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The History and Archaeology of Jordan: The Second Millennium BC

The past 20 years of archaeological work in Jordan have led to a major reassessment of the second millennium BC, one of the most pivotal in Jordan's long history and with profound consequences for world civilization. A generation ago, Nelson Glueck's nomadic hypothesis still held sway. According to this theory, based on field surveys when the Bronze and Iron Age pottery sequences of Transjordan were poorly known, only nomads and pastoral transhumants roamed the plateau south of Wādī az-Zarqā' from the beginning of Middle Bronze (MB) IIA (ca. 1900 BC) down to the end of the Late Bronze Age (LBA), which Glueck ended around 1300 BC.

It can now be demonstrated that the city-state system, which was well-established west of the Jordan River earlier in the millennium, had already penetrated into Jordan from the north by around 1900 BC. Newly established urban sites, such as Pella in the northern Jordan Valley, probably served as large regional centers that coordinated the trade of a range of agricultural and finished goods from intermediate centers and producers in other areas of the country. Southern Palestine was the hub of this MB economic network, which had reached its highpoint by the "Hyksos" period (ca. 1670-1550 BC).

Since my career and research interests have paralleled and significantly contributed to the development of new paradigms for understanding the millennium, as well as in promoting a more scientific approach to archaeology, it is only natural that this overview be a personal retrospective of sorts. As will be seen, many points are illustrated by drawing on surveys, excavations, and laboratory research that I have been directly involved in.

Glueck's Nomadic Hypothesis and LB I Urban Culture

When I was introduced to Jordanian archaeology a little more than 20 years ago, my decision to begin working there professionally was in direct response to the apparent inadequacy of Glueck's nomadic hypothesis. In 1976, LB pottery vessels, to cite only one category of material ar-

tifacts, came onto the antiquities market in 'Ammān. They were traced back to the Baq'ah Valley, a fertile and well-watered expanse 20km northwest of the capital, and were just as sophisticated in style and manufacturing technique as anything found west of the Jordan River. The locally made pottery was accompanied by pieces of imported pottery from Greece, in particular Mycenaean IIB stirrup jars and Cypriote White Slip II milk bowls, making it clear that Transjordan was part of the international trading network of the period. The contrast with the nomadic hypothesis could not be greater: artifacts attesting to advanced technologies and almost identical stylistic assemblages as those associated with small, medium, and large-sized settlements west of the Jordan could only be explained by a sedentary, more complex society on the central Transjordanian plateau.

The Baq'ah Valley Project (McGovern 1986; 1989), which I directed for five seasons from 1977 to 1987, represented the scientific confirmation of this alternative hypothesis. Intensive ground surveys, geophysical prospecting, and aerial surveying were followed up by test soundings at sites throughout the valley. In addition to finding and excavating undisturbed burial caves of the second millennium BC, the main settlement site on the northwestern side of the valley was located at Khirbat Umm ad-Danānir. Its name alone — "the mother of the gold coins or dinars" — promised untold riches! Apart from yielding any scraps of the precious metal, however, the archaeological light this site has shed on the central Transjordanian plateau from ca. 1550 BC to the end of the millennium is what has made it such a profitable site to excavate on a larger scale and study.

One very instructive lesson was learned at Khirbat Umm ad-Danānir regarding surface surveys of second millennium BC Jordanian sites in general. The survey of this site was carried out in an exhaustive fashion — collecting every conceivable artifact (ceramic, lithic, bone, etc.) from the total 2.5 hectare area of the site, which had been enclosed by a 2m thick double wall of boulders as

revealed by a detailed plan of visible architecture. Since the site was built on a series of terraces above Wādī Umm ad-Danānir, it might be anticipated that archaeological materials from every period represented on such a skewed "tall" would have washed down the slope, a vertical drop of about 50m, and be represented somewhere on the surface. To be sure, quantities of pottery and other artifacts were recovered from every sub-phase of the Iron Age (including the early Iron Age, constituting the end of the second millennium), along with Roman, Byzantine, and Mamluk materials. LB II (ca. 1400-1200 BC) pottery was also well represented, and even a stray sherd of what appeared to belong to the late MBA. What did not show up on the surface were any artifacts that could be identified as belonging to LB I (ca. 1550-1400 BC). Excavation was needed to reveal this pivotal period in the second millennium BC history of Jordan.

No sign of LB I was found on the surface, because this period constituted the lowest occupational level of the site, built on bedrock and sealed, after its destruction, beneath 5m of later occupational debris. Once having excavated and removed later Iron Age and Roman structures, a unique building, which was in use from ca. 1480-1300 BC (LB IB-IIA), was revealed. The building, with walls 1 m thick and some still standing 1.5m high, had been destroyed by a fire, and carbonized beams from the roof had collapsed onto a thick, well-made plaster floor. Two layers of beams, made of 300-500-year-old olive trees, were found, running parallel and at right-angles to one another, with a clay layer in between; though burned, some of the beams were 20cm in section, with mortise joints still visible. Few artifacts were found on the floor of the building, but beneath the floor, directly over bedrock, was a 60cm thick accumulation of burnt and unburnt animal bones. Cattle legs, gazelle heads, and the remains of many other mammals (donkey, sheep/goat, and mountain lion) were represented — in other words, both domesticated and undomesticated species, including two animals (the gazelle and mountain lion) no longer living in the region.

The foundation trenches for the LB I building were dug down into this bone layer. Before the plaster floor was laid, the builders placed foundation offerings in the trenches, including a jewelry pendant of standard Syro-Palestinian type (McGovern 1989: Fig. 6. 3) and glass and Egyptian Blue frit beads that represent some of the earliest vitreous materials from the ancient Near East (McGovern 1989: Fig. 6: 1-2). More important for dating purposes was the pottery, which included a miniature hand-made lamp, an imitation of a Cypriot white-shaved juglet in an unusual black ware, and well-made, bi-chrome-painted bowls and kraters of local, 15th-14th BC century BC types (McGovern 1989: Fig. 5).

Even more intriguing, the layout of the rooms in the

Khirbat Umm ad-Danānir building and its construction were nearly identical to a contemporaneous structure that has long fascinated scholars — the 'Ammān Airport Building, about 15km to the southeast (Hennessy 1966; Hankey 1974; Herr 1983). This building, which was discovered at the old airport when a runway was put in but which has since been covered over by another runway, is a perfectly square 15 x 15m building. Like the Khirbat Umm ad-Danānir structure, a "dedicatory fill" of animal bones had first been deposited over bedrock, and walls were precisely 1 or 2m thick. Although some finds are recorded as coming from above the floor, a treasure trove was found beneath the floor, including Mycenaean, Cypriote and Minoan pottery, gold, silver and bronze jewelry, etc.

Although such rich deposits are yet to be found at Khirbat Umm ad-Danānir, what is remarkable is that, to the extent that it has been exposed, the Khirbat Umm ad-Danānir structure closely parallels the layout of the 'Ammān Airport Building. Thus, the northern rooms of both buildings were exactly 2m wide, and had doorways spaced 2.5 and 3.5m apart and opening to the south. Based on analogy to the 'Ammān Airport Building, a massive pillar was hypothesized to be at the center of the Khirbat Umm ad-Danānir structure. A sounding was sunk at this spot, and true to form, a large boulder, 1m on a side, was exposed. It proved to be the upper drum of a pillar comprised of three drums, the lowest of which was hewn into a 1m³ of bedrock. It's not often that one can use another building's plan to direct the course of excavation. It would seem that 3500 years ago, one Jordanian architectural firm had a monopoly on construction in the area, and they even worked according to the "metric system"!

Both the Khirbat Umm ad-Danānir and 'Ammān Airport buildings were probably destroyed sometime during the 13th century BC. Pits containing characteristic LB IIB pottery were dug into the destruction debris of the Khirbat Umm ad-Danānir structure (McGovern 1989: Fig. 7; also see McGovern 1986: 61-63, Figs. 47-48). Besides more bones of the same species of animals as those in the "dedicatory fill" and foundation trenches, one of these pits yielded the front part of a pottery rhyton in the form of a bull, a complete example of which came from a contemporaneous, nearby burial cave (cf. McGovern 1986: Fig. 88. 1-2). This zoomorphic type, which generally occurs in late MB and early LB contexts at other Levantine settlement sites, has obvious religious associations, as a manifestation of the Canaanite sun or weather god.

The finding of burnt human bones near the central pillar of the 'Ammān Airport Building has led to speculations that human sacrifice or cremation, as part of a mortuary cult, was carried out here. As yet, no human bones, burnt or otherwise, have been recovered from the Khirbat Umm ad-Danānir structure that might help to resolve this

issue. Still, the animal bone layers below the floors of both buildings and the miniature vessels and other special artifacts in their "dedicatory fills" and foundation trenches point to some kind of cultic activity. It is also known from contemporaneous texts, as well as biblical tradition, that animal sacrifices played an important role in covenant ceremonies — although mountain lions go unmentioned.

Taking a broader perspective, the layouts of the 'Ammān Airport Building and Khirbat Umm ad-Danānir structure belong to the so-called *Quadratbau* architectural type (Ger., "square building"), which is characterized by a central courtyard and surrounding rooms. The type is especially well represented in the 'Ammān area — e.g., at Rujm al-Ḥinnū East, in the middle of al-Baq'ah Valley, and at al-Mabrak (Yassine 1983), 4km southeast of the 'Ammān Airport Building, both of which were built on bedrock and were possibly constructed during the LBA according to surface pottery. In the central hill country west of the Jordan River around Nablus and the ancient site of Shechem (Tall Balāṭah), several buildings of similar type on Mount Jirzim were more precisely dated to the late MBA and early LBA (Landes 1975). This region might well have been in contact with the central Transjordanian plateau, as trade routes probably ran down Wādī al-Fār'ah to the Jordan Valley, and then up Wādī az-Zarqā' and Wādī Umm ad-Danānir to the Baq'ah Valley and 'Ammān, a distance of only 40km as the crow flies.

Investigators of the MB-LB *Quadratbau* buildings have noted that they often appear to be isolated or at some remove from any permanent settlement. The 'Ammān Airport Building, for example, is more than 5km from the 'Ammān Citadel, where a major LB settlement was located. In keeping with Glueck's nomadic hypothesis and biblical tradition, it was then proposed that itinerant groups of proto-Israelites met at the 'Ammān Airport Building periodically to seal their alliances (amphictyony) with one another. Apart from the fact that a settlement was noted some 300m east of the building, which could not be investigated because it lay under the main runways, it is highly unlikely that the excellent and precise building techniques of the 'Ammān Airport Building can be ascribed to nomads or semi-nomads. Moreover, the pottery and other artifacts of local types, as well as the numerous imports, from the building attest to a sedentary way of life.

Two alternative hypotheses may be proposed to account for why the buildings are generally not incorporated into settlements proper in the 'Ammān and Shechem regions. Firstly, they might have been physically separated from ordinary residences, because of their special architecture and social, political, and/or religious significance. Secondly, the physical separation might reflect and have encouraged the interaction of sedentary and mobile groups, which is well-attested in all periods of Jordanian

history and appears to have provided a buffer in times of economic exigencies. The latter hypothesis is partly borne out at Khirbat Umm ad-Danānir, where large scatters of LB sherds on the uppermost terrace of the site were not associated with any surface architecture and might represent transhumant encampments (McGovern 1986: 11; 1989: 130-132).

The Transjordanian LB I culture on the central plateau, at the midpoint of the millennium and with its distinct urban character, provides a good perspective from which to take stock of developments before and after, as well as elsewhere in the country.

The Consolidation of Urban Culture during the First Half of the Second Millennium BC

What is most striking about the pattern of permanent Transjordanian settlement in the first half of the millennium is its concentration in the northern Jordan Valley in MB IIA. A gradual decrease in settlement throughout the country can be documented from surveys and excavations for the Early Bronze (EB) IV period, which can be tentatively dated down to ca. 1900 BC. However, fairly large, fortified towns at Khirbat Iskandar, along the northern bank of Wādī al-Wāla on the southern Mādabā plains, and at Tall Iktānū, in the southern Jordan Valley, make it clear that settled life, while it might have contracted, had not disappeared (see the overview of the EBA by Kay Prag in SHAJ VII).

The pioneering East Jordan Valley Survey of Yassine, Sauer, and Ibrahim (1988) shows that the number of sites in the northern valley actually doubles from EB IV to MB IIA — 8 recorded sites versus 16 in MB IIA. Contrasted with the more dispersed settlement pattern of EB IV, the MB IIA sites are evenly spaced at the mouths of and between the major wādī systems, as one moves north to south from the Yarmūk River to Wādī az-Zarqā'. In the southern valley, the number of settlements appears to decrease from EB IV to MB IIA.

Once more surveying and excavation are done on the northern plateau, it can be anticipated that a similar pattern as that in the northern Jordan Valley will emerge. Siegfried Mittmann (1970) surveyed the northern plateau between al-Yarmūk and az-Zarqā' during the 1960s when the pottery typology of Transjordan was still poorly understood. While methodologically the survey leaves much to be desired and should be rechecked by more intensive, systematic surveying, the number of MB II sites (27) shows a slight increase over those reported to be of EB IV date (24).

I was brought face-to-face again with the fact that surface surveys do not always reveal what's below the ground at Tall al-Fukhār, a tall in Wādī ash-Shallālah of northern Jordan that has been the focus of a joint Scandinavian expedition (see Strange 1997). Whereas Mitt-

mann reported no MB IIA material from the site, a burial belonging to this period with two probable adults (male and female) was excavated here in 1993. Three associated whole vessels — viz., a globular jar, platter bowl, and carinated bowl — had been wheel-thrown. The absence of slips, the employment of irregular hand-burnishing or more careful wheel-burnishing in the case of the carinated bowl, relatively unstable disc bases (string-cut off the wheel), and specific stylistic features point to the vessels belonging to an early phase of MB IIA (McGovern 1997). Handmade, flat-bottomed cooking pots of the standard MB IIA-B type, with a finger-impressed ledge below the rim, were found in other MB IIA occupational contexts.

As another example of the limitations of surface surveying, Mittmann reported MB IIA, MB IIC, and LB I pottery sherds on the mound of Umm ar-Rujlayn, immediately to the south of Tall al-Fukhār. The intensive survey that I carried out around the base and on top of this largely natural geological feature, however, yielded no MB IIA or indeed any material from the MBA. The entire LBA, which excavation has revealed to be a major period at Tall al-Fukhār (below), was represented, and yet, it went undetected in the earlier survey. I point out these inconsistencies as a cautionary note for taking any survey results, my own included, as the final word, especially until after deep soundings have been carried out.

As one proceeds south on the MB IIA Transjordanian landscape, settlement rapidly thins out and then seems to disappear altogether. MB IIA sherds, which are not associated with architecture, are reported from Dahr al-Madinah (Kafafi and Knauf 1989), 7km northwest of Jarash. Surveys and excavations in the 'Ammān region are yet to report a single occupied site of this period, although some sherds are reported from the 'Ammān Citadel and 'Irāq al-Amīr (Dornemann 1983: 15). MB IIA materials also appear to be lacking in Moab, although some evidence for the period emerged from the survey of Maxwell Miller (1991) on the Karak plateau, between Wādī al-Mūjib and Wādī al-Ḥasā. Whether the pottery sherds were associated with architecture is uncertain; in any case, permanent occupation was on a small scale. Burton MacDonald's survey (1988) farther south, along Wādī al-Ḥasā, again came up empty-handed, and he concludes, perhaps correctly, that there is essentially a settlement gap between the 18th and 13th century BC here and that this is one region where Glueck's nomadic hypothesis is literally correct.

South of Wādī al-Ḥasā, MB IIA settlements are also yet to be found. The possibility that they eventually will be, however, should not be ruled out. For example, Jāwā, in the northern basalt or "black" desert of Jordan, had excellent stone architecture, with piers and cantilevered stone beams holding up the intact ceilings of the so-called "citadel" of probable MB IIA-B date (Helms 1975). Other

parts of the northeastern and southern deserts of Jordan have been explored only to a limited extent, but even here, in the vastness of the Badiya that make up 4/5's of Jordan's total area, second millennium BC stone ruins are reported — for example at 'Irāq al-Qaṭṭāfiyāt, northeast of the al-Azraq oasis near Jabal Qarma (Eigeland 1997). It should be stressed that such "desert" sites, which are best understood against an urban backdrop, have thus far only been located in the northeastern part of the country. The modern precipitation level of 200mm annually is probably comparable to that in antiquity, and is sufficient for year-round settlements and dry farming.

To date, the settlement pattern and material culture of the northern Jordan Valley provides the best illustration of the reassertion of urbanism in MB IIA, following its recession in EB IV. Pella, at the mouth of Wādī al-Ḥammah, had a fortification wall, which is in accord with its mention as Peher/Pihilum in the second group of Egyptian Execration Texts, probably dating towards the end of MB IIA (McNicoll *et al.* 1992; for further references and discussion, see Magness-Gardiner 1997). Nearby Tall al-Ḥayyāt, at the mouth of Wādī al-Yābis, showed no break from EB IV into MB IIA, and, as one of the few thoroughly excavated MB settlement sites in Transjordan, had a continuous sequence of occupation through the period (Falconer and Magness-Gardiner 1989).

Why should the strongest MB IIA influence be apparent in the northern parts of Transjordan, and gradually decrease as one moves south? I would argue that these developments are closely connected with an urbanization process occurring elsewhere in Palestine (for a general overview and current viewpoints, see Oren 1997). West of the Jordan River, sites encircled by massive rampart (glacis) fortifications and extending over large areas that most probably reflected a corresponding increase in population, were built *de novo*, from the ground up as it were. As one example, Hazur, an inland site, went from about 1ha to over 80ha (Yadin 1972). Even more dramatically, a glacis fortification system at Ashkelon, just north of Gaza, probably once extended some 2km in circumference, enclosing an area as large as 150ha (Stager 1991). The use of the fast wheel to make pottery and the extensive alloying of copper with tin to make bronze are also first attested in this period. The sheer manpower required to build these cities and the sophisticated technology imply that craftsmen and groups of peoples must have immigrated into the country from city-states farther north, where sites do not appear to have suffered a decline in EB IV. Native peoples would also have participated in the process, either voluntarily or by coercion.

This model is supported by the largest Neutron Activation Analysis (NAA) project ever carried out in Old World archaeology, which I have pursued over the past decade (McGovern and Harbottle 1997; McGovern 2000).

Nearly 1400 samples of distinctive MB Syro-Palestinian pottery types, including Canaanite Jars and Polished, Levantine Painted and Tall al-Yahudiyah wares, have been tested from coastal and inland MB sites up and down the Eastern Mediterranean, with a heavy emphasis on Tall Dab'a, the "Hyksos" capital of Avaris (Bietak 1996), in the northeastern Nile Delta. By establishing tight "local compositional groups" that are chemically "fingerprinted" by modern clays, it is possible to determine where pottery vessels were originally manufactured and their bearing on Levantine trade and even the movement of ethnic groups during the MBA.

The NAA study makes it clear that Southern Palestine had established itself as the hub of an economic network early in MB IIA. Its imports and exports arrived from and went out by ship to sites along the coast, including Avaris, and goods were also transported overland to inland Lebanon (the Biqā' Valley) and Syria (the Orontes Valley and Tall Mardikh/Ebla). Southern Palestine encompasses a ca. 3000km² area along the southern littoral of Palestine, where a red loess clay with a characteristic chemical composition is common and was used to make ancient pottery. The region includes the MB sites of Gaza (largely unexcavated), Tall al-'Ujūl (often identified as ancient Sharuhēn, a bastion that the "Hyksos" defended for three years before surrendering to the Egyptians around 1550 BC), Ashkelon (a more likely candidate for Sharuhēn because of its large size), Tall al-Fār'ah South, Lachish, Tall Jemmeh, Tall al-Fār'ah South, Tall Haror/Tall Abū Hurayra, and the inland sites of Tall Bayt Marsīn and Lachish. It is probably significant that the local compositional groups for Tall al-'Ujūl and Ashkelon ('Asqalān) were closest to pottery from this region that was exported elsewhere, although workshops are yet to be located at these sites.

Based on relative pottery chronology, Tall Dab'a was transformed into an Asiatic outpost during a later phase of MB IIA than that associated with the founding of city-states along the Levantine coast, including Ashkelon in Southern Palestine and Tall Aphek in the mid-coastal region. Since the MB IIA phases of Tall Dab'a were dominated by pottery imports from Southern Palestine, with only a few vessels coming from sites farther north, the stimulus for settling Avaris is best explained by an expansion of economic interests primarily from this nearby region. During a period of crisis in native governance, this development paved the way for the "migration" of Southern Palestinian peoples to Tall Dab'a, and accounts for the tremendous growth of Avaris, covering over 2.5km² by MB IIB-C.

The wholesale transplantation of Syro-Palestinian culture to Egypt was manifested in the temple and palace architecture at Tall Dab'a/Avaris. Burials, often a sensitive indicator of ethnic origins, at the latter site and in South-

ern Palestine are virtually identical. Tombs were made of vaulted mudbrick, accompanied by equid/ass burials, and supplied with the same Syro-Palestinian pottery types (those at Avaris very often being imported from Southern Palestine according to the NAA results), metal weapons and luxury items, scarabs, etc. Moreover, foodways and cuisine are among the most conservative elements of any culture, and the characteristic hand-made, flat-bottomed cooking pot of Syria-Palestine was used and manufactured in both regions over several centuries (MB IIA-B).

As Avaris grew, a more regulated trade primarily with Southern Palestine developed from MB IIB onwards. Canaanite Jars, which were imported by ship, dominated the picture. Organic analyses indicate that the amphoras generally contained resinated wine. Based on how many Canaanite Jars have already been excavated, Manfred Bietak (1996: 20) estimates that as many as two million Canaanite Jars would be recovered from MB levels of the site, if fully excavated. Based on the NAA results, at least three-quarters of these vessels were imported from Southern Palestine, which converts to about 6000 jars per year or almost 20 jars per day imported over the 250-year lifetime of the city. Assuming many were filled with wine, that should have quenched the thirst of the upper class!

The dynamics of MB settlement in Transjordan would have been very much influenced and conditioned by the emergence of powerful city-states elsewhere in Palestine, which eventually culminated in the "Hyksos period" proper, ca. 1670-1550 BC. MB IIA fortified city-states were built in the northern part of the country in MB IIA, and by the end of the MBA, the urban phenomenon is well-attested as far south as Tall al-'Umayri where a glacis fortification was dug out and erected on the western side of the mound (Herr Forthcoming a). MB IIB-C sites occur throughout the greater 'Ammān region. In the vicinity of the citadel, which probably boasted a large walled-city at this time, rich tombs of the period, similar to those at Jericho and Pella and yielding Hyksos-style scarabs, alabaster vessels and wheel-thrown pottery, have been excavated (see, most recently, Najjar 1991; Zayadine *et al.* 1987). Towns were even built right out to the edge of the present-day desert — including a walled settlement at Saḥāb to the southeast of 'Ammān (Ibrahim 1987; 1989) and pillared structures at Abū as-Sunayslah to its east (Lehmann *et al.* 1991).

Northern Transjordan's involvement in a socio-economic network emanating from Southern Palestine has already been touched on in a paper I presented at the sixth international congress (McGovern 1987). The NAA results from Tall al-Fukhār showed that two vessels from a very small MB IIA pottery corpus, thus far restricted to the excavation of a burial and associated occupation, were imported from Southern Palestine, viz., a wheel-thrown

globular jar and a finger-impressed rope appliqué from a typical, flat-bottomed cooking pot. The importation of a cooking pot from Southern Palestine is very significant, as already stressed above, because of the conservatism of foodways. Although every other MB IIA pottery type was made on the newly introduced fast wheel, the handmade cooking pot continued in use for over 350 years before it was finally displaced by the wheel-made, hole-mouth type.

Transjordan probably provided mainly agricultural products — such as wine, olive oil, tree resins, possibly herbs and honey, and cereals — in exchange for goods from Southern Palestine and elsewhere. The trade connections of an earlier period, which have been reconstructed by the powerful approach of combining NAA (to determine the origin of a pottery vessel) and organic analysis (to determine what the vessel contained), bear out this contention. In EB IB (ca. 3150 BC), some 700 wine jars were transported overland by donkey from the hill country of western Palestine, the Jordan Valley and Transjordan to Abydos on the middle Nile River, a distance of about 900km (McGovern 1998; McGovern *et al.* 1997). At Abydos, they were deposited in the tomb of one of the first kings of Egypt, Scorpion I of Dynasty 0. In this case, the trade in resinated wine appears to have been gone directly from producer to consumer. Middlemen, who presumably grew rich on the profits, had intruded themselves into the process by the MBA, since pottery vessels from Transjordan are then no longer attested in Egypt or even Southern Palestine.

Pella and other regional centers in the Jordan and Jezreel Valleys probably coordinated the trade of goods from elsewhere in Transjordan. The most extensive and richest MB remains have been exposed at Pella, where occupation continued from MB IIA down to the end of the MBA. The transitional period from MB into LB, at the height of the "Hyksos period," is especially well represented here. Epitomizing the eclectic artwork of the times, a marvelous inlaid ivory and ebony box in the form of an Egyptian-style Nekhbet gabled shrine was recovered from a pit, associated with an LB I palace (below). The combination of Egyptian (e.g., intertwined uraei, winged solar-disk at the top, *djed*-pillars) and Levantine motifs (two antithetical lions rampant) is reminiscent of the designs on the jewelry pendants from LB IA Tall al-'Ajūl in Southern Palestine (see McGovern 1985). Yet, the simplified *wadjet* eyes, without eyebrows and falcon markings below the eye, and the vipers, lacking horns, do not follow standard Egyptian artistic canons. Timothy Potts' proposal (1987) that a Southern Palestinian craftsman produced this piece of art — he suggests the northeastern Nile Delta but Southern Palestine itself is just as likely — is a good one, and might even represent payment in kind for goods coming from Transjordan.

Chocolate-on-White Ware: A Highpoint of LB I Urban Culture and Technology

Before scanning the remainder of the millennium, an excursus on Chocolate-on-White pottery highlights how urban development in the Jordan Valley led to the production of some of the finest pottery in the Levant before Hellenistic times. This beautifully contoured, wheel-thrown pottery, with its intense white slip and characteristic geometric designs in an unusual chocolate-colored paint, has usually been interpreted as imported from Cyprus or Southern Palestine (cf. Hennessy 1985). Recent NAA analyses, however, provide strong evidence that the vast majority of the material found in Transjordan was produced by a native industry located in the central-southern Jordan Valley (first proposed in McGovern 1997). Only the main conclusions can be presented here, pending a more detailed presentation of the data and statistical argumentation elsewhere.

NAA was carried out on 72 Chocolate-on-White pottery vessels, some of which are unpainted (the so-called White Slip pottery, not to be confused with the Cypriote type of similar name) from a range of Transjordanian sites: Tall Abū al-Kharaz and Pella in the northern Jordan Valley; Katarit as-Samrā and Tall Nimrin in the central Jordan Valley; and Tall al-Fukhār, sites in the Baq'ah Valley, and the 'Ammān Citadel on the northern and central Transjordanian plateau. Examples from Bayt Shan in Cisjordan, west of the Jordan River and close to Pella, and Ashkelon in Southern Palestine were also included in the study. The NAA results show that three clay types had been used to make this distinctively decorated pottery in standard Syro-Palestinian shapes, including bowls, kraters, jugs, jars, and chalices.

One clay type is, in fact, the red loess clay of Southern Palestine, so prevalent in Southern Palestine (above). Only Bayt Shan yielded this type — five examples, with a white slip that, contrary to standard practice for this class of pottery, had not been burnished. Moreover, only one example was decorated with the usual chocolate-colored geometric design; the other four had an unusual chocolate-and-black decoration. Such "bichrome" Chocolate-on-White pottery is attested at Tall al-'Ajūl in early LB levels. The single, small example from Ashkelon that was tested, which has a chocolate-painted wavy band over an unburnished white slip, belonged to the same chemical group.

Another 52 Chocolate-on-White examples, all of which had burnished white slips, were chemically closest to a local compositional group for Tall Nimrin, at the mouth of Wādī Shu'ayb in the central Jordan Valley, which had a substantial settlement throughout the MBA (Flanagan and McCreery 1990). One may propose that at least two clay beds were exploited, based on markedly different levels of calcium for two sub-groups. The workshops are yet to be located, and indeed it is still unclear

whether or not Tall Nimrīn had an LB I occupation. The chemical comparability of the corpus to the Tall Nimrīn local group implies that the production center was not far away, perhaps to the north in the direction of LB Katarit as-Samrā, which has yielded considerable LB I material and what are reported to be Chocolate-on-White "wasters" (Leonard 1989 and personal communication). The Chocolate-on-White pottery workshops in the central-southern Jordan Valley supplied the whole valley, including Katarit as-Samrā, Pella, Tall Abū al-Kharaz, and Bayt Shan, as well as all the plateau sites.

Another clay type was probably localized somewhere in the northern Jordan Valley, since only nine examples from Bayt Shan, Pella, and Tall Abū al-Kharaz fell into this group. Most examples were less well-made, suggesting that they were made during a later phase of LB I.

The best dating for the highpoint in the production of Chocolate-on-White pottery in the central-southern Jordan Valley is provided by two short-lived radiocarbon determinations of carbonized grain, presumably barley, from inside and outside a silo at Tall Abū al-Kharaz (Fischer Forthcoming). Using the highest probability 2-sigma ranges, the average date of the silo is 1537 BC, which falls at the mid-point of the traditional span for LB IA, viz. ca. 1550 to 1480 BC. The relative pottery chronology is well supported by Egyptian synchronisms and stratigraphic correlations with western Palestinian corpora at Tall al-'Ajūl, Megiddo and elsewhere, where Chocolate-on-White pottery is often associated with Tall al-'Ajūl Bichrome Ware.

The importance of obtaining more short-lived radiocarbon determinations deserves special emphasis here, not just for LB I but for the whole second millennium BC, so as to put MB and LB chronology on a more secure footing and refine it. The need is especially acute in an area such as Jordan which lacks clear geographic and historical references in contemporaneous documentary sources and has relatively few artifact types, whether locally made or imported, that can be cross-dated to the Egyptian and Mesopotamian chronologies.

Pottery vessels from late MB tombs at Jericho, 15km west of Tall Nimrīn on the opposite side of the Jordan River, provide possible prototypes for LB IA Chocolate-on-White Ware (cf. Kenyon and Holland 1983: Figs. 169, 6 and 170, 1). The Jericho examples are generally jars that were decorated in a dark reddish paint with geometric motifs — horizontal and wavy bands, dots, and filled triangles — on wheel-burnished white slips.

In the context of the broader "Hyksos" trading patterns, the emergence of a native Transjordanian industry might also have been encouraged by the *koine* of the MB Levantine Painted Pottery repertoire, and possibly even the immigration of a "Hyksos" population element to the Jordan Valley as suggested by the Chocolate-on-White ves-

sels from Southern Palestine at Bayt Shan (above). Whatever its ultimate origins, Chocolate-on-White pottery evidences a lively and centralized economy in LB I Jordan, since the ware must have been mass-produced and was traded to the all the major Jordanian city-states of the period from a limited number of workshops in the Jordan Valley.

Egyptian Encroachments on LB Urban Culture

Returning to the model, presented above, that the primary economic and social influence on MB Transjordan flowed from north to south, a good case can be made that Egypt attempted to take control of and hold key regional and intermediate trade centers during the rest of the millennium — specifically, the LBA. In some ways, this was a counter-productive strategy, since it was costly to carry out military campaigns and maintain permanent bases among highly independent city-states. The Egyptians had pursued a similar strategy in the previous millennium, during EB I, when they built or took over trading posts in Southern Palestine and the Negev, presumably to control trade in wine (above), copper, and other commodities. Over the long-term, such heavy-handed tactics tended to undermine local LB economies, which were based on native dynasts and entrepreneurial merchants at the highest socio-economic level and farmers, herders, miners, craftspeople, etc., representing the other side of the supply-demand equation, who provided the basic raw materials and finished products. At the same time, the Levant entered an era of unparalleled international trade under the *Pax Aegyptiana* (Leonard 1989; Strange In Press).

I have already stressed that the survey results for Transjordan can be highly skewed and misleading. Gaetano Palumbo (1994) correctly points out that JADIS—the most extensive and up-to-date database of Jordanian survey results — is biased towards later periods and cultivated regions of the country, and includes many non-intensive surveys. Although areas of settlements and population densities are difficult to estimate, it is nevertheless worth noting that the composite number of LB sites (295) for Transjordan exceeds that of the MBA (290).

The unsystematic, non-intensive nature of survey data applies particularly to the LB I period, when many sites were newly founded or reestablished on older sites, especially in the northern and central regions of the country. The *Quadratbau* "temple" at Khirbat Umm ad-Danānīr in the Baq'ah Valley has already been discussed above. Similarly, at Tall al-Fukhār, settlement was reinitiated here, following a 200-year hiatus, in LB I, and had developed into a substantial walled town by LB II that continued down into the early Iron Age. As another example, Frank Braemer (1987) reports an increase in the number of LB I sites, as compared to those of MB date, in the Jarash region, 20km north of Baq'ah. At Jarash itself, the LB I lev-

el was established on bedrock, accompanied by Chocolate-on-White pottery, and occupation continued down to the end of the LBA. In the Jordan Valley, Kataret as-Samrā is another good example of a newly established LB I site, which continued to prosper in LB II.

Larger sites on the northern plateau and in the Jordan Valley — such as Jericho, Pella, Irbid (Lenzen and McQuitty 1989) — were continuously occupied from MB into LB. Indeed, except for the marked presence of Chocolate-on-White pottery, the first appearance of Cypriot imports and distinctive Syro-Palestinian pottery types such as the truncated juglet, the material culture of LB I is very close to that of MB IIC, and, except for Jericho, major destruction levels appear to be absent. Fewer sites on the central plateau showed this continuity of occupation from MB into LB, but it is attested at the 'Ammān Citadel and Saḥāb.

The 'Amarna Letters of the 14th century BC (LB IIA), which record Egyptian interactions with Palestinian city-states, mention only one Transjordanian site without question — Pella (Smith 1973). What has been interpreted as a palace, which yielded two ivory boxes (including the Lion Box, above), cuneiform tablets and other valuables, had already been built here in the 15th century BC, and continued in use down to the mid-13th century BC, when it appears to have been abandoned (Bourke *et al.* 1994: 104-114). This structure, which nicely straddles the 'Amarna Period proper, was very similar to the LB I *Quadratbau* of central Transjordan (above). The excavators state that it was exactly 15 x 15m, and it has a central courtyard surrounded by rooms, including a lavatory and drainage system (Bourke *et al.* 1994: Figs. 15 and 16). Like the 'Ammān Airport Building and other exemplars, it is oriented north-south, with foundation walls comprised of two lines of boulders. One difference is that the upper walls of the Pella structure were made of mudbrick, whereas the *Quadratbau* structures of central Transjordan appear to have been made entirely of boulders. Egyptian analogies for the Pella structure, such as the Governor's Residence type, do not need to be invoked; this building stands solidly within Transjordanian building traditions.

At Tall al-Fukhār (Strange 1997), what has also been interpreted as a public building, was built on a much more monumental scale than the Pella palace. It was constructed in LB IB (ca. 1480-1400BC) and remained in use until the end of the LBA when it was destroyed in a massive destruction. Although only part of the structure has thus far been excavated, it appears to stretch some 40m along the southern crest of the tall. It is at least 15m wide, with groups of intercommunicating rooms. Well-cut and dry-laid limestone boulders comprised the 1.5m thick foundations with a mudbrick superstructure. Based on the 0.5m accumulation of mudbrick destruction debris and large oak beams, the building probably had two storeys. One main entrance was half excavated: a pillar, again 1 x

1m like that in the Khirbat Umm ad-Danānīr *Quadratbau* (above), flanked a stairway of five boulders leading up from a plastered outer courtyard to a broadroom.

The finds from the destruction debris attest to the building's palatial character. Heirlooms from the LB IB and LB IIA periods included a glass female figurine pendant (McGovern 1997), a type which I dealt with in my doctoral dissertation almost 20 years ago (McGovern 1985: 30). This mold-made *tour-de-force* represents one of the earliest, intricate glass products in the ancient Near East. It is attested by single examples only at sites scattered throughout upper Mesopotamia and Syria (Nuzi, Hama, Ebla, and Alalakh), at several sites west of the Jordan River (Bayt Shan, Megiddo, and Lachish), as well as much farther afield at Boghazkale in central Anatolia, on Cyprus, at Mycenae, and in Egypt. The pendant type was likely manufactured and exported from somewhere in upper Mesopotamia. If one needed any better example of the international connections of Tall al-Fukhār, now situated in an unpopulated, relatively barren valley, the glass figurine pendant was it. And this conclusion was borne out by other artifacts: a large wall knob of blue-green glazed pottery, which matched examples at the LB IB-IIA palace of Nuzi and was probably exported from there, a Cypriote milkbowl, and several Mycenaean *kylikes* which were associated with wine-drinking ceremonies in Greece (Wright 1995). NAA of a coil-made cooking pot showed that it came from Southern Palestine, whereas most vessels at al-Fukhār were made of the local wadi clay, found below the site, or came from sites closer by, such as al-'Afulah, west of Bayt Shan in the Jezreel Valley.

What is striking about these Transjordanian "palaces," which were presumably the bases of operations for the kind of princes who were constantly bickering with one another in the 'Amarna Letters, is that very little in the way of Egyptian imports or even Egyptianizing artifacts have been found in them. The Lion Box (above) from the Pella palace, very possibly a "Hyksos" work of art combining and considerably adapting Egyptian and Levantine motifs, is the exception. Otherwise, except for the occasional scarab, which might well have been produced locally within Palestine, or a stone vessel whose material or method of manufacture can be argued to be of Egyptian origin, the overwhelming majority of the finds from these palaces can be explained as native Jordanian productions. Elsewhere in Transjordan, the situation is no different, although it is sometimes relieved by finding Egyptian stone vessels, such as the large group — including heirlooms — that had been amassed in the 'Ammān Airport Building, or an unusual hieroglyphic cryptogram ring, reading Amun-Re in three different directions, in an LB II tomb in the Baq'ah Valley (McGovern 1986: Fig. 93.6).

The relative lack of Egyptian artifacts in Transjordan during the LBA is brought out by contrasting what has

been found at the Egyptian military garrison of Bayt Shan (James and McGovern 1993). The "Hyksos" of Southern Palestine had economic ties with this site in LB IA, according to the NAA results (above), and some might even have retreated here following the Egyptian incursions into Palestine at the beginning of the 18th Dynasty. Although there might have been preliminary attempts by the Egyptians to take the site during LB IB-IIA, as implied by numerous scarabs and Egyptian-type pendants, faience bowls (one with a hieroglyphic inscription around the rim) and Egyptian statuary recovered from Level IX (partially published, see Rowe 1940), the 13th century or LB IIB period marked the highpoint of Egyptian influence at the site and in Palestinian affairs generally. This can also be demonstrated by plotting the absolute and relative frequencies of Egyptian-style artifacts, as I did for jewelry pendants (McGovern 1985: Ch. 8): whereas the hill country of Palestine and the Transjordanian plateau were devoid of Egyptian-style pendants for the whole LBA, small numbers first made their appearance along the coast and in the main inland valley of the Jezreel during LB IB, the numbers remaining relatively constant in LB IIA, until an exponential upsurge occurred in LB IIB.

At Bayt Shan in the 13th century BC, over 250km from the borders of Egypt and in the far northeastern corner of Palestine, the Level IX town was totally dismantled and leveled, to make way for the military garrison, which was purely Egyptian in concept and construction (for a synopsis of the archaeological and textual evidence, see James and McGovern 1993: I: Ch. 11). A residential sector of courtyard houses was laid out along a grid pattern of streets, which was very similar to the workmen's villages at al-'Amarna and Dayr al-Madinah in Egypt. The so-called "Commandant's House," a variant of the center hall residence with the living room along one side of the building, and the *Migdol* (Sem., "Fortress"), similar to those built along the Sinai portion of the "Ways of Horus"/*Via Maris* by Sety I at about the same time, followed Egyptian prototype. Interior hollow cavities in the mudbrick walls of the *Migdol*, which were filled with boulders and wooden beams, were an Egyptian construction method. Matching the architectural changes, the relative percentage of Egyptian pottery and object types to Palestinian types was the highest that has even been recorded at a Palestinian site. At least two monumental stelae of Sety I and one of Ramesses II are particularly important, since they detail Egyptian military activity in the area, including the defense of the garrison against the belligerent nearby city-states of Pella and Hamath.

While Egyptian military officials, architects, and craftsmen were in control of the garrison, the local population largely provided menial labor. Despite the social stratification, a temple precinct at the center of the tall illustrates how Egyptian and Palestinian popular cultures

and technologies could be combined together. The layout of the temple, which was successively built and refurbished by Sety I, Ramesses II and Ramesses III, was comprised of a lotus-columned inner courtyard, with a stairway leading up to a back altar room. Its layout was almost identical to mortuary chapels and sanctuaries at 14th century BC al-'Amarna and 13th century BC Dayr al-Madinah in Egypt.

Although the temple belongs to an Egyptian architectural type, the artifacts recovered from it attested to a combined Egyptian/Canaanite cult. Dedicatory stelae were the most important sources of information about the gods and goddesses who were worshiped here. Thus, one stela shows a seated, bearded figure, who holds a was scepter and 'ankh sign. The figure, wearing a jewelry collar and a conical headdress with two horns at the front and a pair of long streamers at the back, is approached by two males, who hold lotus scepters and wear Egyptian wigs. The accompanying hieroglyphic inscription identifies the seated figure as Mekal, "the god, the lord of Bayt Shan," who is invoked by the Egyptians Amenemopet and Par-aemheb to give "life, prosperity and health." From other Syro-Palestinian and Egyptian representations and inscriptional evidence, Mekal, deriving from a Semitic root, was evidently the local equivalent of a principal Palestinian deity, probably 'El or Ba'al, who were identified with the Egyptian deities Ptah and Seth, respectively. Although Egyptian deities are not mentioned as such, the Egyptian accoutrements of the god on a stela of standard Egyptian type points to an amalgamation of Egyptian and Palestinian religious concepts.

Similar evidence on stelae and pendants exists for a female deity, who was variously identified with Hathor, the Egyptian goddess of turquoise and foreign lands, and was locally known as Antit. She represents the principal Canaanite goddess, more often called 'Ashtarte or Ba'alat. The Egyptian cobra god (Mert Seger or Ranout) was also ideologically merged with the Canaanite fertility goddess, and represented in a technologically innovative fashion. Pottery plaque figurines of the principal Canaanite goddess, even molds for making them, were common in the temple and the nearby houses at Bayt Shan, as were cobra figurines. In standard Egyptian fashion, the cobras were totally handmade by pressing together separate slabs and pieces of clay: a modeled head, a flattened slab for the characteristic broad throat of the cobra, and a base slab, which often had an applied coil to mark the tail. Three cobra figurines, however, were unique in having breasts depicted by applied clay pellets. This feature points to an amalgamation of an Egyptian snake goddess with the Canaanite deity. Supporting this interpretation was a female figurine plaque which was fabricated like the cobra figurines: rather than being mold-made like all the other examples were, its torso was a clay slab to which clay pel-

lets were applied as breasts and side rolls of clay as arms.

These and other examples of Egyptian cultural and technological tradition and its syncretism with native tradition provide important touchstones for assessing developments in Transjordan. On this basis, Pella probably played as large a role with Egypt as any site. It is the only city-state in Jordan to be mentioned in the topographical lists of Sety I, occurring repeatedly. It is said to have supplied chariot parts in Papyrus Anastasi IV (see Smith 1973: 32), fragments of which were recovered in every LB phase at Bayt Shan. As one example of what might have been received in exchange, a serpentine vase from the palace at Pella, probably an import from Egypt, is nearly identical to an example from Level VII at Bayt Shan, dated to the late 13th century (cf. Bourke *et al.* 1994: Fig. 7. 3; James and McGovern 1993: II: Fig. 113. 2). Yet, as one of the Sety I stelae at Bayt Shan indicates, Pella continued to be a military threat, and the amount of Egyptian or Egyptianizing material from the site pales into insignificance alongside that from Bayt Shan. The nearby site of Tall Abū al-Kharaz is yet to yield a single, definite Egyptian import. Additional raids were made by the Egyptians into southern Syria, as attested by the stela set up by Sety I at Tall ash-Shihāb, northeast of Irbid along al-Yarmūk River, and one erected by Ramesses II a little farther north at Shaykh Sa'id, east of the Sea of Galilee (for references, see Strange, in Press). These forays must not have had any lasting effects, since at Tall al-Fukhār, Mesopotamian, even Aegean, ties were more evident than those with Egypt (above).

Most LB city-states in Transjordan that have been excavated on a large scale, such as Tall Abū al-Kharaz, Tall al-Fukhār, Tall Irbid, Saḥāb and the 'Ammān Citadel, were fortified. Sometimes, as at Pella, the outer wall was constructed in the MBA, and continued in use through the LBA. An external casemate wall was built at Tall al-Fukhār, and the use of massive boulders in cyclopean fashion is comparable to the fortification walls at Shechem, Irbid, and Pella.

Egyptian Incursions and Control of LB Southern Jordan?

What still remains a mystery is why the regions of Moab and Edom are apparently mentioned frequently in Egyptian texts, and yet have yielded so little in the way of archaeological remains. A convincing case has been made by Kenneth Kitchen (1992) that the Moabite towns of Butarta, identified with ar-Rabbah (as derived from Raba Batora) and 23km south of Wādi al-Mūjib, and Tibunu, identified with Dhibān and 5km north of the Wādi al-Mūjib, were captured by Ramesses II; Jordanian prisoners were graphically depicted on relieves in the Karnak temple. Yet, excavations at Dhibān showed a gap between the end of the EBA and the Iron II period, and only a few sites

south of Wādi al-Mūjib have yielded LB remains.

Even more mystifying, in view of the lack of archaeological remains in Moab and Edom, are two stelae, generally dated to the 13th-12th century BC, which exhibit a coalescence of Egyptian and Canaanite elements: the Shihān or Rujm al-'Abd stela, and the Bālū'a stela (both conveniently illustrated in Zayadine 1991: Figs. 33-34; also see Ward and Martin 1964), found some 10km apart, just south of Wādi al-Mūjib. Although the stelae were not recovered from secure contexts, LB occupation has been reported from Bālū'a. The iconography of the Bālū'a stela is particularly evocative. A disk, which often represented the sun or weather god on pendants, is seen above the right shoulder of the middle figure. Above the latter's left shoulder is a crescent, most likely denoting the moon goddess or main Canaanite female fertility goddess. Thus, the central figure can be interpreted as a Moabite ruler, upon whom authority and well-being are being conferred by the major Canaanite deities, dressed and adorned in standard Egyptian fashion, who stand on either side of him. Unfortunately, the inscription above the figures, although evidently in hieroglyphics, is illegible.

Ramesses II also claimed to have "plundered Mount Seir," as did Ramesses III. Biblical tradition and contemporaneous Egyptian references, especially that of Papyrus Anastasi IV, make it clear that Edom and Seir are synonymous terms for a region of southern Jordan that was inhabited by a nomadic people — *the shasu* — whose way of life was not unlike that of bedouin living in the area today. Why these pharaohs should have taken it upon themselves to raid this seemingly remote, unimportant region, with little if any permanent settlement according to recent surveys, is difficult to explain.

It might be proposed that the Egyptians were attempting to defend their copper-smelting interests at Timna (Conrad and Rothenberg 1980) or trade connections through the region. Such explanations, however, are weak, because of the lack of evidence for any large-scale overland trade or any military encroachments that impeded operations at Timna. As at Bayt Shan (above), the local people appear to have worked well with their Egyptian overlords. Perhaps more plausibly, the Egyptians were concerned with a metals industry at Faynān, farther north and at the same latitude as Moab and Edom. A sedentary population on the plateau might have kept the Egyptians at bay, and even competed with them in the production and trade of copper. Yet, minimal if any evidence exists for the smelting of the substantial copper ores at Faynān during the 13th-12th century BC (Hauptmann *et al.* 1992: 7).

The LB-Early Iron Age Transitional Period: A New Cultural Constellation

The situation in Jordan *vis-à-vis* Egypt took another un-

usual turn in the 12th century BC, during what is more and more emerging as a true transition period from LB into the early Iron Age that is much more marked at sites east of the Jordan River than those to the west. Ramesses III and later Ramesside kings reasserted their control at key sites in Southern Palestine, such as Dayr al-Balah, and in the Jezreel Valley, at Megiddo and Bayt Shan. At the same time, the Egyptians or their emissaries began to encroach on sites in the central Jordan Valley.

Tall as-Sa'idiyyah (Tubb and Dorrell 1993; Tubb 1997) is the parade example. Here, Egyptian imports, including cups of the same types as those found at Bayt Shan and confirmed to be made of Nile alluvial clay by NAA at both sites, have been found in tombs and in a pool associated with a casemate defensive wall and what has been described as an Egyptian Governor's Residency. It should be noted that in the LB IIB levels at Bayt Shan, all the Egyptian-type pottery and special objects, such as the cobra and slab-made female figurines (above), were made of local clay. Intriguingly, in the LB-early Iron transition period, actual Egyptian imports began to appear at Egyptian-controlled sites, together with relatively more imports from Southern Palestine.

Burial customs, influenced by Egyptian tradition, are another point of comparison between Tall as-Sa'idiyyah and Bayt Shan. At the latter site, large anthropoid coffins appeared for the first time in transitional tombs of the Northern Cemetery. Most of these were of the so-called naturalistic type, which was well-attested in New Kingdom Egypt. Others had more "grotesque" features and what might be interpreted as high feathered headdresses, like those of the Sea Peoples on the contemporaneous reliefs at Medinat Habu, Ramesses III's palace in western Thebes, recording their attack on Egypt by land and sea (for an overview of the evidence, see Dothan 1982).

A NAA study (McGovern 1994) has shown that complete coffins of both types were imported to Bayt Shan from the coastal region of Southern Palestine. Corroborating this finding, a coffin lid face of naturalistic type was found inside a kiln at Dayr al-Balah, south of Gaza, where many other coffin burials were excavated (Dothan 1979). It seems incredible that such heavy coffins, weighing hundreds of pounds and whose bodies were not as well-fired as their lids and would be more prone to breakage, were transported up the Mediterranean coast, probably by boat, and then overland, probably by wagon, through the Jezreel Valley to Bayt Shan, but they evidently were. At Tall as-Sa'idiyyah (Tubb 1998), we seem to have the poor man's equivalent to the well-made anthropoid coffins at Bayt Shan. Here, bodies were sometimes buried in two pithoi, placed mouth-to-mouth, or sometimes merely covered with amphora or *pithos* sherds. Bodies were wound in a cloth that has been identified as linen of an Egyptian weave, and sometimes even covered

with bitumen, suggesting that a simplified kind of mummification was carried out.

By examining the associated burial goods in the transitional tombs at Bayt Shan and Tall as-Sa'idiyyah, an attempt can be made to identify the social or ethnic affiliations of their occupants (see McGovern 1984). Imitations of Mycenaean stirrup jars, made of local clay as established by NAA, figurines with Aegean affiliations imported from Southern Palestine, elaborate bronze wine sets (including a jug for dipping into a larger jar, a strainer, and drinking bowl) which have their best parallels in Egypt, etc., can all be cited as shedding light on this question. In the cosmopolitan world of the LBA and its aftermath, however, it is difficult to assign these eclectic burials to only one group. Since Egyptians themselves would have considered it a disgrace to be buried abroad, the most parsimonious hypothesis is that mercenaries from Southern Palestine, including a Sea People element, were settled at Bayt Shan as military reinforcements in unsettled times. J. B. Pritchard (1968) first proposed that the Tall as-Sa'idiyyah burials represent an expansion of Egyptian interests southwards in the Jordan Valley and a purposeful settlement of Sea People mercenaries there. Recent excavation have confirmed this model, although Tall as-Sa'idiyyah was not on the same scale and has not yielded as much Egyptian or Egyptianizing material as Bayt Shan.

Only 10 km south of Tall as-Sa'idiyyah, Tall Dayr 'Allā probably represents a further extension of Egyptian and probable Sea People influence in the Jordan Valley. A temple, whose period of use extended from LB I down to the transitional period, has been excavated (Franken 1992). In the last phase of its use, Egyptian faience pendants and, most importantly, a faience jar inscribed with the cartouche of a short-lived female pharaoh of the early 12th century BC, Tewosret, attest to Egyptian contacts. A group of at least 13 unique clay tablets with incised writing, from a room east of the central courtyard, were discovered. Although as yet undecipherable, it has been proposed that they are in a Cypro-Minoan script and related to the Sea Peoples. Franken and his colleagues argue that the script is most likely "Proto-Canaanite". Whatever language and script they were written in, they are definitely not related to any Egyptian writing and thus are best attributed to a non-Egyptian group, whether native or newly arrived.

By contrast, on the plateau in the LB-early Iron transitional period, sites were even more removed from direct Egyptian contacts than earlier in the millennium, and their material culture shared more with the hill country of western Palestine, as was true during LB I (above). For example, Tall al-Fukhār was refortified with less substantial walls, following its total destruction around 1200 BC (Strange 1997). Numerous cooking pot and collared-rim

jar types (McGovern 1997), which had already made their appearance at the end of the 13th century BC, characterized the phase. These vessels were exclusively coil-built, as had become common practice by this time for most vessel types (except small bowls and lamps that were thrown off-the-hump). Pottery is lower-fired than previously, with more inclusions, and often has carelessly rendered monochrome red designs over a white slip. These developments are paralleled elsewhere in Jordan — most notably in the Baq'ah and at Tall al-'Umayri — but also in the hill country of central Palestine, at Mt. 'Ībāl and Giloh (see Herr Forthcoming B).

The long-held hypothesis that the collared-rim jar is an ethnic marker of the Israelites was dispelled by Mu'awiyah Ibrahim (1978), who recovered numerous examples of the type from early Iron contexts at Saḥāb. They have now been found throughout Jordan at sites of every description — whether more substantial walled towns or the small agricultural hamlets that proliferated across the landscape after the LB city-state system collapsed and people had to find other means of survival (McGovern 1987). One wonders what the collared-rim jar was used for in the changing economic and political world of the early Iron Age? Except for one example from Tall al-'Umayri which was filled with barley, however, collared-rim jars have been found empty, even lacking interior residues. My laboratory extracted several examples from Tall al-Fukhār, in hopes of recovering intact organics from the interior pottery fabrics, but the results were negative.

The NAA results were more encouraging. Five Tall al-Fukhār collared-rim jars were tested, and four of them were of uncertain provenience. In other words, they were definitely not made of the local wadi clay, which is well-defined chemically, but must have been imported from elsewhere. The origin of one jar could be determined: it was from Southern Palestine, from where so many other imports during this period and earlier had come. Like the anthropoid coffins, it is difficult to imagine transporting such large jars, which sometimes weigh a hundred pounds empty, especially overland. It is also highly unusual to have only one chemical match for five examples of a given pottery type, since the NAA statistical searches draw upon a large database of over 5700 samples.

One may propose that, with the proliferation of small settlements into outlying areas of the country, new clay resources were exploited and new pottery workshops established, capable of mass-producing very large vessels. The fact that collared-rim jars were also produced in lowland, populous regions, such as Southern Palestine, should alert us, as well, to the urban background of the pottery-making industry and the transitional period in general. On the other hand, the proposition (Artzy 1994) that collared-rim jars were used in the long-distance trade of incense, wine or other goods by camel lacks confirmatory evidence

— whether of the organic contents of the jars or of exotic materials and camel remains from contemporaneous sites.

The urban backdrop to the transition period, which carried over into the 11th century BC (sometimes denoted Iron IB), the final century of the millennium, can be seen in other aspects of the material culture. Pillared rooms, casemate walls, plastered cisterns, terracing, and so forth all had their antecedents in the LB city-states. These developments are well-illustrated by the emergence of an iron/steel industry in central Transjordan, the principal features of which can only be summarized here (for details, see McGovern 1986; 1987; 1995).

It was one of the most exciting moments of my archaeological career in Jordan to excavate Cave A4 in the Baq'ah Valley. Among the largest early Iron Age tombs ever discovered in the Levant, a total of 227 burials — men, women and children — had been crammed into the 4 x 5 m area of the burial cave. Many individuals of both sexes wore a pair of bronze anklets or bracelets on an arm or leg. Some people, however, wore a pair of iron anklets or bracelets. Altogether, 20 iron artifacts were recovered, and these were exclusively jewelry types. At the time, they more than tripled the number of published iron objects from early Iron Palestine, and represented a 7-fold increase for Transjordan. A careful study of the microstructures of the virtually intact metal, which still gleamed like the day it was taken from the forge, revealed something even more remarkable about these artifacts: they were actually made of a mild steel, with about 0.5% carbon diffused uniformly through the cross-sections. At 600X magnification, the pearlite structure, with lamellae of ferrite and cementite, was visible, indicating that the metal had been worked above 700EC and then allowed to cool slowly in the presence of charcoal.

It is unknown whether or not the metalsmiths understood that they were producing a wholly new material or whether they simply followed a set of empirical procedures, such as keeping the iron artifacts in close contact with the charcoal, which resulted in a mild steel. Why steel should be used to make only jewelry, and not weapons, is also enigmatic. Perhaps, aesthetics was the prime consideration, the goal being a certain color, surface texture, or even the sound of two objects clinking together. Whatever the explanation, the Baq'ah jewelry is the earliest verified corpus of steel from Jordan (as well as the ancient Near East generally), and belongs with a very small group of the earliest iron artifacts from elsewhere in the Eastern Mediterranean, including many Transjordanian sites (viz., burials at Pella, Tall as-Sa'idiyyah, the 'Ammān Citadel, and Mādabā) as well as sites in Syria and on Cyprus (Waldbaum 1978). Metallographic examination is still needed to determine whether the iron artifacts from the other sites and areas — which are dominated by jewelry types like those from the Baq'ah

Valley — were also made of a mild steel.

Where was the steel jewelry made that has been excavated in central Transjordan? There is no compelling reason for arguing that these artifacts had to be imported. The pottery and other artifacts found together with the steel jewelry, apart from marine shells from the Mediterranean and Red Sea, are of types common enough at many early Iron Age sites on the plateau and elsewhere in Palestine.

A scenario that I have developed for the innovation of iron and steel technology in Transjordan, if true, places Jordan right at the cutting edge of a new high-tech age in antiquity (with no pun intended, since it was mainly jewelry that was being made). As already mentioned, in the wake of economic and social dislocations at the end of the LBA, the urban population apparently dispersed into hinterland areas where alternative subsistence strategies were required. Under these circumstances and especially if the population included displaced coppersmiths from Wādī 'Arabah, new ores might have been experimented with and a new technology of iron and steelworking developed. This process had apparently begun towards the end of the LBA, since a fragment of an iron anklet/bracelet, so extensively corroded that it could not be determined whether it was carbonized, was recovered from Baq'ah Cave B3, dated to the 13th century BC.

Hydrothermally deposited iron ore deposits, one of the few large sources in the Levant, are concentrated in the area north and northwest of Baq'ah along Wādī az-Zarqā' and in 'Ajlūn, at sites such as Jil'ād, Dhahrat Abū Thawwāb, Tulūl adh-Dhahab, and Mugharat al-Wardah. Preliminary investigation of these sites suggests that smelting operations had begun by the early Iron Age. Several of the sites are in relatively fertile areas, along the watershed at a higher elevation than the Baq'ah, and probably received more rainfall in this period, when the Eastern Mediterranean generally appears to have suffered from a decline in precipitation, and when areas in the vicinity of the major LB city-states had probably been extensively deforested. Large oak and conifer tracts exist in these upland regions today, which might well have been similarly wooded in antiquity and capable of providing the fuel needs for the iron/steel industry.

The emergence of a native, Jordanian iron/steel industry in the 13th-12th century BC preceded the consolidation of a full-fledged Philistine culture in Southern Palestine, which had occurred by the late 12th century BC at the earliest. Thus, the Philistines *per se* could not have introduced iron metalworking into Palestine, as implied by biblical tradition. Conceivably, Sea People metal-smiths, who were connected with the Egyptian expansion into the central Jordan Valley during the transition period (above), contributed to the development of the early iron/steel industry of Transjordan, but until detailed in-

vestigation of several smelting sites is carried out, this proposal must remain conjectural. The relative chronology of the period is borne out in a limited way by the finding of a Philistine sherd in the destruction debris of the 11th century BC gateway at Tall al-Fukhār, the only Philistine pottery ever found east of the Jordan River. The deep bowl type, with a well-executed looped spiral design in black and red paint on a white slip, was derived from a Mycenaean drinking vessel, the *skyphos*. NAA confirmed that the vessel was made of the red loess clay of Southern Palestine, as was another collared-rim jar that had been imported from this region that was recovered from an Iron IB context at Tall al-Fukhār (McGovern 1997). Clearly, northern Transjordan maintained contacts with Southern Palestine, which had begun much earlier, until at least the end of the millennium.

The new metals industry — including new artifact types made of steel, no less — in early Iron Transjordan is illustrative of a whole series of new developments in this period, which I believe formed the matrix or crucible out of which the major Iron Age kingdoms of the Aramaean states, Ammon, Moab, and Edom crystallized. Even though Jordan seemed more cut off from the rest of the civilized world at this time, the impetus for change and innovation was enhanced. The country appears to have accepted the ecological and economic constraints as a given, and redefined itself. Seemingly new pottery and other artifact types, which are tied stylistically and technologically to their LB antecedents, were perhaps visible symbols of a new order, which might be described as a "revolution" in its own right.

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