Textiles and Staple Finance in the Near East and the Southern Levant

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*Textiles have long been recognized as a key feature in the economic and social development of early complex societies. Many comparative dimensions, however, remain unexplored, including within the ancient Near East. Unlike contemporary societies in Syria and Mesopotamia, wool was not used as a staple finance good in the Early Bronze Age southern Levant (**c.** 3700–2000 BCE) since the landscape could not permit adequately scaled production. In larger cultural regions wool was produced at vast scales and helped underpin royal institutions. But without a non-perishable, high-volume and high-value commodity like wool, staple finance in the southern Levant was restricted to seasonally produced grain, wine and oil, primarily used in exchange for local labour. Moreover, without wool there was little need in the southern Levant for the administrative and security technologies used elsewhere, namely seals and sealing, and later, writing. This limited the development of complex institutions and cognitive abilities.*

Introduction

The role of textiles in the evolution of complex societies has been a longstanding issue (e.g. Barber 1991; Hirth 2020). The development of technologies for the production of fibres and textiles, related technologies such as basketry, and the position of textiles in the expanding range of storable surpluses complement the better-known development of foodstuffs. Other questions such as the relationship of secondary animal products to energy-intensive industries such as pottery production remain completely unexplored.

McCorriston (1997) proposed that flax played a key role as precursor to wool production. But a recent analysis suggested that flax was a specialized textile in the prehistoric southern Levant with little or no role in Syria and Mesopotamia (Joffe 2022). No evidence exists to posit flax cultivation and linen production as a precursor to wool production. The 'Fibre Revolution' as reconstructed by McCorriston must be rethought in terms of the products as well as the spatial, economic and social transformations, both in the primary centres of the ancient Near East and the southern Levant.

As in Syria and Mesopotamia, domesticated sheep and goats were utilized in the southern Levant since the Neolithic. But in sharp contrast, no evidence for wool exists in the southern Levant before the Middle Bronze Age. Some of this is explicable in terms of the carrying capacities of various landscapes; since only a few thousand sheep and goats could be grazed within the territory of any given region or polity, wool production was correspondingly lower. But since flax was not a factor, wool's importance in Syria and Mesopotamia is greater than previously thought, while its role in the Levant is smaller.

The implications of textile production for understanding early complex society in the Near East and southern Levant during the fourth and third millennium BCE are enormous. Social-spatial reorganization—'urbanization'—is one aspect, while staple finance by emergent institutions is another. Additional problems include the development of administrative and security technologies—writing and sealing. These technologies, or lack thereof, have important implications for cognitive categories and interactions.

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Wool and staple finance in Syria and Mesopotamia

Models for the emergence of social complexity in the ancient Near East necessarily place human use of domesticated plants and animals at the centre. New research continues to refine regional and site-specific sequences that will revise models further. Some dynamics, however, may be outlined in a generalized way for Syria and Mesopotamia.

After 5000 BCE, larger herds of sheep and goats were moved across increasingly specialized and territorialized agricultural landscapes associated with growing settlements in Syria, northern and then southern Mesopotamia (Stein 2010). Land claims by economic entities such as kinship groups and 'tribes' partitioned landscapes and necessitated new concepts of tenure and ownership.

Specialization within and between communities also created new categories of 'farmers' and 'herders', as well as new communal forms of political organization and leadership to coordinate and adjudicate relationships. Most communities hedged their economies with both farming and herding in various mixtures. But some locations such as steppe regions favoured herding, that led very much later to the development of pastoralism (Arbuckle & Hammer 2019).

The need to coordinate activities of farming and herding also intensified the need for managerial specialists. Herds degrading agricultural lands and increasing soil loss—and conversely, fertilizing and compacting soil—were impetuses for managerial innovations. So, too, was the problem of directing perishable agricultural surpluses and non-perishable wool surpluses.

The temporal and spatial dimensions of increasingly interrelated herding and farming also reshaped cognitive landscapes as new categories emerged with names for things, concepts and numbers. This instantiated 'Neolithization', which had previously reorganized the world into 'human' and 'natural' components and imagined expanded human control over nature (Cauvin 2000). It created new words and cognitive categories for property, ownership and territorialism, as well as for built space and the natural and human worlds (Mithen 2019).

All these factors in turn created pressures for more complex information and security technologies—writing and sealing. Textile remains help chart the emergence of these technologies. For example, the appearance of clay stamp seals at Neolithic Ulucak in contexts with textile tools such as loom weights, bone needles and spindle whorls suggests the stamps were used 'ritually' to decorate fabric and possibly other surfaces (Çilingiroğlu 2009; Skeates 2007). Much later cordage impressions on sealings such as at Tell Brak demonstrate the shift from hair to wool during the fourth millennium (McMahon 2021). Managerial specialists then claimed a share of surpluses or became dependents of emerging institutions.

As the vast territories of the southern Mesopotamian alluvium were colonized in the millennia after *c.* 5000 BCE, a hierarchy of settled communities emerged based on irrigation agriculture and herding of cattle and sheep-goats, connected by waterways and sustained by wetlands and marshes. Similar processes took place in northern Mesopotamia, at different rates and scales, utilizing a different mix of the same resources; cattle and sheep-goat herding, secondary animal products, and rainfall rather than irrigation agriculture (Marchetti *et al.* 2019; McMahon 2020; Pournelle & Algaze 2014).

New categories of wealth, territory, ownership and social status were created as more land gradually came under the control of urban sites and presumably urban elites, the nascent 'Great Estates' of palaces, temples and family corporations, evidence for which remains vague but tantalizing before the third millennium. The gradual construction of an engineered landscape in the alluvium, building artificial irrigation systems off the slowly shifting macrostructures of the Tigris and Euphrates and their channels, created more pressure to control land and labour. Over time, the processes of partitioning and controlling the physical and social landscapes also created friction between communities, advantaging those with locational, organizational and conflict capabilities.

Conflict looms large in the urbanization process and later in the emergence of political leadership. One aspect of this is conflict between institutionally organized sheep herding and independent communities practising a mixture of agriculture and herding on common land. The analogy of eighteenth- and early nineteenth-century Britain is unexpectedly useful, since various methods of enclosing land and assuming ownership are richly documented. These included acquiring control through the systematic and piecemeal consent of owners or leaders acting in the name of groups; with encroachments such as squatting; classification of lands as non-productive 'wastes'; and various forms of political and legal manipulations, such as thousands of parliamentary acts. At their extreme, the 'clearances' involved direct violence and expulsions that removed entire communities to cities or far beyond, as emigrants or indentured servants in various colonies (Mingay 1997).

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Active and passive resistance were widespread, but the process was effectively completed in less than 200 years. In Scotland, industrial-scale sheep raising and wool production was instituted, which helped underpin a new national economy based on trade and a new ruling class. The surrounding historiography, usually produced by urban writers, often emphasized how more 'rational' production was beneficially organized in regions occupied by 'anarchic' or 'primitive' populations (Richards 2007). Wool products famously became a symbol of the colonized and reinvented notions of group and 'national identity' (Cheape 2010).

Pre-industrial production of wool in Syria and Mesopotamia had similar effects in terms of the transformation of land, played out over a vastly longer time frame. The socio-spatial changes of 'urbanization' entailed creation of the 'countryside' and the gradual depopulation of lands surrounding centrally located site hierarchies focused on cities that became ever larger. Surrounding areas were more 'rationally' organized with irrigation agriculture and herding in mind. These difficult-to-map processes of urban agglomeration and densification, and especially rural reorganization, lasted from the fifth into the mid-third millennia, when a process of 'ruralization' began with the growth in the number of smaller settlements (Marchetti *et al.* 2019, 222–4, figs. 10, 11).

Power clearly accumulated in cities. In addition to the growth of urban institutions, most notably temples, documented social phenomena include institutional violence, such as warfare, slavery, dependency, control technologies, new concepts of ownership and management, including rationing, taxation and corveé, new categories of labour and social relations, such as an increase in craft and occupational specialization, changes in gender roles, sumptuary behaviour, and a decrease in local self-governance (Steinkeller 2015).

These variables played out in varying trajectories toward state formation in southern Mesopotamia, northern Mesopotamia and the upper Euphrates valley (Frangipane 2018). Wool production was key, along with cereals. This was the real 'Fibre Revolution'.

The growth of sheep and goat herding created opportunities for both urbanism and staple finance by emergent institutions. In staple finance systems, authorities mobilize wealth from subordinates in the form of commodities, utilitarian goods and attendant labour in order to finance projects such as monumental construction, ritual activities, or warfare (D'Altroy & Earle 1985). Classic discussions focus on the evolutionary implications of staple finance as indicative of higher levels of organization on the path toward state-level systems.

But defining staple finance as opposed to wealth finance systems and distinguishing them archaeologically is difficult. Classic discussions see staple goods as 'obligatory payments in kind to the state of subsistence goods such as grains, livestock, and clothing', that is, wealth that is immediately deployable, storable and movable, and ultimately convertible but often subject to logistical constraints. But D'Altroy and Earle see wealth finance as comprising 'the manufacture and procurement of special products (valuables, primitive money, and currency)'. Such goods are more easily portable but must be understood as valuable within shared regimes of value in order to be convertible (D'Altroy & Earle 1985, 188). A processed animal product like wool is therefore a good that moves from one category to another, a vehicle that is wealth in itself and convertible into other, more typical wealth items, such as precious metals.

This ambiguity extends further, since animals have other primary and secondary product characteristics that are by definition movable and convertible (such as assignable labour) within a market- or exchange-based economy. Animals also have broad sorts of symbolic values that are often widely shared across cultures. In this latter sense, animals are 'complex capital' which are useful for 'strategic ambiguation' by emerging elites, what Grossman and Paulette (2020, 1–3) call 'wealth on the hoof'. This concept unites a varieties of processes or regimes: symbolic capital, the living representation of successful and ongoing accumulation and thus economic power; the conversion of staple goods into wealth goods; and assertion of abstract connections with mythological realms embodied by animal deities. This latter space is malleable and connects the quotidian with the transcendental and participation alone is itself a form of wealth.

The evidence for large-scale wool production by the Uruk period is clear. Algaze points to wool's particular advantages, namely thermal properties, ability to be dyed and thus used for visual expression and style, economies of scale unachievable with flax and linen, resulting reorganization of the agricultural landscape, and substantial labour availability for herding and weaving (Algaze 2008, 77–92).

During the Bronze Age and before, sheep were plucked by hand, a method called 'rooing', in which the entire fleece is peeled intact from the moulting animal. It has been estimated that an individual could pluck approximately 10–12 small sheep

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per day (Andersson Strand 2012, 30; Potts 1997, 92–3; Waetzoldt 1972, 14–17; Wright 2013, 402–3). The wool was then processed and spun.

Late Uruk period textual evidence documents only parts of the cycle from herding to plucking to garment production (Bauer *et al.* 1998, 152). But it is clear that there were dedicated personnel, including dependent females, facilities under the supervision of administrators, and that wool was a key commodity that was controlled and rationed (Charvát 2011).

By the third millennium, state-controlled herds dominated the landscape around southern Mesopotamian sites. In northern Mesopotamia, the state and related elites controlled herds while the movements of nomadic herds were integrated into the local animal economies. Along with management of cereal storage (Casadei 2019; Paulette 2016), sheep and goats acted as real and symbolic sources of capital for emergent elites, anxious to project their domination, and the keystone of an expanding economy of exchangeable and convertible commodities (Grossman & Paulette 2020). The quantities of wool produced were often immense: at the site of Ur during the Ur III period, texts record the delivery of 8000 talents of wool—some 240,000 kg—which required approximately 320,000 sheep (Sallaberger 2014).

Staple finance systems based on large-scale sheep herding and wool production were thus key economic components in third-millennium BCE Syria and Mesopotamia (Breniquet 2014). Fink (2016) argues further that wool was a strategic and political commodity for third-millennium southern Mesopotamian states faced with the choice of acquiring foreign goods through warfare or through export of local commodities. High-value, non-perishable commodities such as woven textiles were more easily exported than bulk commodities such as grain or fish. The high exchange rates between wool and copper received by Akkadian traders in Dilmun show that wool was a highly desirable export commodity (Fink 2016).

The appearance of linen in elite burial contexts in Mesopotamia and the Gulf, including tombs at Ur and Tell Abraq, suggests it was an elite product (Reade & Potts 1993). Ebla texts also indicate linen items were distributed by the royal establishment, most frequently to itself and members of the court (Biga 2010). Less surprisingly, linen forms an important part of late fourth- and third-millennium funerary assemblages in Egypt (Jones 2010).

Dramatic drops in wool prices attested from the Sargonic to Ur III periods were due in part to competition from other regions (Foster 2014). Even so, Fink (2016, 90) observes that unlike contemporary commodity export-dependent societies, Mesopotamia was not caught in a 'resource trap', since wool was renewable and the larger economy was open to innovation. That said, dependence on single commodities like wool, subject to climate and market fluctuations, was more problematic in rainfall agriculture areas such as Ebla than in southern Mesopotamian cities.

The third-millennium southern Levant in the political economy of the Near East

Urbanization in the Early Bronze Age southern Levant (*c.* 3700–2000 BCE) has been discussed many times (e.g. Greenberg 2019; Joffe 1993). Most studies emphasize Mediterranean crops such as grapes and olives as commodities employed by emergent small-scale elites who competed for land and labour. Small-scale urbanism, or perhaps better, a walled town culture, developed craft specialization including in ceramics and chipped-stone industries, 'palaces' and 'temples' of various scales, and massive fortification systems by the middle of the EB I period.

In contrast, urbanism in the central and northern Levant emerged during the first centuries of the third millennium in a process more closely related to Mesopotamian-influenced societies in the upper Euphrates, inland Syria, and both northern and southern Mesopotamia. Southern Levantine sites reached their peak of size and complexity at the beginning of the Early Bronze III, *c.* 2900, and then began to recede (Greenberg 2017), just as the northern and central Levant were taking off (Wilkinson *et al.* 2014). Some features were shared between the three regions of the Levant but others not. Most notably the influence of the Ebla *chora* and emerging traditions of numeracy and literacy do not extend to the southern Levant. These third-millennium relationships are much debated (see Adams 2014; D'Andrea 2021; Vacca & D'Andrea 2020).

This discussion argues a minimalist view. One reason is the much earlier start to urbanism in the south, in tandem with Egypt, which created a unique series of local traditions and adaptations. Equally important are the environmental and scalar contrasts between the southern Levant and other regions, constraints that shaped agro-pastoral economies, risk and abatement strategies which underpinned socio-political development (see Wilkinson *et al.* 2014, 50–54). A third reason is the deep social and economic integration between settled and arid zones, relationships that stretched far into the Sinai and Arabian Peninsulas. For these reasons the southern Levant stands apart and should be considered

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separately as a region with a distinct and contrasting trajectory.

Large walled sites with specialized institutions developed by 3500 BCE. Relations with Egypt are evident in the later fourth millennium with economic relations and a short-lived network of Egyptian settlements, outposts and enclaves, and in the first half of the third millennium with brief Egyptian campaigns and possibly diplomatic gift exchanges. Walled sites, however, rapidly evaporated after *c.* 2700–2500 BCE and were followed by a long period of town and village settlements during the EB IV.

Studies of the Early Bronze Age economy have centred on Mediterranean crops, along with ceramic production: the role of textiles remains completely unexplored. There are no fibre remains of wool until the Middle Bronze Age (Shamir 2015). By the fourth millennium, Mesopotamian and Syrian wool was being harvested by plucking, and it is unclear why this was not done in the southern Levant.

There is limited secondary evidence for textile production. There is only a small number of clay loom-weights in Early Bronze Age contexts (Boertien 2013, 104, 227; Spinazzi-Lucchesi 2018, 68–71) and a somewhat larger number of perforated stone rings and ceramic disks with uncertain association with weaving. These may have been loom-weights or simply spindle whorls (Rosenberg & Greenberg 2014, 200–202). Basalt examples were products of specialized production and trade networks and may have been prestige items (Levy 2020, 121; Savage 2011). The relatively small numbers of items reflect experimentation or perhaps small-scale production of wool or hair. In contrast, the number of second-millennium clay loom-weights is very large.

One obvious constraint on wool production is that southern Levant environments could not sustain herds as in Syria and Mesopotamia. For example, until the twenty-first century the area adjacent to the large EB centre of Tell Yarmouth contained approximately 2000 sheep and goats. Researchers estimated that the maximum carrying capacity of the region was only 30 per cent higher (Eitan 2011, 73).

The southern Levant was also subject to especially severe fluctuations in herd sizes. Early twentieth-century data indicate that in years of severe drought up to 90 per cent of an individual's or village's livestock could be lost. Sheep and goat enumerations are suspect due to endemic under-reporting as a means of tax avoidance, but usefully indicate changing scales of herding. For example, in 1926, 290,854 sheep and 571,289 goats were counted in the entirety of Palestine. In 1934 this dropped to 157,235 sheep and 307,316 goats (El-Eini 2004, 226, table 26; cf. Hazell *et al.* 2003). In contrast, during the Ur III period, there were at least 320,000 sheep associated with the city of Ur alone (Sallaberger 2014).

Ebla's wool production was similarly large. Leading families oversaw immense herds, totalling in the hundreds of thousands of sheep, requiring an estimated grazing area of 34,000 sq. km (Wilkinson *et al.* 2014, 58), and as members of the court, contributed wool to the palace (Biga 2010). Wool was stored by the royal establishment and processed into hundreds of different types of items by dependent craftspeople such as weavers and dyers. These products, such as bolts of cloth and garments, were distributed to craftspeople, clients and specialists, merchants, soldiers, priests and temples, as funerary, wedding and birth presents, and as diplomatic gifts.[1]

As in both Syria and Egypt, linen was produced in the EB southern Levant for mortuary purposes, but it was not exported (Joffe 2022). Sheep and goats were raised for primary and secondary products, including skins and sheepskins, but wool was not a source of staple finance for elites. This raises the question of staple finance and the economic bases of complex societies in the third-millennium southern Levant.

Staple finance and social organization in the southern Levant

If wool was not a staple finance commodity in the southern Levant, what was? Several sites with large-scale silos suitable for grain storage have been noted in the later EB I (*c.* 3500–3000 BCE) such as 'En Esur Area M (Elad *et al.* 2018) and Amaziya (Milevski *et al.* 2016). These are more plausibly interpreted as individual or communal facilities rather than centrally administered by regional or site-wide elites (Golani & Yannai 2016; Milevski *et al.* 2016). No sites have evidence of controlled access or accounting procedures and all are devoted to grain storage rather than dry goods or containers such as jars, baskets, or bundles.[2]

These storage facilities are roughly contemporary with other institutional structures, namely the enormous EB I Temple at Megiddo, smaller temples at Jericho, Arad and elsewhere, and a number of communal buildings used for both storage and community activities, including rituals, at Beth Shean, 'Ai, Bâb Edh-Dhrâ and Tell el-Far'ah North. With the exception of the Megiddo temple (Sapir-Hen *et al.* 2022), these structures, too, have no evidence for extensive social storage or animal consumption, or for administrative procedures such as controlled

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access or accounting (Adams *et al.* 2014; Genz 2010; Mazar & Rotem 2009; Sala 2008).

Similarly, there is little evidence for EB systems of weights, as opposed to standardized volumes associated with vessels and linear measurements used in construction (Ascalone 2006; 2012; de Miroschedji 2001; Genz 2011; Massa & Palmisano 2018; Rahmstorf 2006). Measurement and associated architectural expression appear based on spatial templates rather than numerical calculation.

The lack of weights in particular would have limited the ability to exchange and convert values with reference to emerging interregional and intercultural standards based on precious metals (Marfoe 1987, 33; Milevski 2011, 235–6). By the mid-third millennium these networks stretched from the Euphrates to the Aegean and included shared styles of elite drinking vessels, decorative bone and ivory items, precious metals and semi-precious stones. Except for a few specific items, such as carved bone and ivory bull heads and tubes, southern Levant appears to have been largely excluded from this early or incipient phase of 'globalization' (Mazzoni 2020; Peyronel 2018; Peyronel & Vacca 2021; Zarzecki-Peleg 1993).

But despite the lack of luxury goods, the EB II–III (*c.* 3000–2500 BCE) 'palaces', 'temples' and other structures demonstrate means of mobilizing labour and moving commodities to support nascent or presumptive elites. This was done without large-scale production of wool or other durable goods, but rather with the procurement, storage and redistribution of oil, wine and grain, and possibly animals (Fig. 1).

The nature of elites associated with these facilities remains obscure, with only Tell Yarmouth and Megiddo having plausible claim for 'royal' establishments, as opposed to 'elite residences' (de Miroschedji 2020). Food provisioning and feasting were the central concepts, not centralized redistribution.

Tell Yarmouth is the paramount example, with storerooms containing over 150 pithoi (de Miroschedji 2006). At Khirbet al-Batrawy the 'palace' had one storeroom contained over 20 pithoi (Nigro 2013), while the 'pantry' at the Tell es-Saidieyh 'palace' had well-preserved remains of a variety of foodstuff and associated 'table settings' (Cartwright 2002; Tubb *et al.* 1997). At Beth Yerah—the only site in the southern Levant plausibly deemed 'urban' and whose political organization remains especially unclear—the famous 'Circles Building' may briefly have contained silos capable of holding at least 1700 tons of grain (de Miroschedji 2003; Mazar 2001; cf. Greenberg *et al.* 2017) (Figs 2 & 3).

In all these, and in the many EB I–III sites with fortification walls, local production of cash crops was applied locally for the generation of different sorts of social power, with limited storage and convertibility into other forms of wealth besides labour (Genz 2003; Shalev 2018). Crops were seasonal, perishable and could only be stored for a limited time and transported across a restricted geographic range. In turn, wealth could only be directed into limited types of projects such as site fortifications, which acted as displays and occasionally as defensive systems (Ashkenazi 2020; Paz 2011), and very limited sumptuary items.

EB fortified sites were thus centres for patrimonial elites who had reciprocal obligations with rural populations. Highly local politics and elite competitiveness created the need for community-level signalling and other services, such as the creation of redoubts. In return for labour, communities were rewarded with commodities that had been previously extracted (cf. Greenberg 2017, 46–8). In this scenario, little formal management was necessary beyond face-to-face relationships between elites and non-elites, effected without administrative technologies such as seals.

Feasting is difficult to document, but is reflected in the changing composition of EB ceramic assemblages, for example the rapid increase of drinking forms such as cups in the EB I and the presence of larger presentation shapes such as platters in the EB II–III. Given that platters emerge in the late EB I, their appearance in central and northern Levantine contexts may be a rare example of south-to-north diffusion (Joffe 2018; cf. Vacca & D'Andrea 2020, 134–7). It is worth noting again, however, that later drinking vessels such as *depas* and tankards that become part of a unified elite culture from the Euphrates to the Aegean are absent in the southern Levant.

Traditional explanations that exports of Mediterranean crops to Egypt substantially underpinned 'urban' and elite economies in the southern Levant, a consensus view for decades, should be discarded (Joffe 1993, 82–3; Stager 1985). Recent analyses demonstrate that wine and oil were being exported from the central, not the southern Levant in the early–mid third millennium (Genz *et al.* 2016; Jean & Badreshany 2023). A wide area of the central and northern Levant shared a 'combed ware' ceramic culture focused on vessels made from shale-rich and later calcareous fabrics, suggesting an integrated economy where agricultural products circulated in identifiable vessels, some of which were sealed as 'brand indicators' (Badreshany *et al.* 2020, 190). These networks extended into the northernmost regions of the southern Levant.

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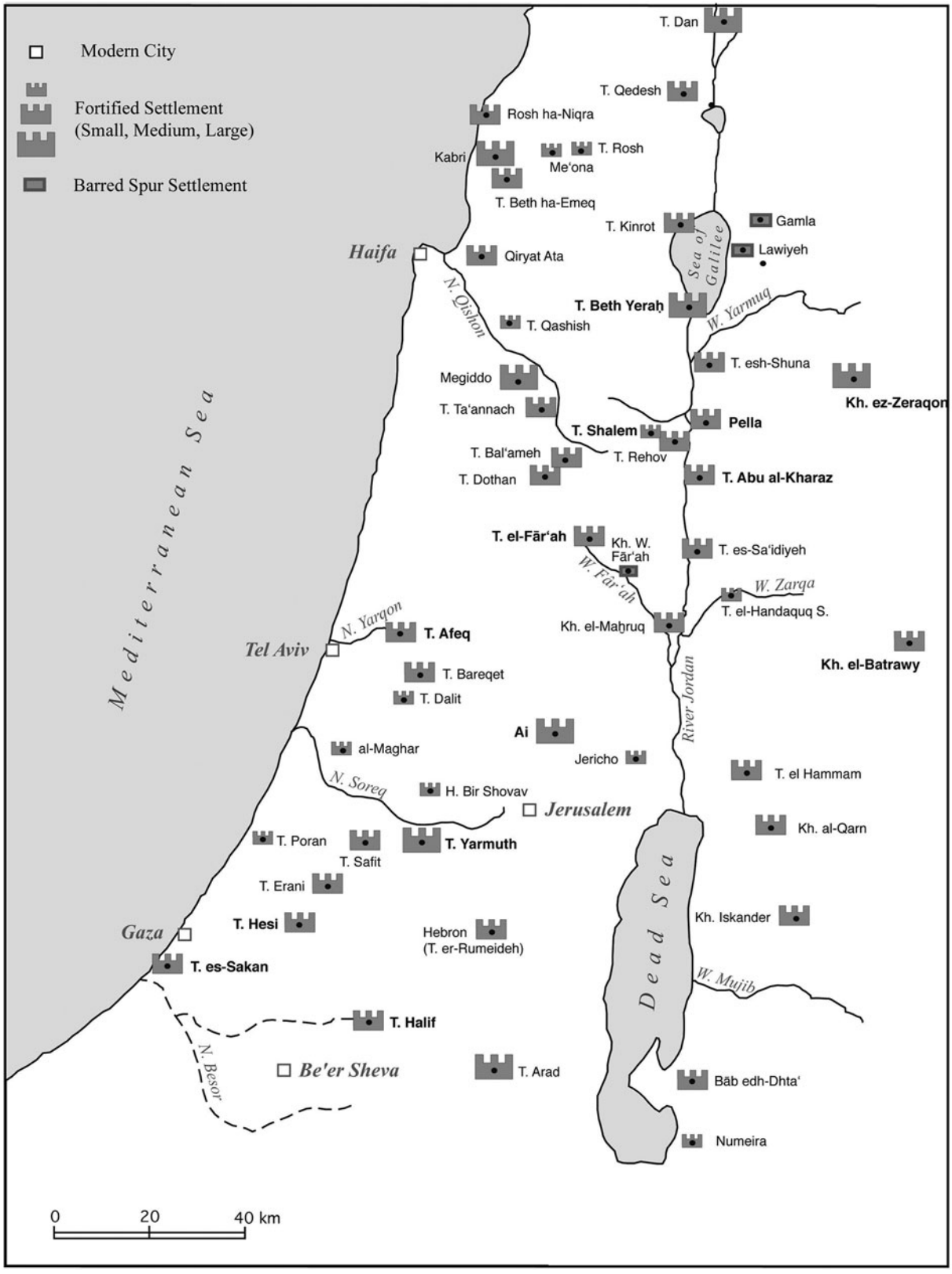

Figure 1. *Map of Early Bronze Age sites. (After de Miroschedji 2020, fig. 9.4. Used by permission of Pierre de Miroschedji.)*

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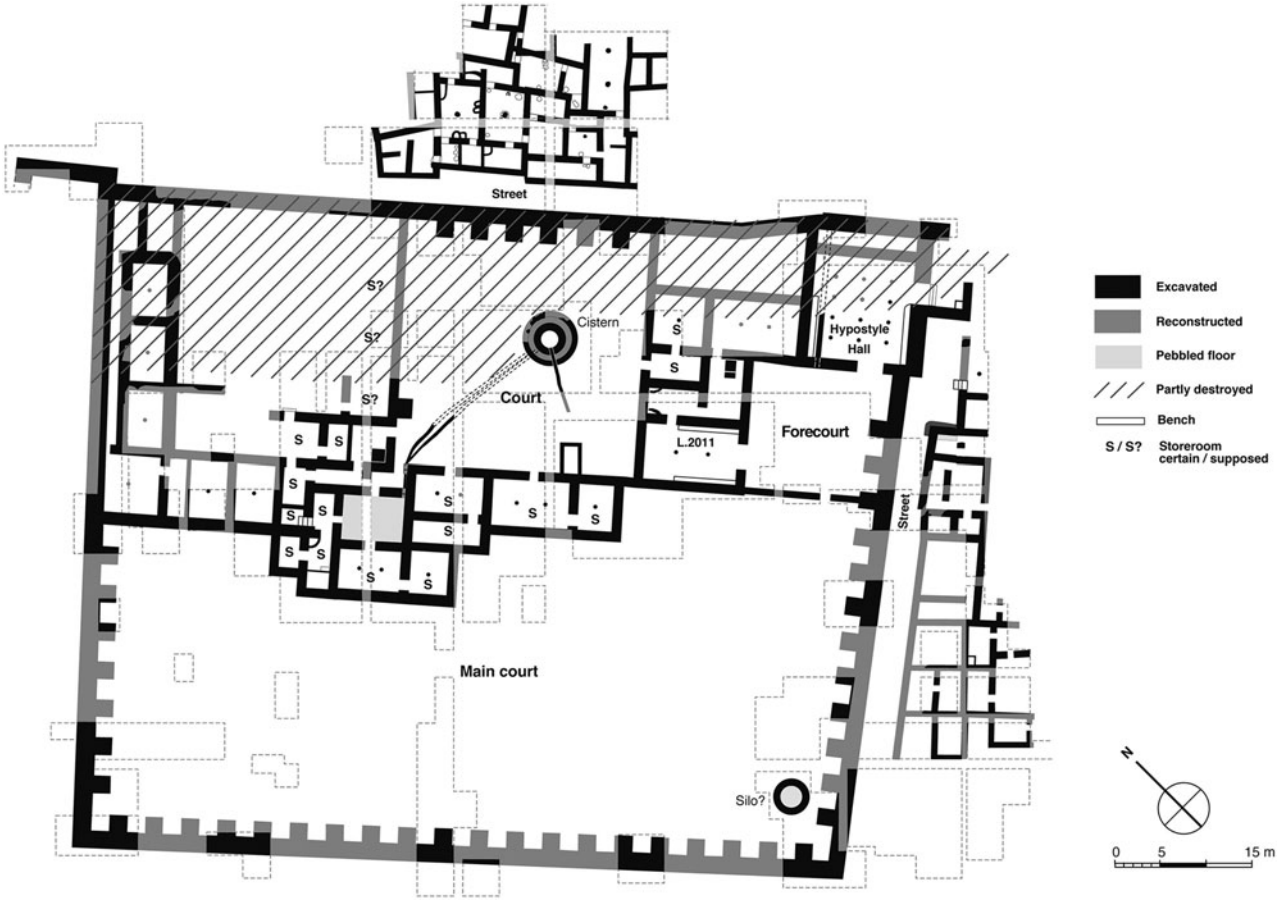

Figure 2. *Tel Yarmouth B1 Palace. (After de Miroschedji 2020, fig. 9.10. Used by permission of Pierre de Miroschedji.)*

The organization of EB II–III central Levantine sites including Byblos, Tell Arqa, Tell Fadous Kfarabida and Tell Koubba remains difficult to discern but all share forms of planned 'ritual monumentality' including temples (de Vreeze & Badreshany 2023). There is also extensive evidence for sealing, inter-site specialization, and, at least at Tell Fadous Kfarabida, archaeozoological evidence for wool production but few tools for spinning or weaving (Genz 2016). Stronger links to Egypt and inland Syria and to international systems more than compensated for whatever lack of wool there may have been as a staple finance good.

In the southern Levant enormous EB I sites such as 'En Esur (Paz & Elad 2022) also emerged outside the area of direct Egyptian contacts in the fourth millennium, suggesting that early exports to Egypt had only a modest impact on elites and economics. Wine and oil production in EB II–III was primarily for local consumption and political economics (Milevski 2011, table 7; cf. Stager 1985).

One other source of wealth existed in the EB: copper. Two phases of copper production in the Negev across EB II–III and EB IV BCE link southern Levantine networks to Early Dynastic and Old Kingdom Egypt, first via the town of Arad and then via Negev highland sites (Ben-Yosef *et al.* 2016; Finkelstein *et al.* 2018; Yamafuji 2023).

In neither phase, however, was copper distributed widely from production sites to sites in the southern Levant itself. Most copper objects are small and prosaic with little evidence for centralized distribution. A hoard of copper axes appear to have been specially produced symbols of power in the palace at Khirbet al-Batraway (Medeghini *et al.* 2016; Nigro 2015). Similar hoards were found at Tell el-Hesi and Pella in prosaic contexts (Montanari 2018) and most EB sites appear predictably stripped of valuable metals. Copper may have been circulated by locally elites through patronage mechanisms, but at low levels. The role of copper as a staple finance good thus appears unlikely.

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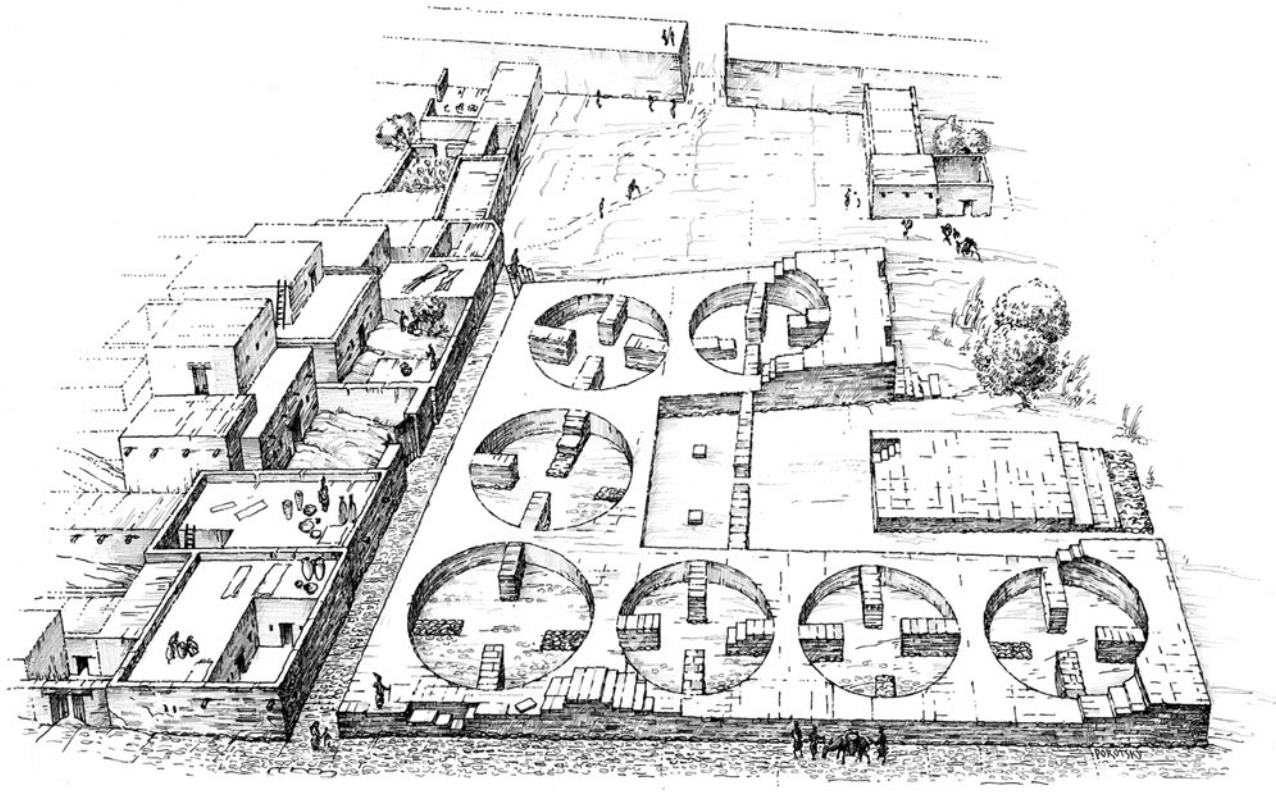

Figure 3. *Beth Yerah Circles Building. (Reconstruction by Dov Porotsky, the Tel Bet Yerah Project. Used by permission of Raphael Greenberg.)*

Isotopic evidence dating to EB III also indicates that Egyptian animals including donkeys and ovicaprines were moved to the southern Levant (Arnold *et al.* 2016; Greenfield *et al.* 2020), while Egyptian reliefs suggest cattle from the southern Levant were moved to Egypt (Sowada 2018). The organization and scale of this trade is unclear, but the significance of donkeys as valued means of transportation ritually disposed of at the end of their use life implies considerable significance.

Animal bones at Tell es-Safi, however, show that most sheep and goats were raised in the immediate area of the city and were not imported from a distance (Arnold *et al.* 2018; Greenfield *et al.* 2020). The discovery of anthropogenic soils in close proximity suggests intensive exploitation of Tell Yarmouth's surroundings. Overall subsistence was a local affair (Ackermann *et al.* 2017) and there is no evidence the southern Levant export economy included textiles.

In return, the Egyptian goods received in the southern Levant throughout the Early Bronze Age were mostly random items gifted to local rulers. No meaningful quantities of high-value imported Egyptian commodities such as gold have been identified rather than reused palettes, stone vessels and beads (Sowada 2009, 91–127). This is in contrast to the northern Levant where inscribed Egyptian materials were more common.

International contacts were specialized and limited, and during the EB II and early EB III surpluses were deployed to architectural displays and feasting. Another measure of the limited power of EB southern Levantine elites is the comparative lack of mortuary display; there are no hypogea, tumuli, or significant disposal of wealth (including humans, equids, and dogs), as was common in mid-third-millennium Syria and Mesopotamia (Baadsgaard *et al.* 2011; Wygnańska 2017). Outside of Bab edh-Dhra and Jericho there is puzzlingly little evidence for EB II–III burials at all (Ilan 2002).

The lack of wealth removed from circulation in burials reflects the economy as a whole. The complex fiscal and finance systems documented at Ebla (Benati & Bonechi 2020), with revenue, rents, tributes and fees, including from commodities passing through its territory, a carefully measured system of land ownership, and a complex structure of designated and enumerated elites and dependents, are difficult to perceive at any point in the Bronze Age southern Levant.

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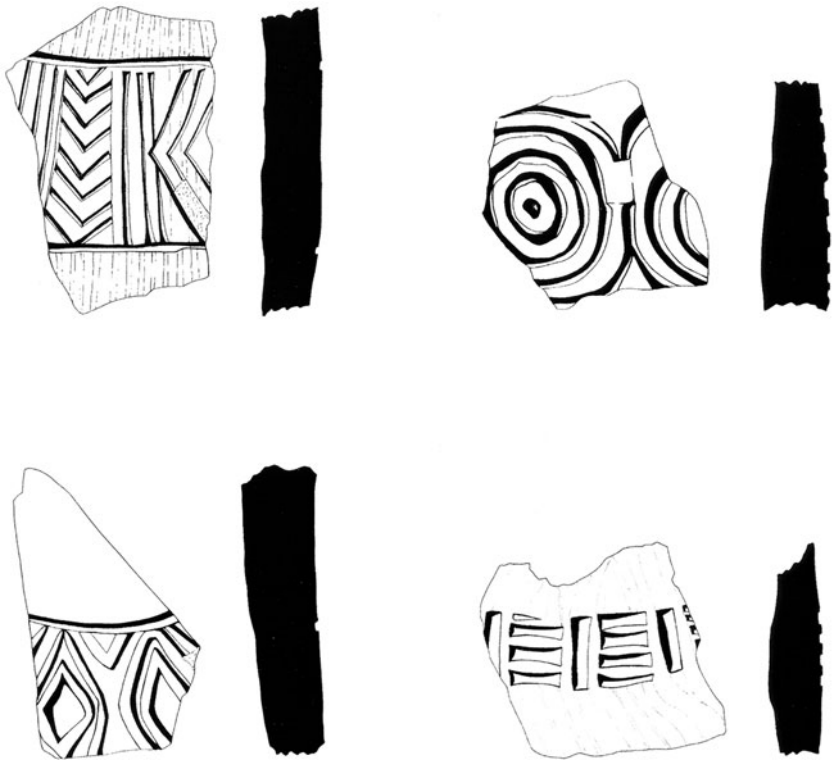

Figure 4. *Seal impressions from Mizpe Zevulun. Scale 2:1. (After Joffe 2001, fig. 19.2.)*

Whatever systems existed did so without writing, at least during the third millennium.

Wool: economy, symbolism and cognition in the southern Levant

Despite the obvious ease of acquiring fleeces through rooing, there is no significant wool weaving in the Chalcolithic or Early Bronze Age southern Levant. Instead, it appears leather and sheepskins were worn, products of an integrated animal economy that emphasized meat and other secondary products (Joffe 2022).

During the fourth and third millennia BCE there are no material remains suggestive of industrial-scale weaving, such as specialized buildings, or for such activities being attached to or controlled by emerging institutions, namely EB I–II temples, EB I–II communal buildings, or EB III palaces (de Miroschedji 2019).

There are no signs that a wool industry was ideologically or iconographically encoded into material culture. Only a single seal is comparable to the southern Mesopotamian 'pigtailed women' weaving scene seals (Ben-Tor 2016; Breniquet 2010; Dittmann 2018; Vila & Helmer 2014; cf. Kelley 2018, 71–3). Moreover, there are no weaving or craft scenes (or contest, banquet, or master of animal scenes), which are common on contemporary Syrian and Mesopotamian seals (cf. Tumolo 2019a, 44).

In contrast, animal imagery on EB seals emphasized processions of wild animals with magical associations and bovines representing wealth displays (de Miroschedji 1993), but not sheep. An impression from 'En Esur depicting an orant figure next to a bovine conveniently joins both categories of wealth and ceremony (Paz *et al.* 2018, 290, fig. 2d) (Figs 4 & 5). Scenes of lions and goats juxtapose the wild and tamed worlds (Thalmann 2013), while ceremonial scenes of individuals holding hands, variously interpreted as religious dances or 'sacred weddings', provide a human context for animal scenes of magic and wealth (Paz 2017; Paz *et al.* 2013). Both scenes are also present in the central and northern Levant (Tumolo 2022: 72–4).

But outside the EB I Egyptian enclave, there are no bullae recording individual transactions. Seals were not used as security technologies to control access to facilities or stores, or as part of an accounting system for incoming or outgoing commodities. Instead, the bodies of storage vessels are sealed, a branding practice partially consistent with contemporary Syria and the central and northern Levant including Ebla and Hama (Genz & Ahrens 2021; Matthews 1996; Mazzoni 1992; Tumolo 2022).[3]

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Overall, southern Levantine symbolism—heraldic, cultic (de Miroschedji 2011; Paz 2017), geometric, and naturalistic—was restricted to seals carried as personal totems, sealings on special function vessels (Thalmann 2013) as 'brand indicators' or manufacturer's marks (Badreshany *et al.* 2020), and potmarks (Mazzoni 2017). Representative seals presented stock narratives and associations with little semantic or temporal content and offered few opportunities to transmit information to viewers.

EB figurines are also predominantly bovines or donkeys, representations of agricultural wealth and trade made at the household or village level (Milevski & Kolska Horwitz 2019). More elaborate ivory bull's heads are notable prestige objects during EB II–III but in very small numbers (Al Ajlouny *et al.* 2012; Paz 2014; Tumolo 2019b). In contrast, sheep (and flax, juxtaposed with date palms) as well as bulls are found on many examples of Mesopotamian art such as the Warka Vase, and the 'peace' side of the Uruk Standard, encoding the concept of divinely provided abundance (Miller *et al.* 2016; Winter 2007). Even abstracted shapes in jewellery may represent roped sheep (Miller 2013).

Finally, there are no written records in the southern Levant. The appearance of EB potmarks has been suggested to represent the beginning of a rudimentary system for quantitative notation, but this has been disputed (Genz 2001; Greenfield *et al.* 2016; Helms 1987; Moreno García 2016). Without the need to record labour and products associated with textiles and managed cereal production—high-volume and high-frequency transactions with long storage horizons—the pathway toward writing in the southern Levant was dramatically slower than in Syria and Mesopotamia.

The lack of a system of economic sealing in the late prehistoric southern Levant is especially puzzling given the evidence for an early abortive local tradition of seals, tokens and bullae found at PPNB Munhata, Pottery Neolithic Sha'ar HaGolan and Ha-Gosherim, and Early Chalcolithic Tel Tsaf (Freikman & Garfinkel 2017). Late Chalcolithic seals exist in small numbers but do not form a coherent corpus in terms of motifs or usage. They appear talismanic (Fig. 6).[4] Southern Levantine practices contrast sharply not only with Mesopotamia and with the complex fourth-millennium administration systems of seals, cretulae, and bullae in the Upper Euphrates, epitomized by palatial Arslantepe (Frangipane 2016).

Southern Levant remained non-literate despite direct exposure to Egyptian writing systems at sites such as 'En Besor and Nahal Tillah (Shulman 1995).

Figure 5. *'En Esur seal impression depicting an animal and orant figure. (Used by permission of Yitzhak Paz. Photograph: Clara Amit, after Paz* et al. *2018, fig. 2d.)*

Later, as Ebla was adapting cuneiform for its West Semitic dialect and recording transactions in enormous detail, the southern Levant remained uninterested, or even unable, in recording individual transactions.

It is possible that some form of writing was done on perishable materials, such as on skins, but no evidence currently exists. No evidence exists for non-writing accounting systems such as *quipu* or tally sticks, although a drilled Chalcolithic bone figurine has been suggested as an unspecified mnemonic device (Levy & Golden 1996). The southern Levant's lack of writing and numeracy, and generalized sense of seasonality and calendrics, has important implications for language, cognition and categorization (Overmann 2019).

The EB southern Levant could not record complex economic transactions such as land sales, loans and marriage contracts. Long-distance diplomatic and economic contacts similarly relied on memory and orality. The lack of evidence for calendrics (Greet 2021; Polcaro 2013) or mensuration meant that agricultural space could not be accurately charted, seasons predicted or planned, and surpluses and dispersals precisely recorded (cf. Sallaberger 2021). Older systems that relied on landmarks and natural signs such as lunar and solar cycles, recalled

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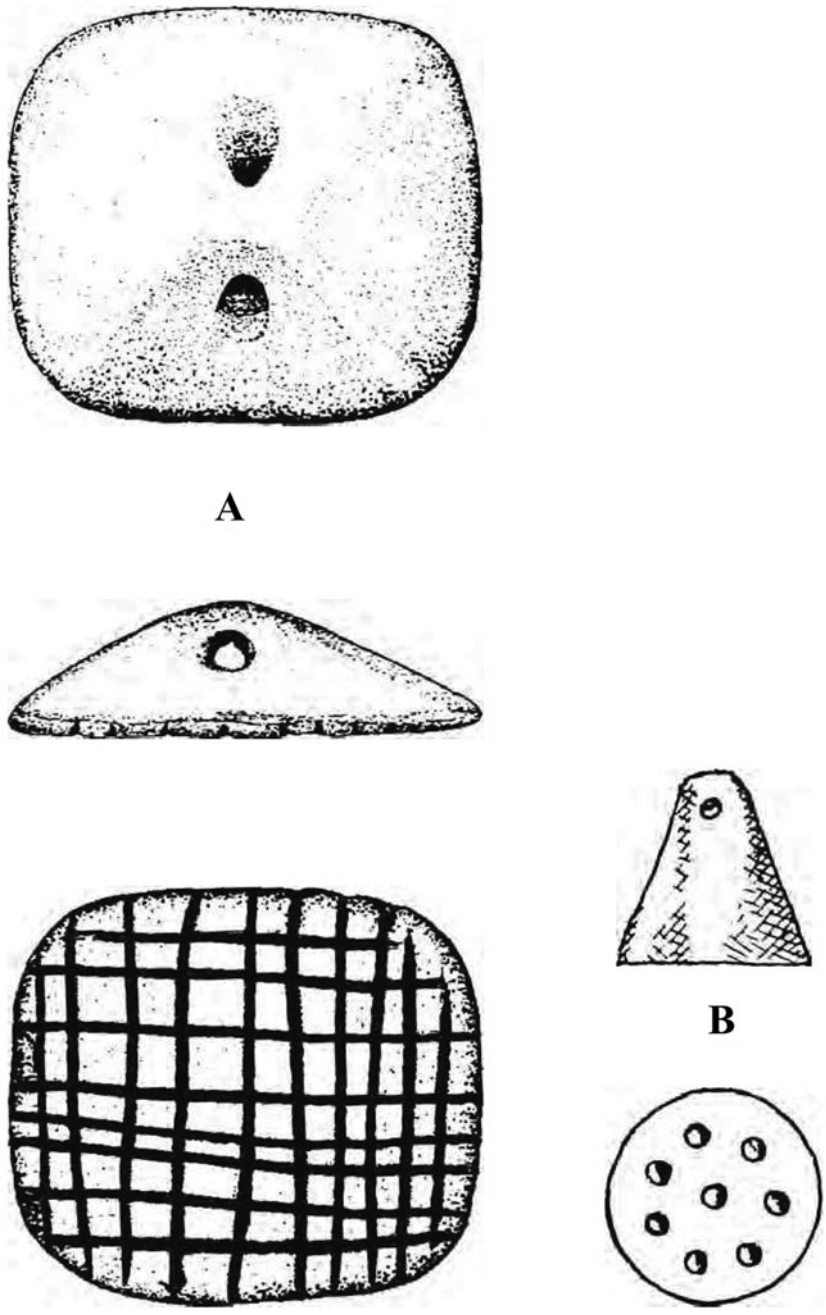

Figure 6. *Ghassul seals. (A) Mallon* et al. *1934, fig. 28.1; (B) Bourke* et al. *2000, 71, 73, fig. 23:1. Used by permission of Stephen Bourke.*

through rituals such as solstice or moon-naming ceremonies, or even more broadly with animal or bird migrations, sufficed, as did supporting ideologies and behaviours that sought to sustain productivity through supernatural intervention.

Similarly, without writing, neurofunctional abilities to conceptualize words as discrete signifiers, in contrast to faces, objects or descriptions, may not have developed. Without instantiation created by recording systems, cognition associated with numbers was also limited; ambiguity and fluidity remained (Overmann 2022). Writing, when encountered, may even have been viewed as unnatural. And without language being centralized by bureaucrats, various linguistic communities retained far greater autonomy in dialectic and conceptual terms. The nature of things remained expansive, unconstrained and fluid.

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In the absence of writing, cultural and political memory and politics as a whole were similarly moored by orality, ritual and supporting objects rather than fixed accounts. In a sense, performativity prevailed over precision. Performance as a means of maintaining balances between real and liminal realms, including the construction of time, was the basis of Chalcolithic culture. How EB patrimonial society managed its internal politics and external relations with more complex entities this way is unclear.

Conclusions

Wool and woven animal hair were used at ever-increasing scales in Mesopotamia and Syria from the later fourth millennium and became the primary fabric in both regions. High cereal productivity allowed the development of specialized herding for wool at massive scales. Prior to this, skins and sheepskins were the primary sources of clothing, while animal hair was spun and woven for small items such as bags and then cordage. The Fibre Revolution did not involve flax, but rather a shift from mixed usage of hair and wool to industrial-scale production, which brought pervasive social and spatial transformations.

The lack of compact, high-value, non-perishable, easily stored and exported commodities such as wool, a condition imposed by the fragmented environment of the southern Levant, limited the amounts and variety of wealth that could be extracted from local society. Staple finance was only possible with seasonal commodities such as wine and oil that were subject to severe transport costs. Local patrimonial estates, rural elites and nascent 'palaces' thus had little need for security and accounting systems.

More broadly, the southern Levant could not produce adequate surpluses of any commodity, whether copper, oil, wine, grain, or wool, to permit accumulation at a scale for a generalized breakthrough to 'palatial'-level society that could support diverse specialists. Individual sites could marshal local resources for a time, but never enough for a long enough period to transcend patrimonial relations. Local elites of the EB II and III may have thought of themselves as kings and princes, but there is no evidence until the second millennium or later that anyone else did. There was, in short, too little wealth to produce much order or legitimacy (*sensu* Baines & Yoffee 1998).

During later periods, international trade passing through the southern Levant generated wealth for elites, albeit temporarily. But even then, inability to generate meaningful quantities of non-perishable surpluses that could be banked and converted into something other than food and labour—and reciprocally into 'elite items' such as specialized vessels and their contents, or finished goods in precious materials—kept local political relations at the patrimonial level.

Generating convertible non-perishable surpluses of wool and linen textiles, and other fibres such as hemp, was not possible until larger-scale 'national' integration was achieved during the first millennium BCE. During this period larger territories were brought under the control of individual polities and 'nation-states' became commercial partners and then tributaries of empires. While textile production was largely organized at the household level (Mazar 2019), religious institutions also participated (Boertien 2014). The scale of elite or 'royal' participation in textile production remains unknown.

Notes

1. *Contra* Schloen (2017) there is no evidence, not least of all toponymic, that links Ebla's vast wool economy with the southern Levant, where, as noted, weaving wool appears to have been unknown. See Biga & Steinkeller 2021.
2. In the Early Chalcolithic the only evidence for either community-level storage or administration comes from the northern-influenced (if not actually Halafian) site of Tel Tsaf (Freikman *et al.* 2021; Garfinkel *et al.* 2009; Rosenberg *et al.* 2017).
3. The practice of sealing vessels is also found in the early third-millennium Hamrin Valley (Renette 2014), later third-millennium northern Mesopotamia and western Syria (Gallego Lôpez 2011; Graff 2012;) and in the Aegean (Beeler 2018). These similarities remain unexplained.
4. One bulla from Gerar possibly sealed a basket (Ben-Tor 1995).

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