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Investigating Late Neolithic ceramics in the northern Levant: the view from Shir

Olivier P. Nieuwenhuyse[1], Malgorzata Daskiewicz[2] and Gerwulf Schneider[3]

This paper presents a review of the ceramic investigations at the Late Neolithic site of Shir. Situated in Western Syria the site occupies a central position in the so-called 'Levantine corridor', which linked the southern Levant, Central Anatolia, and Upper Mesopotamia in the Neolithic. The ceramic sequence covers a period of several centuries between *c.* 7000 and 6450 cal BC. The pottery analysis combined bulk processing in the field and archaeometric work in the laboratory to construct a viable ceramic categorization. This paper discusses long-term ceramic trends that follow the first appearance of pottery in the northern Levant, including the development of pottery containers for storage.

Keywords Neolithic, ceramics, cooking, storage, Levant, Shir

Introduction

The northern Levant occupies a central position in the prehistoric archaeology of the ancient Near East. This mountainous yet fertile strip between the Mediterranean and the arid interior is often seen as a 'corridor' connecting the Neolithic cultures of the southern Levant with those of Upper Mesopotamia and Central Anatolia (Aurenche and Kozlowski 1999: fig. 3). It is, therefore, somewhat frustrating to observe that our understanding of the region's Neolithic archaeology remains rather poor, especially when contrasted with the record of recent work in south-eastern Anatolia and northern Syria (Akkermans and Schwartz 2003; Nieuwenhuyse in press b; in press c; Nieuwenhuyse *et al.* 2013). In this paper we are concerned with the early ceramic traditions of the region, namely those of the Late Neolithic or Pottery Neolithic, *c.* 7000–5300 cal BC.

Our case study will be the Late Neolithic site of Shir (Fig. 1). Excavated between 2006 and 2010 by the German Archaeological Institute, excavations at the so-called 'Southern Area' of the site have yielded a sequence of six superimposed building levels (with sub-divisions), dated to between *c.* 7000 and 6450 cal BC. Typological and archaeometric studies of the associated ceramic assemblage attest to dramatic changes over the course of this sequence. In the earliest levels the assemblage is composed of minimal quantities of carefully made, visually conspicuous pottery. In subsequent levels pottery increased in quantity while also changing qualitatively, to become dominated by plain, coarsely finished vessels.

The investigation of the pottery began immediately after the first soundings at the site in 2005 (Nieuwenhuyse 2009). The ceramic analysis faced several issues in constructing a workable ceramic typology. Our limited understanding of the raw material and technological basis of any of the ceramic categories distinguished in the northern Levant was a particular problem. This reflects a strong, persistent tradition of work that has mainly emphasized vessel shape and decoration as basic criterions for categorization, what Orton and Hughes (2013: 4–14) termed the 'typological phase' of pottery studies. Problems arise when we seek to compare newly excavated materials with these older data sets — is this Dark-Faced Burnished Ware

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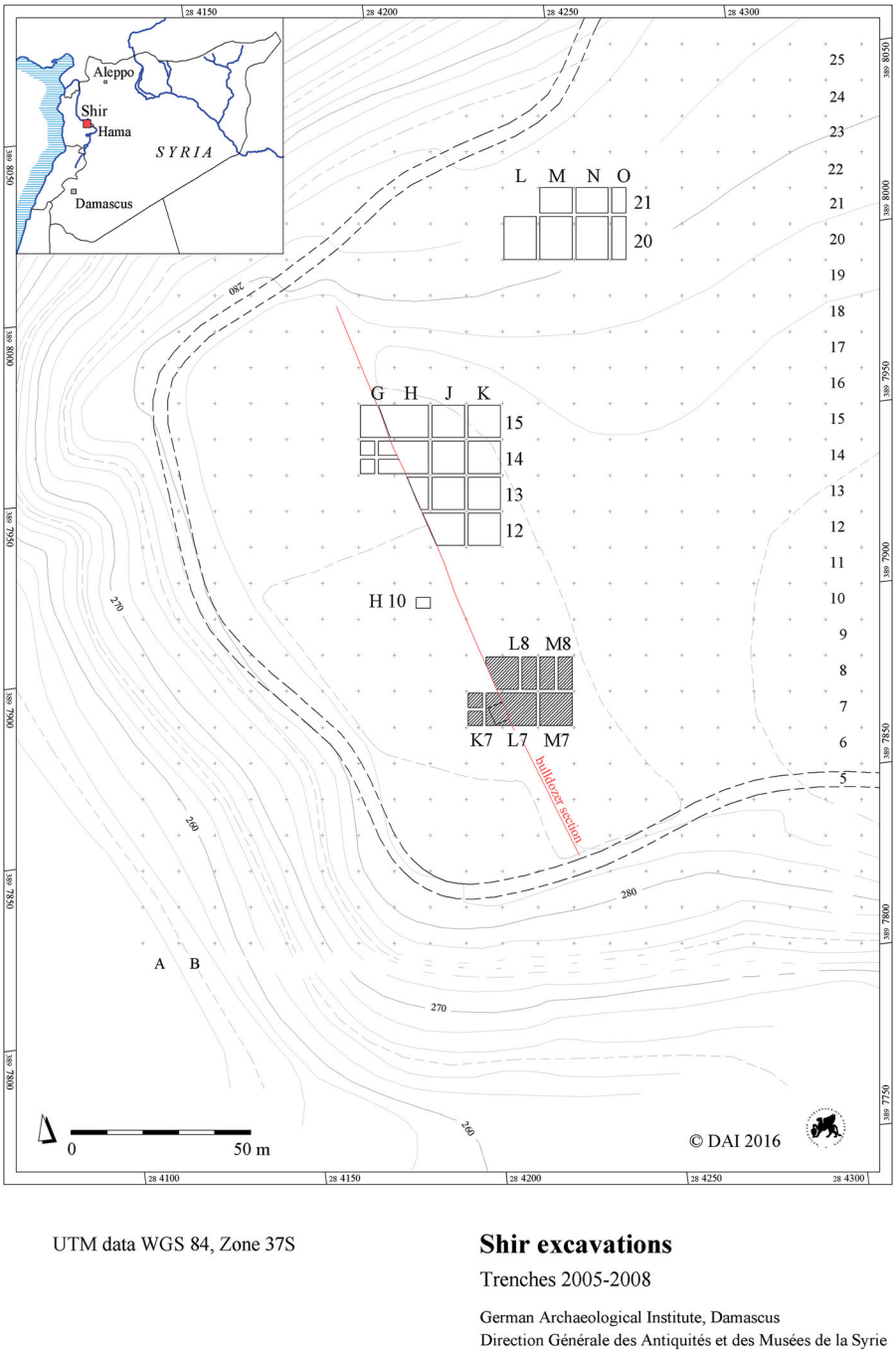

Figure 1. Plan of Late Neolithic Shir, showing the modern bulldozer cut across the site. The Southern Area comprises trenches K7 to M8 (map: DAI Orient Department, Th. Urban).

really all the same? (Mathias 2015) — or when ceramic sequences, such as the one excavated at Shir, document long-term ceramic change during which technological traditions transformed from one type into another. The slow development of plant-tempered 'Coarse Ware' is a northern Levantine case in point (discussed below). Furthermore, for tackling questions of ceramic provenance, the selection and preparation of raw materials are key issues (Le Mière and Picon 1987). For these reasons the project decided on an integrated approach involving macroscopic studies of the bulk of the excavated ceramics in the field (supervised by O. N.) and archaeometric studies in the lab (G. S. and M. D.). These studies will be published in detail elsewhere (Daszkiewicz and Schneider in press; Nieuwenhuyse in press a).

Our contribution to this special issue will concern three closely related themes. We will start with briefly presenting the site itself. We shall continue by discussing the typological and technological ceramic

categorizations developed at Shir. We shall then review the long-term development of the Late Neolithic ceramics at Shir, starting with the earliest ceramics documented at the site (levels I–III), and continuing with those of the upper levels IV–VI. We end with some concluding remarks. We argue that although there is evidence for sustained pottery production from the earliest levels at the site, it is only with the later levels that we see evidence for the full societal integration of pottery containers. Furthermore, our study suggests that the consumption of pottery containers at Shir began with importing them from elsewhere, with local production following at a later stage.

The excavations at Shir

The Neolithic site of Shir measures *c.* 4 ha and is situated on a high spur overlooking the Sarut, a small, perennial tributary of the Orontes River. The site should not be confused with the adjacent mound of Tall al-Shir, which is situated west of the Neolithic site and dates to the Bronze Age (Bartl and Haidar 2008). The prehistoric site is not very conspicuous as a settlement mound (*tell*), and was, in fact, only discovered after local farmers destroyed part of the site with a bulldozer to level the surface (Fig. 1). After a successful test sounding in 2005, full-scale excavations began in 2006 and continued until 2010, focussing on several parts of the site (Bartl 2013; Bartl *et al.* 2006a; 2006b; 2009; 2011; 2012; Bartl and Haidar 2008; Bartl and al-Hafian 2014; Bartl and Ramadan 2008). As the work developed, several inter-related research questions were formulated. In the so-called Southern Area a full stratigraphic sequence was excavated covering the time from the initial settlement of this location to the final stages of inhabitation. Large-scale excavations in the Central Area looked to gain information on the lay out of the settlement during its later stages. Finally, excavations in the North-eastern Area investigated several large buildings belonging to the final phases of the site.

As shown by geophysical surveying (geomagnetic and ground penetrating radar) and excavations, the Late Neolithic village mostly consisted of several multi-roomed, rectilinear buildings with plaster floors, hearths and internal sub-divisions. Extensive, rich middens and open areas separated the buildings. The material culture included an abundant lithic industry exploiting locally available raw materials (the site is located on natural flint beds), containers made of stone, plaster and pottery, and even a few remarkable human (female) figurines. A spectacular discovery was made in the North-eastern Area, where excavations uncovered the well-preserved remains of a large, multi-roomed storage building; this is dated to the final part of the 7th millennium and held several large *in situ* pottery containers (Bartl *et al.* 2012; Bartl in press). We presume that this structure served a collective role for the village as a whole.

Here we are concerned exclusively with the so-called Southern Area (trenches K/M–7/8), that were excavated in the southern area of the site, on either side of the bulldozer cut. These excavations produced a valuable stratigraphic sequence spanning six distinct building levels (with sub-divisions), termed I to VI counting from the bottom up. The oldest levels (I–III) were reached in trench KL7 at the foot of the artificial bulldozer cut, whereas the upper levels (IV–VI) were exposed over a larger area extending from the original surface of the mound down to the bulldozed level (Fig. 2). The pottery from the uppermost level VIb corresponds typologically to that of the Northern and Central Areas of excavation. Hence, we believe that the sequence is representative for the site as a whole.

Importantly for northern Levantine prehistoric archaeology, Shir has produced a good strong series of radiocarbon dates from well-stratified contexts (Bartl 2013). At present, the stratigraphic complexities of the site caution against suggesting overly exact dates for specific levels. However, we can be relatively sure of a starting point soon after *c.* 7000 cal BC (level I), with the abandonment of this part of the site placed sometime after *c.* 6450 cal BC (level VIb).

Pottery is already present in the basal level I, albeit at very small densities. The ceramics from this level are remarkably advanced and certainly do not suggest any 'experimenting' by novice potters. Put differently, the excavations at Shir have so far not documented a local transition from the Pre-Pottery (aceramic) to the Pottery Neolithic. The importance of the sequence lies in the very conspicuous changes it documents in the quantity of ceramic containers in daily use (documented through increasing sherd densities) as well as through the composition of the ceramic assemblage, as evidenced by the sizes and shapes of the vessels, and in the changing role of decorated ceramics (summarized in Fig 3; for detailed discussion see Nieuwenhuyse 2009; in press a). These changes taken together led us to distinguish four 'Pottery Phases' (Fig. 3). From Phase I, the earliest, to the final Phase IV, pottery containers evolved from being a relatively infrequent class of object with a limited, yet multi-functional, range of uses, to become a ubiquitous and diversified class of objects fully integrated into the social, economic

Figure 2. Shir. The trenches in the Southern Area viewed from the west. Trench KL7 is at the foot of the bulldozer cut (photo: DAI Orient Department, Th. Urban).

and ritual practices of the Neolithic inhabitants of Shir.

Constructing a ceramic typology

A major formal classificatory concept in this study is that of a ceramic 'ware'. This categorization rests on a reconstruction of the *chaîne opératoire*. Adopted originally from Leroi-Gourhan (1964), ceramicists have used the concept to chart the progressive transformation of raw materials into a manufactured finished product (van der Leeuw 1993: 240; van der Leeuw *et al.* 1987). In principle, each irreversible step influences the range of possibilities for the subsequent stages (Bernbeck 1994; Godon 2010; Le Mière 1979; 1986; Le Mière and Nieuwenhuyse 1996; Nieuwenhuyse 2007; Robert 2010). However, the concept does not imply a mechanistic determinism ruled by material, ecological or technological constraints. Potters typically face a great deal of latitude when creating specific products; the same type of pot can often be made with different techniques (van der Leeuw 1993; Mahias 1993). The choices potters make reflect broader societal ideologies, concepts of status, gender and identity, and collectively held social representations of what particular end products should be like (Coupaye 2009; Lemonnier 1993; Sillar and Tite 2000).

For present purposes, a 'ware' denotes a group of pottery with similar raw materials, fabric preparation and firing behaviour. These constitute the invariant 'backbone' of the *chaîne opératoire* that cannot be easily tampered with (van der Leeuw 1993: 240). This categorization does not consider shaping methods and decorative style, the 'variants' that allow a greater latitude of freedom, alternatives and technological choice (van der Leeuw 1993: 240–42). In this project, we did not use these latter attributes to define distinct categories (e.g. 'Red-Slipped and Burnished Ware'), but instead we used them to identify the variability within each type of ware.

In the field, the study began with constructing a macroscopic categorization, and followed existing terminologies in the literature as much as possible. This resulted in three major ware categories, Light-Faced Burnished Ware (LFBW), Dark-Faced Burnished Ware (DFBW), and Coarse Unburnished Ware (CUW). In addition, small quantities of what was termed Soft Ware and some intrusive, Post-Neolithic pottery occurred (Nieuwenhuyse 2009). These major wares were sub-divided. Thus, the Dark-Faced Burnished Ware included two technologically distinct varieties that differed in their firing strategy, viz. oxidized or purposely reducing (Fig. 8 (see below)). The Coarse Unburnished Ware showed varying proportions of organic inclusions, potentially reflecting important innovations in clay preparation through time.

These classifications were made in the field without the assistance of specialized laboratory techniques. Subsequently, samples for each ware were submitted for laboratory analyses at the Freie Universität Berlin. Three methods were applied to understand thermal behaviour and to estimate the original firing circumstances, viz. chemical analysis,

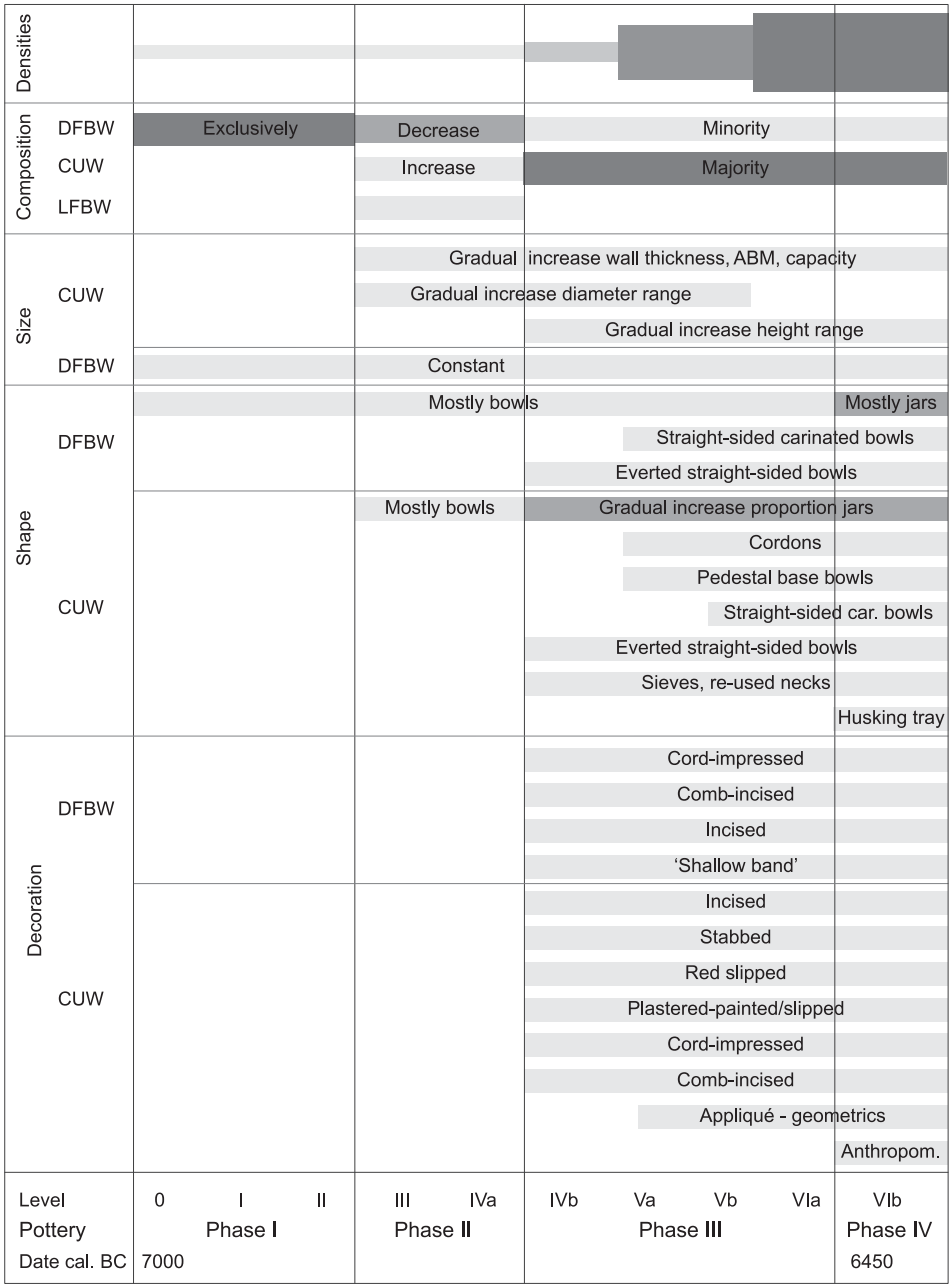

Figure 3. Shir, Southern Area. Main properties of the ceramic assemblage by level and Pottery Phases I to IV (after Nieuwenhuyse in press a).

thin-section analysis, and re-firing tests (Fig. 4). Local clays and plasters were also included to form a fairly broad comparative framework (for full discussion, see Daszkiewicz and Schneider in press). This was done to investigate aspects of ceramic technology that could not be studied in the field, but also to assess, critically, the validity of the field categorizations (Daszkiewicz *et al.* 2009). The laboratory work corroborated the basic field distinctions but also identified variable sub-groups not observed in the field. The ware groups represented in this report should, therefore, be understood as a devised classification (Rice 1987: 275–77) based on attributes intrinsic to the material itself as observed by the archaeologist; they may, or may not, correspond to indigenous categorizations recognized by the prehistoric inhabitants of Shir.

These categories are based on the selection of specific raw materials and on the reconstructed *chaîne opératoire* that results in distinct end products. The laboratory studies attest to the use of different clay sources for different categories of pottery. All CUW samples, all LFBW samples and about half of the DFBW samples analysed so far were made of

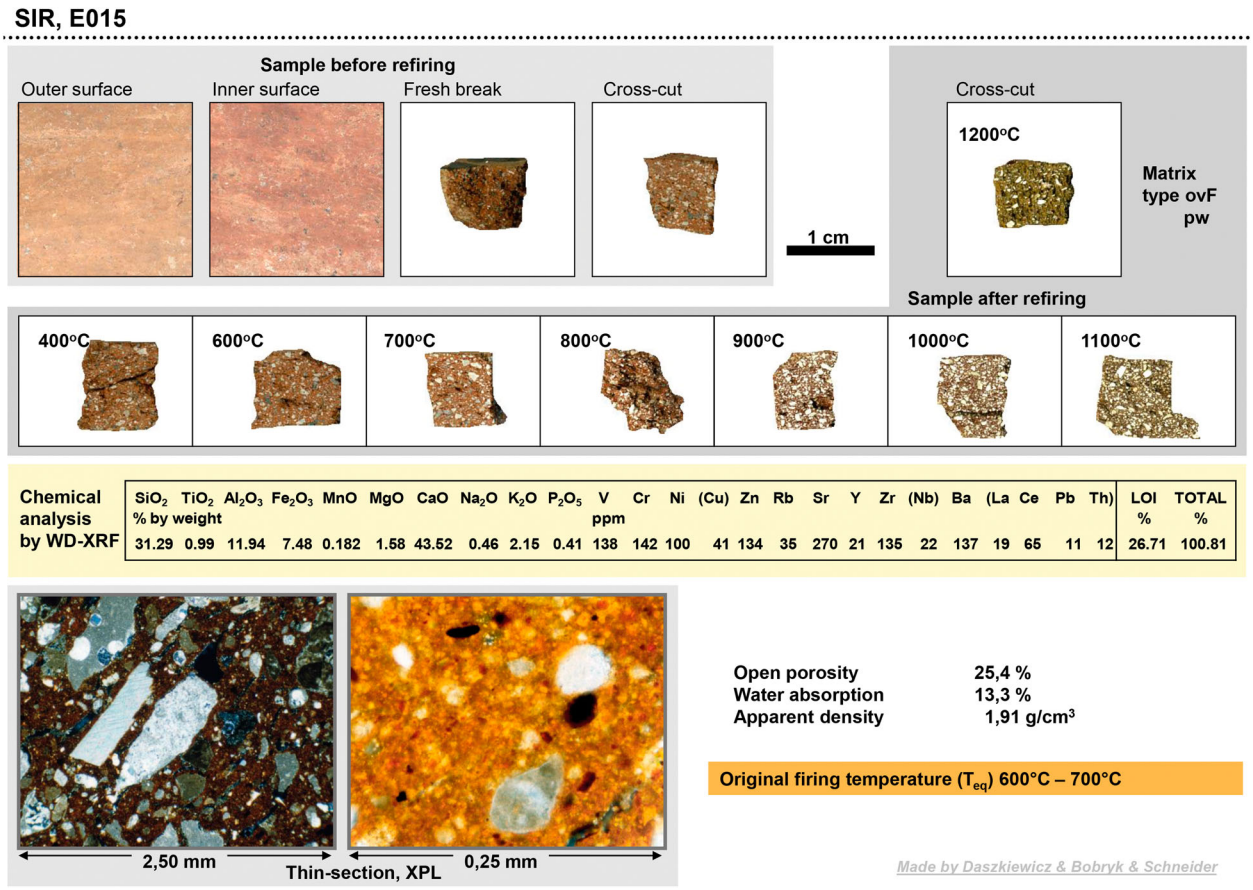

Figure 4. Shir, Southern Area. Example of the archaeometric description of the Neolithic pottery (sample E015, DFBW group 6) (after Daszkiewicz and Schneider in press).

marly clay, even if the resulting fabrics were certainly not the same. Classifying the sherds according to the results of chemical analysis by wavelength-dispersive X-ray fluorescence (WD-XRF) and by matrix classification by re-firing (MGR) analysis (Daszkiewicz 2014; 2017; Daszkiewicz and Schneider 2001), suggests several distinct groups of, probably, different provenance. It is argued here that the bulk of the coarse pottery, as represented by CUW, was made locally at the site. The stratified samples correspond sufficiently well to the compositions of the local (modern) clays collected from the vicinity of the site.

On the other hand, the so-called Light-Faced Burnished Ware studied so far seems to be a non-local product. This category occurs only in the earlier levels at Shir (mainly in levels II to IVa). It was made of a marly clay that produced a very light, cream to light grey, surface colour that, interestingly, resembles that of the White Ware containers from the same levels. The surfaces were very carefully smoothed or, occasionally, burnished. The range of containers in this intriguing category closely resembles those produced in the contemporaneous DFBW. Few other Late Neolithic sites in the northern Levant have unequivocally reported similar pottery, but material that appears superficially similar has been reported from Ras Shamra and Tell Sukas (Nieuwenhuyse 2009).

The Dark-Faced Burnished Ware offers a more complex picture. From the start of the project we have been conscious of the fact that since the term 'Dark-Faced Burnished Ware' was first coined (Braidwood and Braidwood 1960), it has become a rather poorly-defined catch-all category for almost anything found in the northern Levant that is prehistoric pottery, dark-coloured and burnished (for specific critiques, see Miyake 2003; Özdoğan 2009). As a response, ceramic analysts increasingly acknowledge the need to combine generic macroscopic categorizations with archaeometric studies, in order to specify precisely what type of DFBW they are discussing (Balossi 2004; 2006; 2017; Diebold 2000; 2004; Le Miere and Picon 1999; Mathias 2015; Miyake 2003; Tsuneki and Miyake 1996).

The macroscopic fabric analysis in the field revealed the existence of a variety of DFBW fabric groups. Subsequent chemical and MGR analysis suggest that

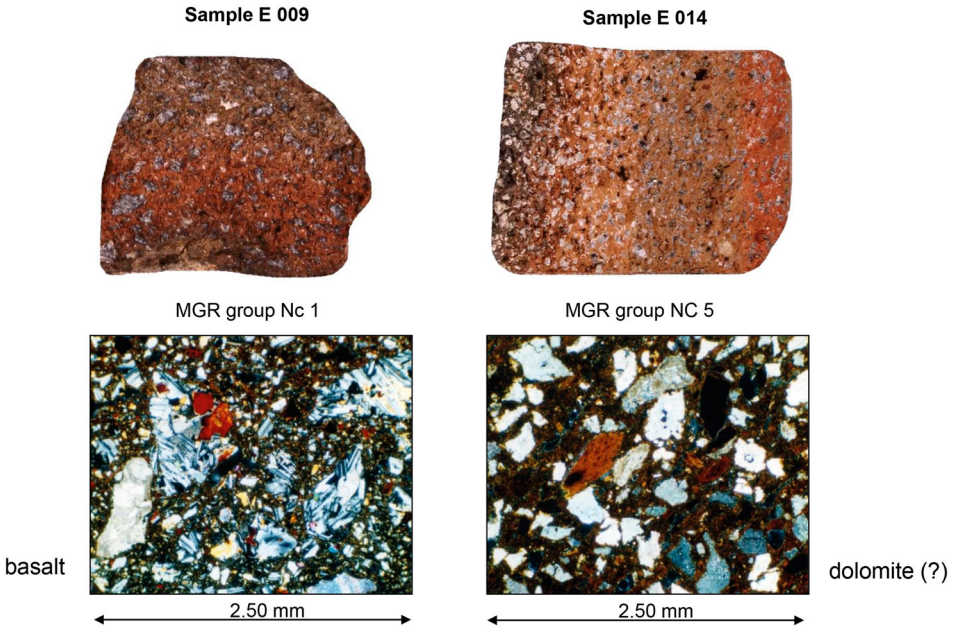

Figure 5. Shir, Southern Area. Comparing MGR analysis (samples re-fired at 1200°C) and thin sections; sample E009, non-calcareous DFBW and sample E14, non-calcareous DFBW) (after Daszkiewicz and Schneider in press).

at least 12 fabric groups were present at Shir (Fig. 5). For about half the samples studied to date, the non-plastic mineral inclusions are rather heterogeneous but mostly comprise calcite in differing quantities. When compared to the modern clays, at least some of these should represent local production, while others are sufficiently distinct to suggest that they were imports. About half of the DFBW samples examined were made of non-calcareous clays, and these may represent a range of non-local provenances. The 'non-local' varieties are particularly associated with the early levels at the site (levels I–III) suggesting that the earliest inhabitants of Shir acquired their ceramic containers through exchange. Interestingly, two examples of basalt-tempered DFBW were attested, perhaps pointing to a relationship with the basalt-tempered ceramics from the slightly later site of al-Marj to the south (Ibáñez, pers. com., December 2009), or with Tell Nebi Mend on the Orontes (Mathias 2015). In sum, the present work suggests a combination of local production and interaction with networks of ceramic exchange to explain the DFBW pottery at Shir.

Finally, the re-firing tests suggest that all wares were fired at relatively low temperatures, between 600 and 700°C (Fig. 6). Firing these vessels at higher temperatures would have been problematic due to the high proportion of calcite in the clays used. Such firing temperatures are well within the ranges observed for Late Neolithic pottery production across the ancient Near East.

The earliest pottery at Shir

The narrow soundings into the earliest levels at Shir yielded very limited quantities of ceramics. The basal level 0 yielded only a handful of sherds from ashy contexts. It is believed that this level may in fact represent the clearance of the natural vegetation marking the arrival of the first occupants of the site (Bartl *et al.* 2006a). In levels I to III, the quantities pottery recovered were also fairly low, but were definitely increasing, even if initially at a very slow rate. This trend continued per force in the subsequent upper levels, characterized by disheartening quantities of coarse and amorphous pottery sherds (Fig. 7: upper). Thus, the raw frequency counts would suggest that this type of container was relatively uncommon in the initial stages of pottery use at the site. It is only several centuries later that it developed into a ubiquitous artefact.

Obviously, the lateral extent of the excavation directly influences how much material (i.e. pottery) is recovered. As we have seen, the upper levels were present over a much broader area than the lower levels, naturally resulting in larger samples. Are the frequency counts a valid indicator of increasing pottery consumption? To arrive at a more objective measurement of the availability of pottery containers, one should consider density estimates, defined as quantities/cubic volume of excavated soil (Bernbeck 2010; Bernbeck and Pollock 2003; Gopher and Eyal 2012; Parker and Kennedy 2010; Pollock 1999;

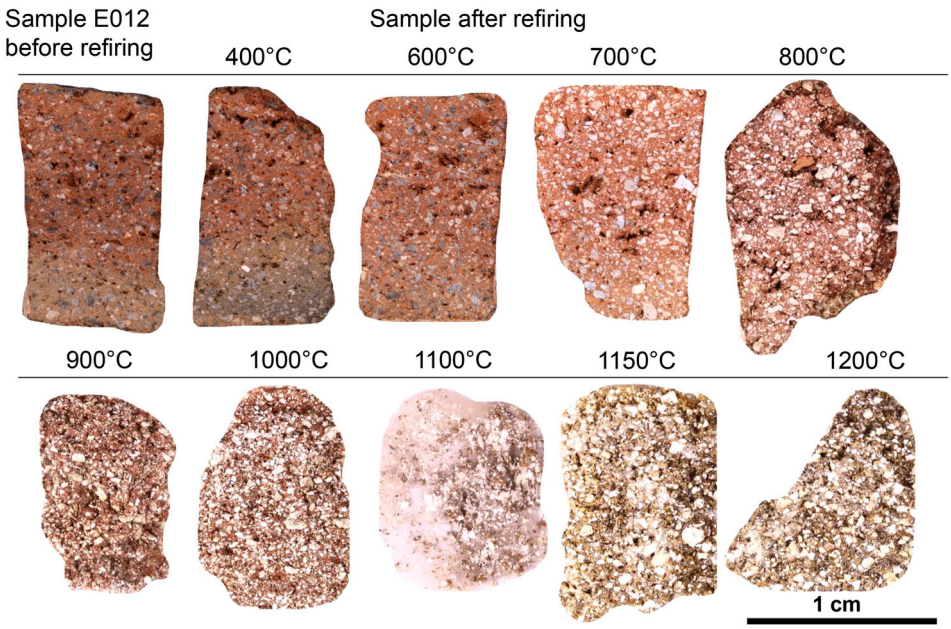

Figure 6. Shir, Southern Area. Re-firing tests (sample E12, DFBW group 1) (after Daszkiewicz and Schneider in press).

Thuesen 1988). If one calculates these statistics for Shir, the results strongly corroborate the picture already produced from the sherd frequencies (Fig. 7: lower). Throughout levels I–III the densities remained similar. Although it is difficult to translate these statistics into absolute numbers of pots in circulation at any specific point in time, it suggests that in the earliest stages of occupation relatively few pottery vessels were in use.

In these early levels, the ceramic assemblage comprises three distinct wares, which we termed Dark-Faced Burnished Ware, Light-Faced Burnished Ware and Coarse Unburnished Ware (Nieuwenhuyse 2009). DFBW constituted the majority (73% of the bulk sherd count). Using the firing circumstances as a criterion, two sub varieties of DFBW may be distinguished: oxidized and purposely reduced. The latter includes about half of the assemblage. In addition, Light-Faced Burnished Ware (LFBW) comprises about 15%. Although LFBW is commonly found in these early levels, it disappears entirely in subsequent levels. Finally, a coarsely shaped, thick-walled, roughly finished category has been termed Coarse Unburnished Ware (CUW). This category was virtually absent from the very earliest levels at the site, but began to appear in small quantities in level IV (Fig. 7). Importantly, this latter category played a key part in the remarkable increase in the ubiquity of pottery in the upper levels (see below). DFBW certainly continued to be used in the upper levels but it appears to have become numerically less important (Fig. 7: lower).

It seems to be clear that much of the DFBW in these early levels was intentionally made dark by means of a purposely-reduced firing. Reduced DFBW shows an even, homogeneous, dark surface colour, often including the core, and ranges from dark-grey to black (5YR 2.5/1–3/1). In contrast, oxidized DFBW has surface colours varying from brown to reddish-brown or greyish-brown (10YR 6/3–4/3), and less often buff or red. The oxidized firing has frequently left dark, incompletely oxidized cores. Alternating colours observed in the cross-sections of many reduced sherds — the 'sandwich' effect — suggests that the dark effect was created via deliberate smudging at the end of the firing process — 'end reduction'.

In terms of vessel shape, the early levels are characterized by limited morphological variation. The DFBW comes in two main shapes: bowls and small jars or goblets with low necks (Fig. 9: 1–13). The bowls mostly have convex walls without a carination, and range from open to closed. Vessels are small in size and mostly thin-walled. Pointed, flat or bevelled rims are fairly common, whereas many vessels show the typical DFBW 'splayed rim', i.e. flattened rims that thicken near the rim. These splayed rims are mainly associated with a single vessel shape, the closed, convex-sided bowl. Appendages of various kinds are frequent, with 'ear-shaped' lugs commonly applied.

The category we provisionally termed Light-Faced Burnished Ware is not that dissimilar to DFBW. Both categories are made of clay with no vegetable inclusions, both show a carefully finished surface,

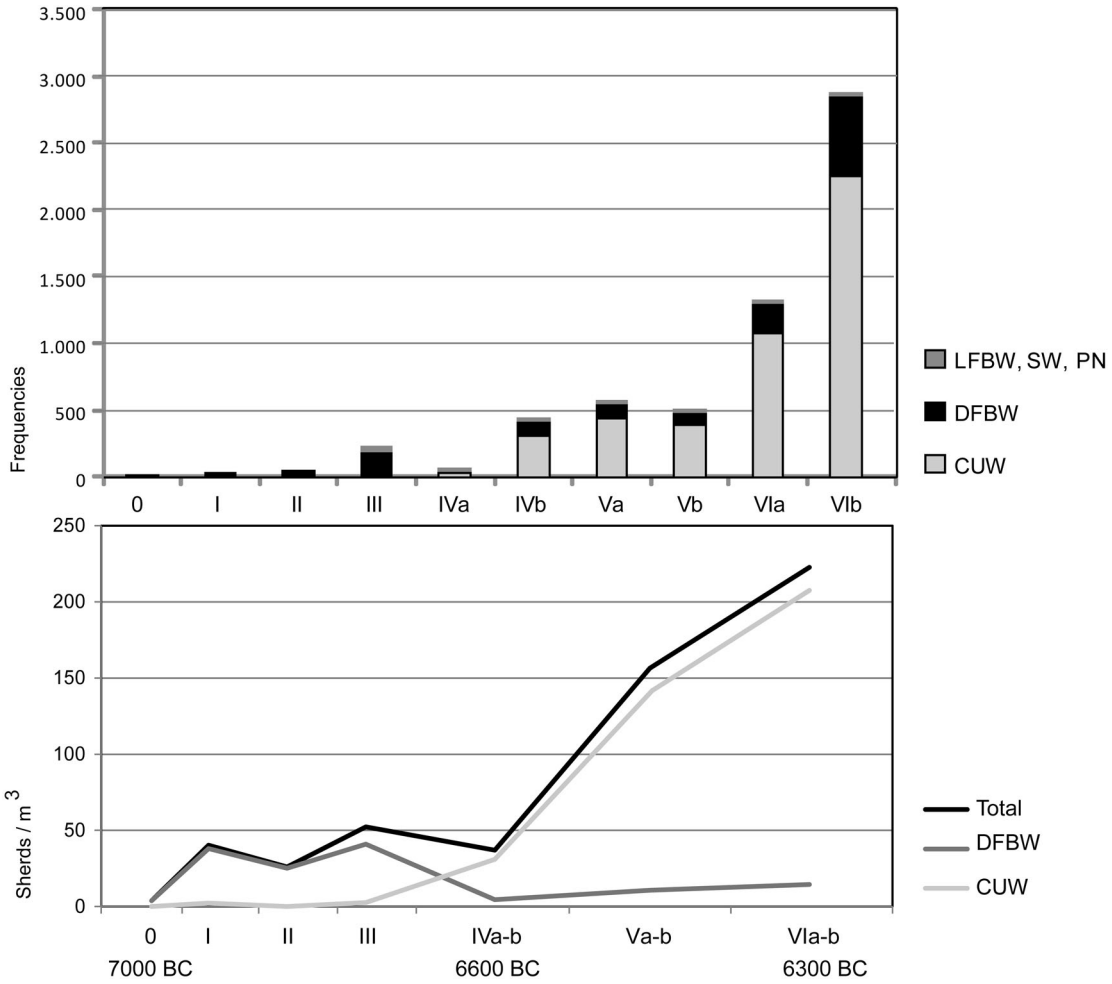

Figure 7. Shir, Southern Area. Sherd quantities by level, distinguishing between different wares (LFBW: Light-Faced Burnished Ware; SW: Soft Ware; PN: Post-Neolithic; DFBW; Dark-Faced Burnished Ware; CUW: Coarse Unburnished Ware. Upper: frequency counts. Lower: densities (after Nieuwenhuyse in press a).

Figure 8. Shir, Southern Area. Ceramics from the early levels I–III (trench KL7). Upper: a: DFBW - oxidized variety; b-d: reduced variety. Lower: LFBW (after Nieuwenhuyse in press a; photo: DAI Orient Department, I. Wagner).

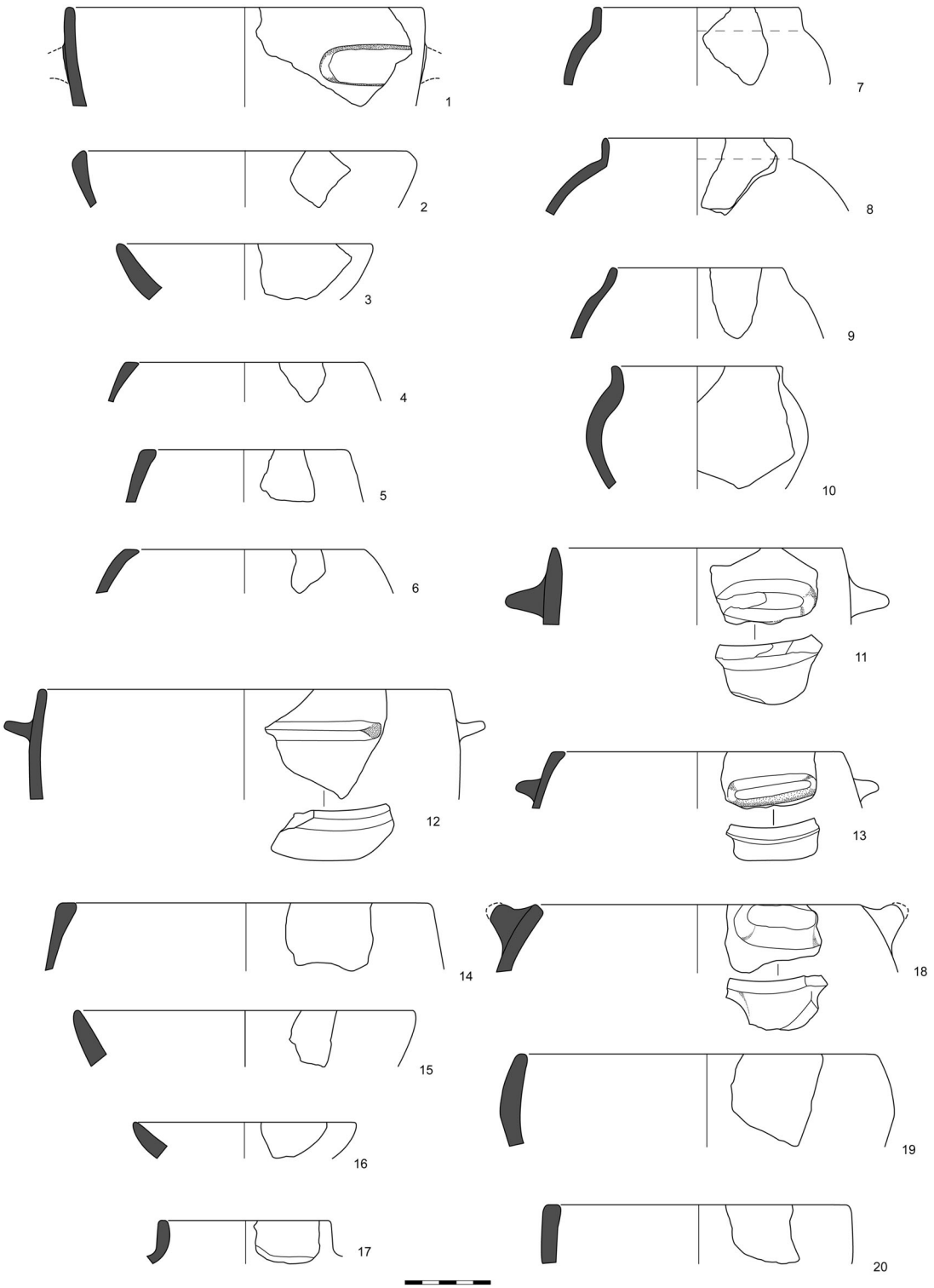

Figure 9. Shir, Southern Area. Ceramics from the early levels (trench KL7). Nos 1–13: DFBW. Nos 14–20: LFBW (after Nieuwenhuyse in press a).

and both have shapes with regular wall profiles without angularities. As with the DFBW, most LFBW sherds were burnished. As with DFBW, LFBW occur in simple shapes, without either carinated profiles or vessels with distinct necks (Fig. 9: 14–20): as with DFBW vessels were mostly small and of limited volume. In contrast to DFBW, however, appendages were rarely found with LFBW, although occasional 'ear-shaped' lugs were identified.

More than 99% of all the early sherds were plain; the limited evidence of decoration comes from a few DFBW sherds with impressed or incised decoration. The LFBW was entirely undecorated. That said it would, however, be wrong to say that stylistic messaging through the medium of decorated pottery vessels played no role at this stage. Through skilful manipulation of raw materials, surface finishing techniques and firing strategies, Neolithic potters were able to vary surface texture and, in particular, colour. Thus, the three-fold technological categorization suggested in the terminology does in fact correspond to a colour division in pottery containers; collectively they display colours ranging from reddish-brown or orange (DFBW-oxidized), to dark-grey or black (DFBW-reduced), to white (LFBW). Technically 'undecorated' as they may have been, the ceramics from the early levels at Shir were certainly visually conspicuous, a characteristic they shared with early ceramics from across Upper Mesopotamia and the Zagros (Nieuwenhuyse *et al.* 2010; Nieuwenhuyse and Campbell 2017).

Much debate has focused recently on possible uses for early ceramics in ancient Western Asia (Tsuneki *et al.* 2017). Although early ceramic complexes across the broader region differ in many respects, they have been shown to have several use-related properties in common (Le Mière 2017; Tsuneki 2017). This suggests that they may have played similar roles in comparable functional settings. It seems very unlikely that storage was among them. The small size and limited capacity, as well as the open, unrestricted shapes argue against significant contributions to storage. This runs counter to prevailing interpretations regarding the adoption of pottery in the ancient Near East which assume that this arose from the unique storage potential of ceramic containers (e.g. Redman 1978). At Shir the deployment of pots for storage certainly occurred, but it was a later development (see below).

Several properties of the DFBW found in the early levels argue for a role in the preparation of cooked food. These include strong mineral temper, regular wall thickness, and lack of angularities, all of which usefully mitigate the effects of thermal shock. The strong burnishing would contribute to a reduction in porosity, while the frequent lugs are cross-culturally typical for cooking vessels in need of frequent manual handling. Characteristic of early ceramics across the broader region, these properties suggest that cooking was among the functions of early pottery (Le Mière and Picon 1991). But this would not have been its only role. The conspicuous appearance and emerging evidence for imports suggests that visual qualities played a role in ceramic exchange, as well as the negotiation of social identities (Balossi 2017; Odaka 2013a; 2013b). It is probable that the early vessels at Shir were multi-functional (Le Mière 2017; Odaka 2013a; 2013b; 2017; Nieuwenhuyse and Campbell 2017).

The early ceramic assemblage from Shir is certainly not unique. It falls within a heterogeneous yet identifiable ceramic-cultural horizon in the northern Levant. Good comparisons come from the tell at Hama (Period M), the lower levels of Tell Sukas and Ras Shamra period VB (Nieuwenhuyse 2009). Closer by are the contemporaneous sites of the Rouj Valley (period 2a; Tsuneki and Miyake 1996) and the basal levels of Tell Nebi Mend (Mathias 2015). The latter site is especially intriguing as both it and Shir produced DFBW with a basalt temper; future study may further explore the possibility that these sites maintained networks of exchange at the dawn of the Pottery Neolithic.

After the first pots

Important changes manifested themselves in the upper strata excavated at the Southern Area, levels IV–VI. Perhaps the most fundamental change was the much greater availability of ceramic containers. As expressed in the reconstructed sherd densities, the use of ceramic containers had increased five-fold in just a few centuries (Fig. 7). Ceramics were a relatively rare find in the early levels in this area, but the later upper levels produced overwhelming quantities of pottery. In this regard Shir is far from unique; the huge quantitative increase in the presence of pottery in the later 7th millennium BC appears to be typical across the northern Levant and upper Mesopotamia (Nieuwenhuyse in press b).

The bulk of the ceramic assemblage recovered from the upper levels belongs to a category of coarse and unburnished pottery that we termed, simply, Coarse Unburnished Ware (CUW). For CUW, the epithet 'coarse' is certainly no exaggeration. Vessels attributed to this category were rarely smoothed to an even or regular surface; more typical was a coarsely smoothed surface that showed traces of the shaping process. Many sherds seem to have been deliberately roughened. In the words of Robert Braidwood (Braidwood and Braidwood 1960: 78), who excavated closely comparable materials in the 1930s in the Amuq, many of them almost feel like 'sandpaper' (Fig. 10).

It is, however, important to emphasize that this category was dynamic through time in terms of its basic *chaîne opératoire*. Fundamentally, potters gradually

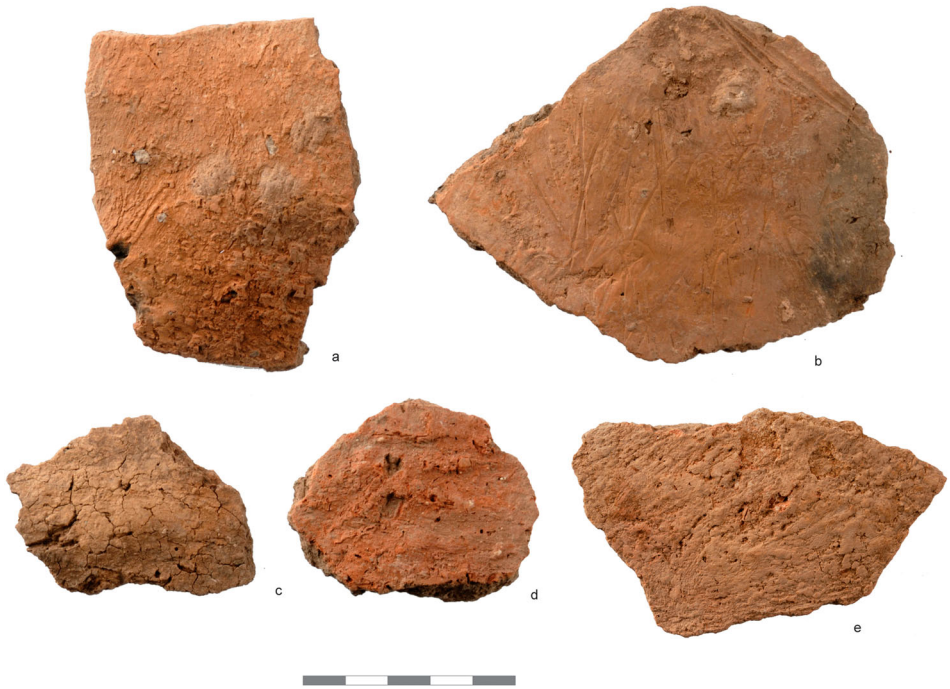

Figure 10. Shir, Southern Area. Typical coarse surface finish of Coarse Unburnished Ware (after Nieuwenhuyse in press a; photo: DAI Orient Department, I. Wagner).

implemented an important change in the tempering. In the earliest levels in which CUW appears, the pottery was largely made of a coarse fabric containing abundant mineral inclusions but no clearly detectable plant temper. The limited numbers of early CUW that contain minor amounts of plant inclusions may be evidence of a deliberate choice in clay selection. CUW containing dense amounts of larger plant inclusions, potentially representing chopped straw added as a deliberate 'temper', were initially a minority. Over time, a growing proportion of fabrics containing larger densities of coarse plant inclusions are found. In the final levels of Shir's stratigraphy (levels Iva–b), we find a porous, coarse, but immensely strong pottery, traditionally known as 'Coarse Ware'.

In this regard, too, Shir is far from unique. The development and growing adoption of plant-tempered Coarse Ware is also observed at Tell Sabi Abyad, Seker al-Aheimar, Mezraa Teleilat, Tell Halula and several other later 7th millennium BC sites in northern Syria (Arimura *et al.* 2000; 2001; Balkan-Atlı 2002; 2004; Cruells *et al.* 2017; Faura 1996; Faura and Le Mière 1999; Karul *et al.* 2002; Miyake 2003; 2005; 2007; 2010; 2017; Nieuwenhuyse in press a; Nishiaki and Le Mière 2005; 2008; Odaka 2013a; 2013b; 2017; Özdoğan 2009; Özdoğan *et al.* 2011; Tsuneki and Myiake 1996; Tsuneki *et al.* 2007). At Shir we can study the emergence of this important ceramic tradition in the northern Levantine region in close detail.

It is argued that the importance of this technological innovation lies in its implications for broadening the repertoire of shapes available to the potters. In particular, adding coarse plant fibres to the clay fabric allowed potters to develop larger, taller and more voluminous containers by preventing the cracks and fissures that can occur during the shaping and drying process. The addition of coarse plant fibres would also have increased the tensile strength of the vessel wall. This is precisely what is observed at Shir. Over time, vessels became slightly less fragmented after they were discarded, as reflected in proxies of fragmentation, such as the increasing portions (percentages) of rims and bases preserved, or the growing average weight of the CUW body sherds (here called the ABM, for details see Nieuwenhuyse in press a). This reduced degree of fragmentation may reflect changing depositional circumstances, however, we argue that it also reflects the increased strength of the coarse vessel wall in the upper levels (Nieuwenhuyse in press b).

Unfortunately, the prevalence of very fragmented vessels — not a single intact CUW vessel was found — prevents any meaningful measurements of pottery volumes, yet the wall thickness and height may offer useful proxies for vessel capacity. Values for these two parameters increased over time through the sequence; CUW vessels increased in wall thickness and in height. This in turn may relate to the increasing

Figure 11. Shir, Southern Area. Example of a Coarse Unburnished base fragment from level VI shaped while the vessel was standing on coiled basketry (after Nieuwenhuyse in press a; Berghuijs in press; photo: DAI Orient-Department, I. Wagner).

employment of pottery for storage. Most formally, this is reflected in the rising proliferation of vessels carrying a distinct neck — 'jars'. Absent entirely from the earlier levels, the jar form appeared by the end of level IV, becoming quite common in levels V and VI. A turn toward ceramic storage is also seen in the popularity of CUW closed shapes without a distinct neck ('pots'), which preceded the development of collared vessels, and in the frequent application of lime or gypsum plasters to reduce porosity.

Interestingly, these developments may have stimulated new strategies for shaping the vessels. As far as we can reconstruct from 'reading' the traces of the primary shaping process (van As 1992; 2004), coiling appears to have been the main technique employed throughout the sequence. Soon after CUW was introduced, potters occasionally shaped vessels while keeping them standing on a reed mat (Fig. 11). Several examples of basketry-impressed bases were found in the upper levels. This innovative technological choice may be related to the increasing scale of pottery production, necessitating technological improvements to enhance efficiency. Reed mats as a support allowed the vessel to be rotated and more easily moved after the shaping. This would have become more advantageous in the upper stratigraphic levels when vessel shapes became bigger and therefore heavier and probably more difficult to manoeuvre.

The adjective 'plain ware' is certainly no exaggeration when describing CUW. However, by level IVb sustained production of decorated pottery containers is attested for the first time. Common decorative techniques include: stabbing, impressing or incising the vessels with combs or other sharp tools, applied decoration showing mostly abstract non-figurative motifs, and red slipping (Fig. 12: 16–26). CUW containers appear to have increasingly gained roles in signalling social identities. Interestingly, the supra-local affiliations of these decorative styles suggest connection to both upper Mesopotamia and the southern Levant. In Upper Mesopotamia, closely comparable styles are found with plant-tempered ceramics during the Pre-Halaf or Proto-Hassuna stages (Le Mière 2000; 2001; Le Mière and Nieuwenhuyse 1996). To the south, Neolithic communities first began making pottery during the Yarmukian period (Garfinkel 1999: 16; Gopher 1995; Gopher and Gophna 1993), which overlaps chronologically with the upper levels of the Southern Area of Shir. Yarmukian pottery containers often carry red slips and incised-impressed decoration, sometimes resembling the contemporaneous examples from Shir.

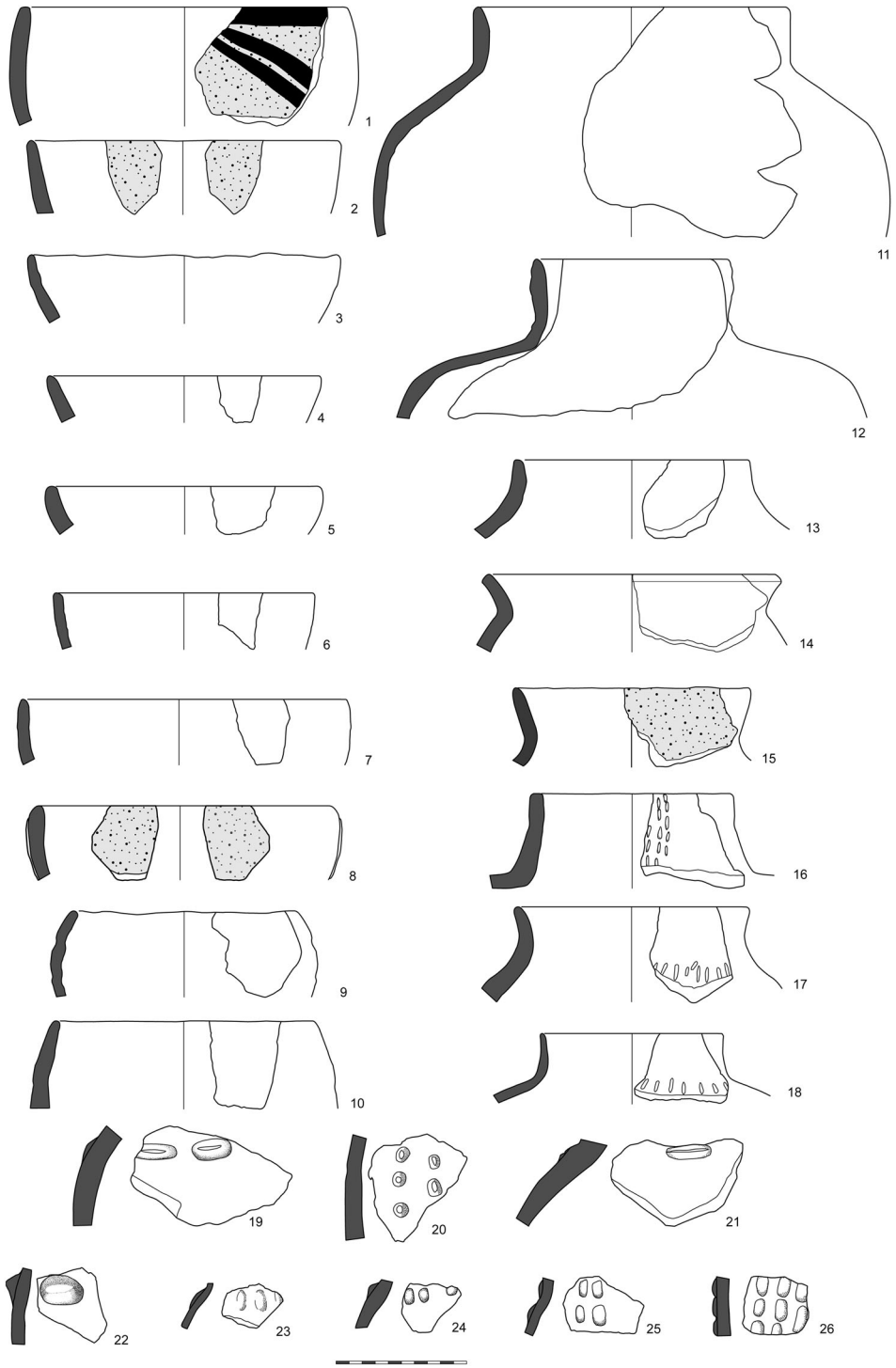

Figure 12. Shir, Southern Area. CUW ceramics from the upper levels. Nos 2, 8, 15: plastered. No. 1: plastered-and-painted. Nos 16–18: stabbed/impressed. Nos 19–26: appliqué (after Nieuwenhuyse in press a).

The use of Dark-Faced Burnished Ware did not cease during the upper levels, but its role seems to have been reduced, as reflected in its decline as an overall proportion of the ceramic assemblage (Fig. 7). A distinctive type of DFBW surface manipulation in levels IV–VI is known as 'cord-impressed' pottery (Fig. 13). Defined by the characteristic impressions suggestive of cord imprints, it was first identified by Frank Hole (1959) at the site of Tabbat al-Hammam on the Syrian coast. It was subsequently identified at several sites inland and in the central Orontes Valley, including, in spectacular format, Tell

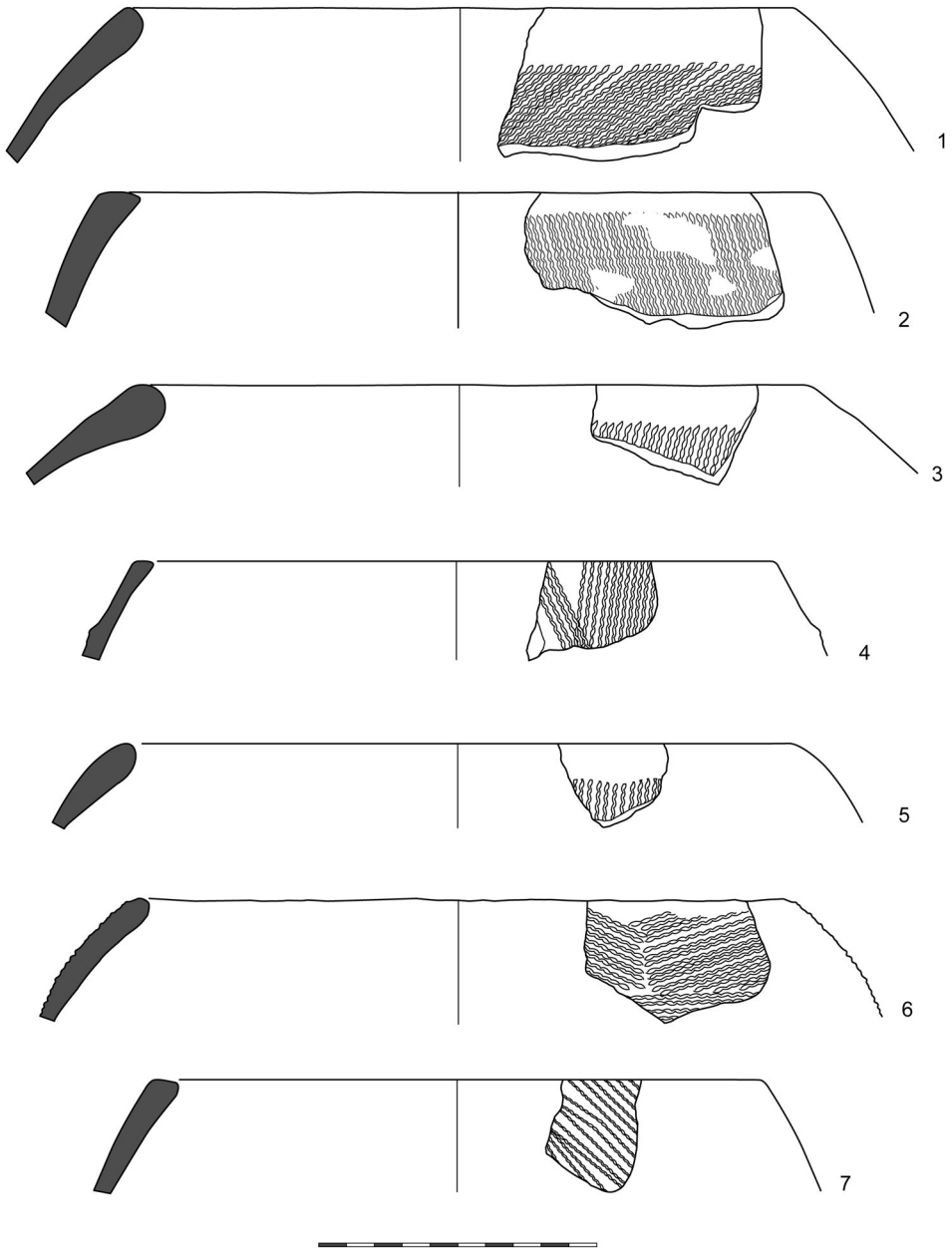

Figure 13. Shir. Cord-impressed Dark-Faced Burnished Ware from levels V–VI (after Nieuwenhuyse in press a).

Nebi Mend (Mathias 2015: 89). This cord-impressed DFBW represents a uniquely important source of information on Neolithic organic woven materials. The analysis of the impressions at Shir identified textiles, reed mats and wrapped cords (Berghuijs in press; Nieuwenhuyse *et al.* 2012).

It is not yet clear why Neolithic potters sought to produce these impressions (Mathias 2015: 89). The imprints might be residual from the shaping process, similar in a way to the CUW basketry imprints. Potters could have rested the soft, wet vessels on textiles while shaping the vessels. This is contradicted by the very regular overall appearance of the imprints, which suggests a purposeful attempt to cover the entire surface with a neat series of impressions. The impressions could have been a distinctive decorative style signalling specific social identities. However, the strong association between this type of surface manipulation and a distinct mineral-tempered, burnished ware (DFBW) eminently suited to cooking, and the relationship with a narrow range of shapes (closed convex-sided bowls and hole-mouth pots), suggests a functional, use-related role for the impressions. They may have constituted a purposeful roughening of the vessel surface to improve the transfer of heat through the vessel wall while in contact with a fire.

Concluding remarks

In the past decade or so, new research projects have significantly progressed our understanding of Late Neolithic ceramic production and consumption in the northern Levant. Apart from Shir, work has been undertaken on the Pottery Neolithic deposits at Tell Nebi Mend on the Orontes (Mathias 2015; Parr 2015), Tell el-Kerkh in the Rouj basin (Iwasaki *et al.* 1995; Miyake 2003; Odaka 2003; 2017; Tsuneki and Miyake 1996; Tsuneki *et al.* 1997; 1998; 1999; 2000), Tell Kurdu in the Amuq (Diebold 2000; 2004), and Yumuktepe on the Turkish Mediterranean (Balossi 2004; 2006; 2017). At these sites, meticulous stratigraphic excavations, the dedicated collection of a large series of radiocarbon dates and state of the art approaches to ceramic analysis are delivering detailed site-specific micro-studies of pottery. There is great potential for follow-up studies that bring together the results from several northern Levantine sites to probe provenance and patterns of ceramic exchange, and to put individual sites into a broader, inter-regional interpretative framework. Conceptually, the northern Levant is especially attractive for such investigation, as it connects several neighbouring regions in which the Neolithic period has been well researched.

At Shir, sustained pottery production is attested from the earliest level at the site (level I), dated around *c.* 7000 cal BC. However, the very low densities suggest ceramic containers had limited, though probably multi-functional, uses. The earliest pottery was 'visually conspicuous' and may have held significance in specific commensality events in which pot-cooked food played a role. The full integration of pottery containers with the Neolithic economy occurred several centuries later (levels IV–VI). This integration, in effect the emergence of the 'Pottery Neolithic' package as traditionally understood, appears to have progressed quite gradually. Associated with the rise of coarse thick-walled vessels and the gradual development of plant-tempered 'Coarse Ware', storage came increasingly to the fore as an important activity, dependent on ceramic containers. By the end of the period, Late Neolithic villages across the larger region were packed with movable-yet-durable ceramic storage vessels in a wide range of shapes and sizes (Nieuwenhuyse in press a; in press b).

The consumption of pottery containers at Shir began with what is called Dark-Faced Burnished Ware. Recent provenance studies suggest that those who settled the early levels at Shir brought these small, portable containers from elsewhere. Future studies should scrutinize this preliminary interpretation, and seek to identify the origins of the early vessels. Speculating, some of the early DFBW may have travelled to the site from contemporaneous Tell Nebi Mend (and *vice versa)*, but it is too early to draw such specific conclusions.

The initial 'DFBW phase' at Shir was followed by what appears to be local production on an increasing scale. Interestingly, at a general level a similar situation is observed on the northern Syrian plains, where provenance studies at many initial Pottery Neolithic sites show that the early mineral-tempered wares were very frequently exchanged (Le Mière 2017; Le Mière and Picon 1987; Le Mière *et al.* in press). Here too, this initial situation was followed by local production of plain, thick-walled coarse pottery (Bader and Le Mière 2013; Nieuwenhuyse in press b). In sum, ceramic developments in the 7th millennium BC show a quite significant (sub) regional variability, but with broader, supra-regional trends becoming apparent. This suggests that at some level ceramic containers gained comparable roles in various Late Neolithic societies.

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