

TIME AND TECHNOLOGICAL TRANSFER IN PROTO-HALAF AND HALAF SEQUENCES AT CHAGAR BAZAR (KHABUR VALLEY, SYRIA)

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El objetivo de este artículo es presentar los resultados de estudio del Proto-Halaf y el Halaf Tardío en Chagar Bazar centrándose en la transferencia tecnológica presente en las sociedades neolíticas. Se evidencia porqué el proceso de fabricación y las técnicas de modelado han permitido a los arqueólogos construir esquemas tipológicos y cronológicos detallados con énfasis en la uniformidad morfológica y volumétrica.

Proto-Halaf, Halaf tardío, Valle del Khabur, Tecnología cerámica.

This paper presents the main results obtained in the fieldwork related to Proto-Halaf to Late Halaf periods at Chagar Bazar by focusing on technological transfer in Neolithic societies. We discuss why manufacturing processes and information on shaping practices has been used by archaeologists to construct detailed typological and chronological schemes with an emphasis on morphological and volumetric uniformity.

Proto-Halaf, Late Halaf, Khabur valley, pottery technology.

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INTRODUCTION

More than 10 years of excavations at Chagar Bazar (Khabur valley, Syria) have recovered a long stratigraphic sequence related to a Neolithic site with a complex settlement pattern and archaeological diversity. In this context, material culture, and especially pottery, becomes one of the best physical materials allowing an approach to the tools, knowledge and crafting techniques developed and used by the first farming communities during the sixth millennium cal BC.

In that sense, the aim of this paper is to summarize the current data from the Proto-Halaf to Late Halaf periods at Chagar Bazar obtained through the materials recovered at the site, predominantly by studying the pottery manufacturing process and shaping practices in context. Traditionally this data has allowed archaeologists to construct detailed typo-chronological schemes with an emphasis on morphological and dimensional unifor-

mity. But these classifications can easily correspond to various technical traditions; different shapes may correspond to the same typology and similar shapes can be achieved with different techniques.

In our proposal, Halaf culture periodization needs to be redefined site by site, in a micro analytical way. As other chronologies in the Near East, the Halaf period is indeed a span of time which still needs to be more accurately defined on the basis of data obtained during the last 30 years. The selected ¹⁴C data from several sites (Campbell 2007; Cruells 2006d; Cruells *et al.* 2013) showing the span of the Halaf period suggest that the total length of this period is around 700/800 years. More specifically, the Proto-Halaf is a very short-term phase of around 150 years (Cruells/Nieuwenhuys 2004), in which two different implantation models have been proposed (Cruells/Molist 2006).

Traditionally, in that sense, two main phases have been

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emphasized: a formative phase and a development phase. Notice that the formative occupational moments and latest ones are affected by difficulties in their attribution mainly from a regional point of view. Such aspects as focus area, spread *processus* and regional development are still unknown, for example in the Khabur valley, upper Mesopotamia.

On one hand, the difficulties include the very nature of its emergence, which was of a polygenic nature with two well differentiated prototype sites, and a final stage, where exogenous influences surely affected its original character so that it started to adopt different regional differences that are currently recognisable (such as Chagar Bazar, Tell Halula and Nord Iraq eastern assemblages), one of them the Ubaid interaction.

Both sites, in the Euphrates and the Khabur valleys, were occupied at the end of the seventh millennium BC, during the end of Pre-Halaf or Hassuna III. And based on a gradual evolution of these phases, the Halaf appeared (Campbell 1992, 2007; Cruells/Nieuwenhuys 2004).

On the other hand, in the current knowledge of the “Proto-Halaf” phase, there are two completely different types of manifestations with regard to settlement pattern. At sites like Chagar Bazar or Tell Baghouz, the Proto-Halaf represents an *ex novo* phase of occupation possibly related to an advanced stage of the “transition”, comparable to Sabi Abyad’s level 4, among others. In contrast, Sabi Abyad, Tell Boueid II or Tell Halula form part of a second group of sites with an internal evolutionary sequence that comes from earlier pre-Halaf and Hassuna phases equivalent to a primitive stage of “transition” relatable to level 6 - 5 at Sabi Abyad (Cruells 2017).

The Proto-Halaf phase in Chagar Bazar is therefore the foundational phase at the site and is characterized by different occupational phases related to an open area, fire places, burials and houses (Cruells *et al.* 2013). Future excavations in extension will surely recover the necessary elements to establish and clarify this earlier pottery phase. These data must contribute more information about its nature as a technological group linked to a clear cultural identity configuring a hinterland that occupies northern Mesopotamia (D’Anna/Binder 1998, Hole/Tonoike 2016).

In the second type of sites the Proto-Halaf represents an evolution of previous stages (Late Neolithic) at Halula or Sabi Abyad and it appears around 150 years earlier (Fig.1).

The earliest date indicates a time between 6200-5800 cal BC while the latest date is around 5500-5300 cal BC. Settlement occupation would therefore be over 700 years.

TECHNOLOGICAL SKILLS

In Near East prehistory, some general transfers have been proposed to analyse the evolution of previous historical stages. The most relevant items are related to pyrotechnology, pottery, technology and architecture but all of them were linked and influenced each other. This short introduction will focus on architectural technology skills (building and domestic facilities), pigment knowledge (acquisition, transformation, application techniques) and clay objects and related processes (pottery, figurines, stamps, tool sherds).

The first of them, architectural technology skills, is related to knowledge of materials (stone, mud-brick, etc.) and the technology of fire. The presence of plaster and limestone has been related to pyrotechnology. Structures like pit ovens or key-hole shape ovens would be able to control temperature. Experience with earthen architecture would be also indispensable for pottery kilns and the circular building tradition, attested with the well-known *tholoi*.

Architectural Technology Skills (building and domestic facilities from the Late PPNB period)

Acquisition of chalk or plaster and its application in architectonic aspects (building elements, floors and walls, benches, niches, etc.) is well documented since the PPNB in such sites as Tell Halula (Molist *ed.* 1996, 2013). Additionally, domestic facilities like pits, ovens and open-fire places are well attested in all sites. Finally, as is well-known, firing is a complex process which started in Palaeolithic times and temperature control seems to be a gradual process involving a large number of variables (Cruells 2017; Dandrau 2000). Variation in type and shape demonstrate the archaeological difficulties in interpreting these structures in terms of function and complementary activities. The particular combustion structures that are common in the PPNB continue throughout the 7th millennium and reach the Proto-Halaf. The pit-ovens filled with calibrated stones found at Chagar Bazar in the Proto-Halaf stage represent a continuation of these traditions.

The plastered horse-shoe oven shape recovered at Tell Halula belongs to the Proto-Halaf period while circular buildings appear in a *long-durée*. The architectural transitions are slow and progressive.

Pigment Knowledge (acquisition, transformation, application techniques)

In the Middle East, colour application is as old as the 9th millennium cal BC. Pigment, as raw material, can be obtained from several mineral or vegetal sources. From the very beginning, polychrome effects were applied to human skulls but also to floors and walls of buildings,

with clear and well-defined colours like white, red and black

Pigments and colours in the Middle East usually appear related to decoration in the form of geometric or figurative motifs in buildings, and soon afterwards in pottery (Dabbagh 1966; Cruells 2005, 2009; Nieuwenhuyse 2007, Gómez-Bach *et al.* 2013).

Clay Objects And Related Processes (pottery, figurines, personal objects, stamps, tool sherds).

Clay models are well attested since the early Neolithic. PPNB animal figurines are an example. These objects increased in number and presence during the Pottery Neolithic and some of them shared more than one raw material, such as stone or clay (sling balls, seals, rings, pendants, etc.).

This paper will unify and classify these pottery techniques. It aims to demonstrate, as far as possible, the importance of the spatial distribution and the specific location of the potsherds from chronological and stratigraphic points of view.

CHANGING FABRICS IN THE 6TH MILLENNIUM CAL B.C.

The 6th millennium cal BC ceramics were characterized by a fine, largely mineral-tempered fabric, excellent firing properties, thin-walled, complex vessel shapes, and extensive painted decoration in a lustrous red or black. Fabrics changed in the 6th millennium cal BC and the main difference in technology was the change in ovens, as mentioned above. Oxidation preferences and the use of separated chambers (combustion and firing) would offer different aptitudes in thermal and mechanical responses. The main painted Late Pre-Halaf coarse ware traditions displayed red and oxidising colours. A few exceptions exist, related to such other raw materials as bitumen.

The immediate precedents of the halafian painted traditions are the Pre-Halaf fine wares. As an example we can see Phase I at Akarçay Tepe (last third of 7th millennium) sharing slips and painted motifs.

CHAGAR BAZAR AS A CASE STUDY

Chagar Bazar was already settled during the pottery Neolithic. Excavations revealed pottery belonging to the Halaf culture, from Proto-Halaf to the Late Halaf (Cruells 2005, 2006e; Cruells *et al.* 2013). By the Early Bronze Age, in the third millennium BC, Chagar Bazar had turned into a small town 12 hectares / 30 acres in size. The site appears to have been abandoned by the end of the third millennium BC.

Chagar Bazar is located in Al-Hasakah Governorate, approximately 35 kilometres (22 miles) north of Al-Hasakah, on the Wadi Dara, a tributary to the Khabor river (Cornet 2007). The site was excavated by M. Mallowan, the British archaeologist, from 1936 and 1937. Abundant material such as pottery and a large number of cuneiform clay tablets were recovered. Work was resumed at the site in 1999 by a joint mission from the Syrian Directorate of Antiquities, the British School of Archaeology in Iraq and the University of Liège (Belgium) until 2002 and by DGAM, University of Liège and UAB collaboration until 2011 (McMahon *et al.* 2001, Tunca *et al.* 2000a and b, Tunca/Bagdho 2006).

The stratigraphical sequence at Chagar Bazar, recovered in Sector F, displays some remarkable aspects. Some Neolithic layers are badly disturbed because of the large Bronze Age building foundations and owing to the very large soundings opened by Mallowan (most of them not reported) (Mallowan 1936, 1937, 1946, 1947, Curtis 1982).

The Neolithic buildings basically have no stone foundation, only with mud brick and *pisé* walls, and most of the round buildings are partly sunk. There is an alternate succession in the position of dwellings and the open areas disturbed the previous installations. Moreover, opportunistic architecture and a rapid succession of architectural phases are predominant. In the lower part, 10 occupational/architectural phases have been defined in around 2 metres of stratigraphic sequence and in the upper part, 11 architectural phases. In this sequence, Halaf intermediate B2 was not dug in extension at Chagar Bazar and only Chantier E (1999/2000) provided a few materials related to this moment.

CHRONOLOGICAL APPROACH TO THE HALAFIAN SEQUENCE

The understanding of the occupation of Chagar Bazar is related to the establishment of a valid and calibrated chronological sequence that allows the stratigraphic sequence previously described to be complemented and validated. This has been achieved through different absolute dates, which have been compared, as far as possible, with existing old dates and a few sequences made in the 1990s and the beginning of the 21st century.

Different series of radiocarbon dates are available for Chagar Bazar. A first radiocarbon date published in the 1970s (Lawn 1973) is documented, and corresponds to the sediment in a layer of ash in Levels 11-12 of Mallowan's Prehistoric Pit. This old sample, numbered P-1487, resulted in a date of 6665±77 BP or 5590±60 cal BC at 1σ (Lawn 1973, Chataigner 1995, Böhner/Schyle 2006).

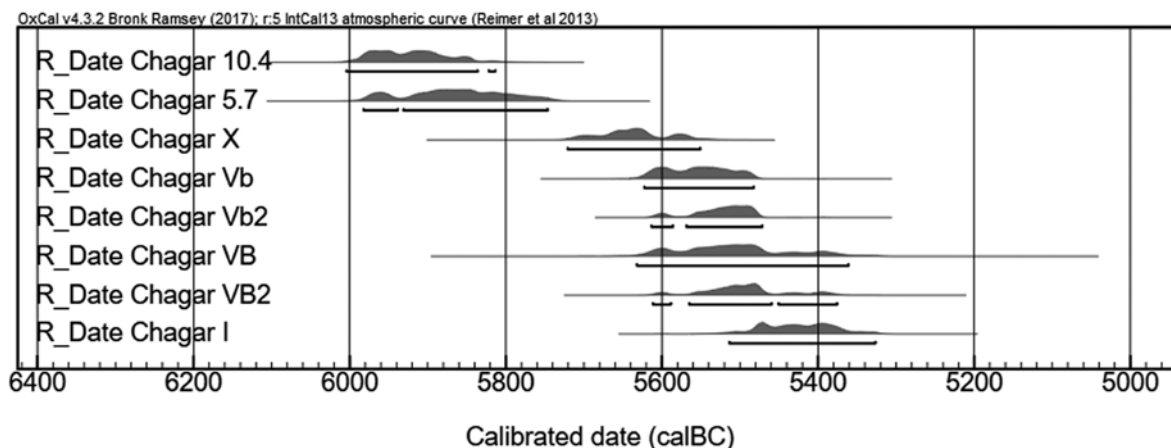


Figure 1. Radiometric data from Chagar Bazar.

The 2000-2010 fieldwork in the Neolithic sector was able to expand and establish a new chronological sequence (Tunca/Baghdo 2006; Cruells 2006d; Cruells *et al.* 2013). Two radiocarbon dates have been published for the earliest occupations at the site. The first of these samples comes from Sounding E, stratum 10.4.1 CB 2723, numbered Beta 174042 and with a date of 7030 ± 40 BP, calibrated to 5990 to 5810 cal BC at 2σ . The second dated sample comes from Survey F, stratum L.5, 5-7, CB 4147, numbered Beta 174043 and with a result of 6980 ± 50 BP, calibrated to 5980 to 5740 cal BC at 2σ . These dates suggest a time for the Proto-Halaf at Chagar in an interval of 6000-5940 cal BC. (Cruells 2006d).

The recent archaeological fieldwork carried out in Chantier F at Chagar Bazar has increased the number of radiocarbon dates (Cruells *et al.* 2013; Gómez-Bach 2011). This new series of unpublished dates includes a set of dates covering from Phase I to Phase X in the Neolithic sector (Late Halaf) and two dates for Pre-Halaf levels (Fig. 1).

The results have identified continuity in important successive occupations, where the shortest sequence, stratigraphically formed by Phase V, with 3 occupation subplots, represents a time of about 100 years of anthropic activity. The rest of the intervals reflect a very compact chronological sequence, making it difficult to discriminate between occupation and abandonment patterns. Between 5600 and 5460 cal BC, the layers offer a context of approximately 150 years of continuous and consolidated occupation where an important set of materials, mainly ceramics, was recovered. It should be noted that this post-burning date of 5600 cal BC is artificial, since, as has been mentioned, the stratigraphic sequence continues whereas the analysis performed has stopped in Phase X.

At the same time, it seems that the time of

abandonment of the Neolithic occupation can be defined. As observed in the first tholos recovered (L.65), a period from 5327 to 5514 BC cal at 2σ is defined for the sedimentation of this building. By including the old date obtained by Lawn in this sequence (Lawn 1973; Chataigner 1995; Böhner/Schyle 2002-2006), we can approach the Level 11-12 occupation phase in Mallowan's prehistoric pit with the new stratigraphic succession at Chagar Bazar. This comparison allows Mallowan's Levels 11-12 to be situated next to Phase X in the current stratigraphy of the deposit.

CHAGAR BAZAR: PARTICULARITIES OF PROTO-HALAF AND LATE HALAF POTTERY PRODUCTION

In the Proto-Halaf phase, the ceramic series from Chagar Bazar would remain virtually the same as in the previous phase at other sites (Cruells/Nieuwenhuys 2004; Cruells 2009). Nevertheless, new series would now appear, like as orange ware (Fig. 2 and Fig. 3.9), burnished red slip or the painted fine series (Fig. 2 and Fig. 6.11). Proto-Halaf coarse ware ceramics evolved from previous 7th millennium traditions, where geometric motifs and figurative ones, such as dancing ladies and derivatives are present (Fig. 3, 1-8). The second moment within this first phase corresponds to the primitive Halaf.

The latest archaeological levels at Chagar Bazar display great variety in architectural layout patterns. In turn, they have yielded great variety in shapes and decorations in the ceramic assemblages, and complete sets with the same decoration are well documented. The exterior surface of most vessels was completely painted in a dazzling variety of geometric designs, such as bands, crosshatching, zigzags, triangles and checkerboards.

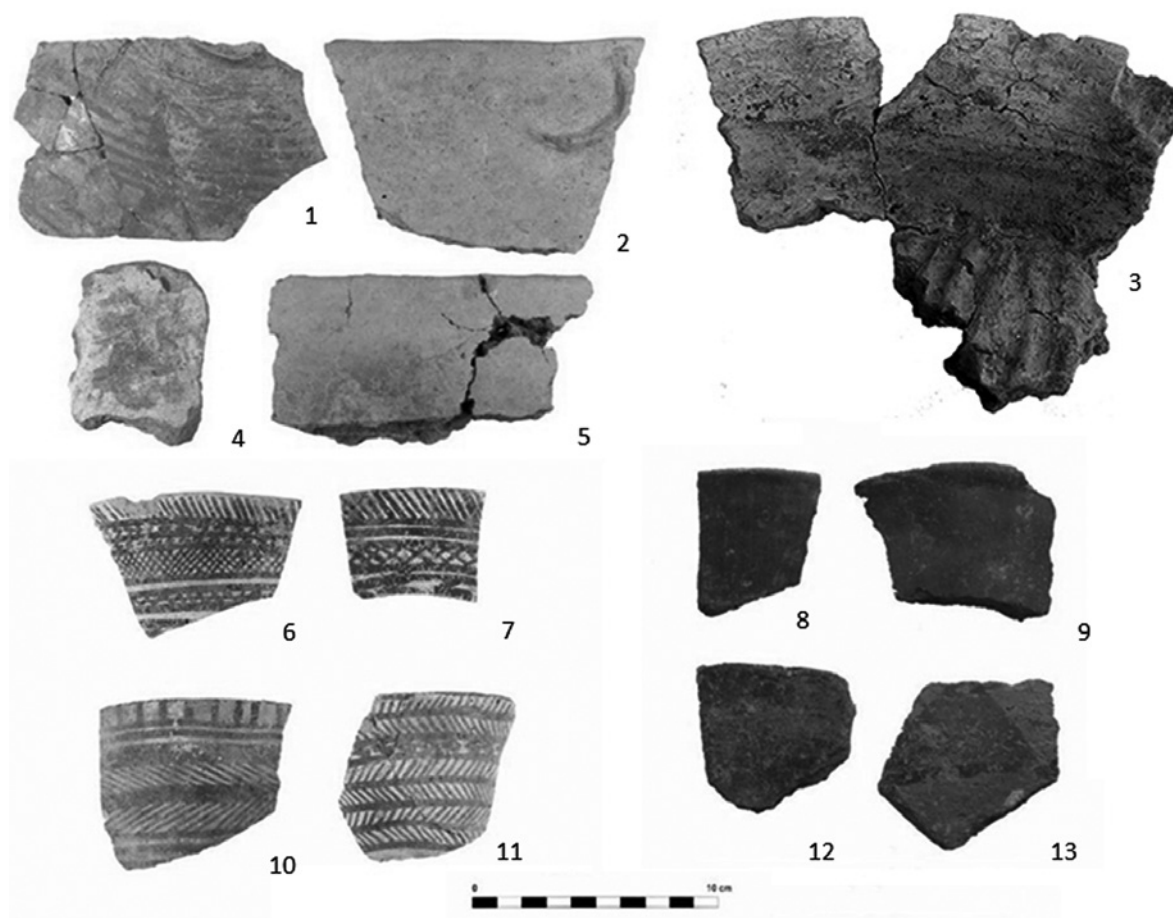


Figure 2. Proto-Halaf layers, L.10.4, 7030±40 BP. (6005-5837 cal BC).

There are also many examples of naturalistic decoration incorporating plants, birds, quadruped animals and the renowned *bucranium* (a bull's head with horns).

The vast majority of fragments collected during excavations belong to the category of fine ceramics. One of the advantages this group presents when classifying it is that, despite a great diversity of shapes and types, almost all the fragments possess a characteristic paste, very purified and with limestone, quartz and mica inclusions that can often be identified at a glance. Therefore, the initial classification has focused on differentiation in the manufacturing and shape and the final treatment (finishing and firing) (Gómez-Bach 2008, 2011; Gómez *et al.* 2015). The diversity of techniques in the manufacture and finishing processes indicate a change starting from a gradual complexity. Warping, coiling, basketry and moulds, the use of RKE (Rotational Kinetic Energy) and mixed type techniques have been identified (the most frequent are moulds and coiling).

A proposal of identification between the morphological and metric variables and the technological variables has been made from the metric data. If the dimensional variable is omitted, different manufacturing processes are

documented, from early to late moments, and can be summarised in:

Process 1: Manufacture of small containers or containers of medium size. These are closed bowls, with full or partial oxidation firing and refined paste (Fig. 4).

Process 2: Manufacture of medium-sized containers, with full or partial reduction firing, linked to a form of jar, and made with a paste with medium size quartz and biotite inclusions.

Process 3: Manufacture of small open containers, in the form of an open bowl with complete or partial oxidation firing and undefined mineral ware, which have a reticulated incised decoration on the exterior surface (Fig. 5).

Process 4: Manufacture of small straight-walled closed containers or medium-sized containers.

These are closed straight wall bowls, with full or partial oxidation firing and a singular clay group (Fig. 6).

Process 5: Manufacture of large containers, mainly a group of jars, made with a similar fabric containing quartz inclusions and fragments of limestone, and complete oxidation firing (Fig. 7).

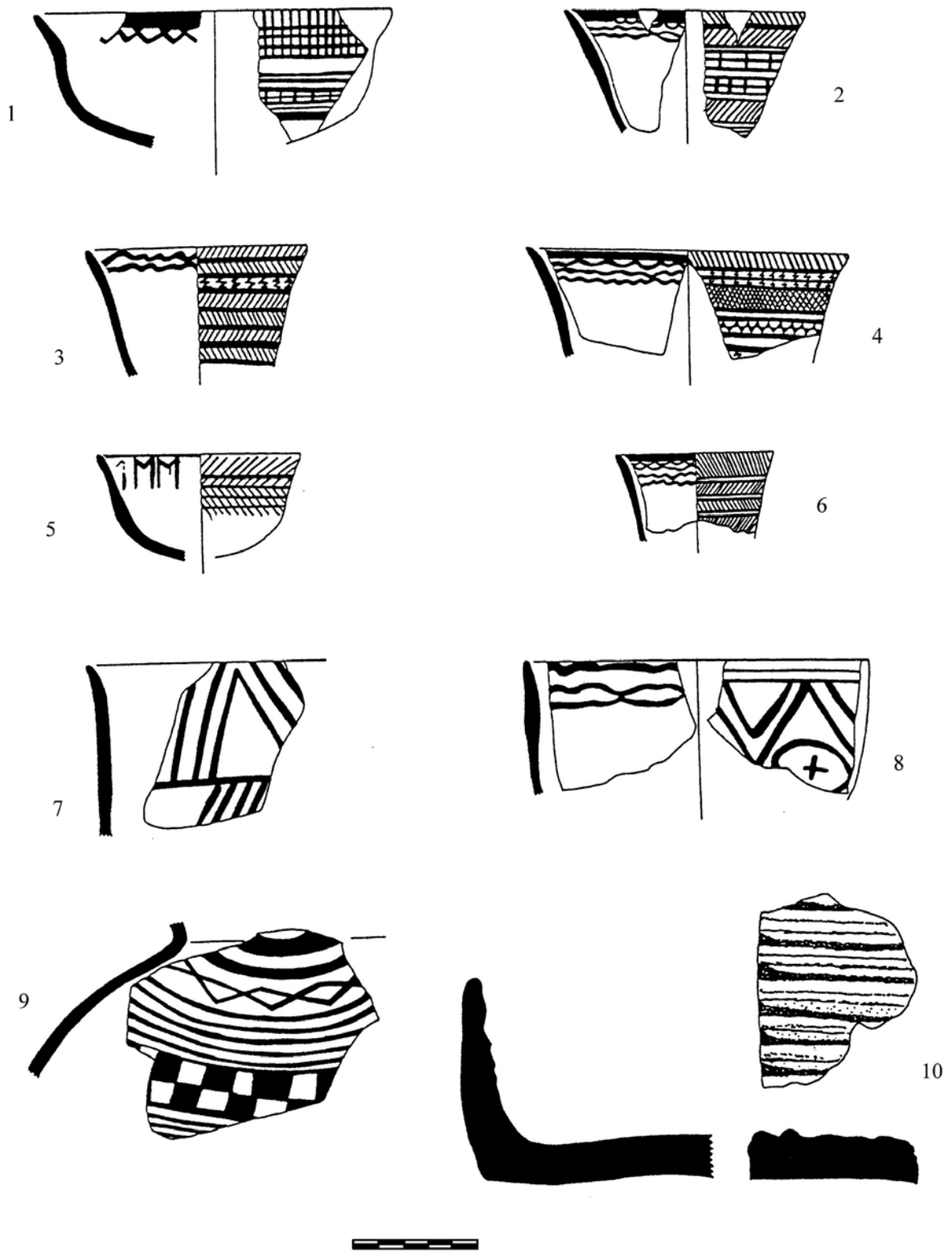


Figure 3. Proto-Halaf layers. L.5.7, 6980±50 BP. (5932-5747 cal BC).

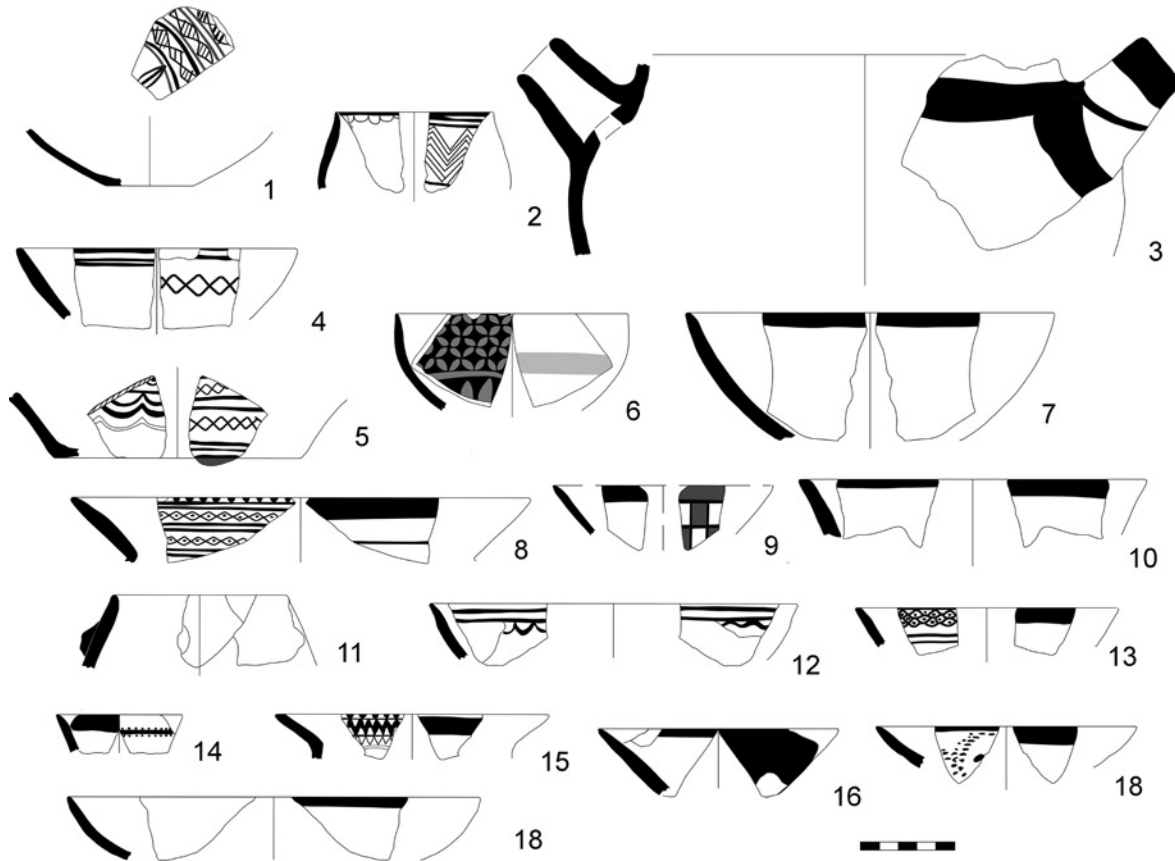
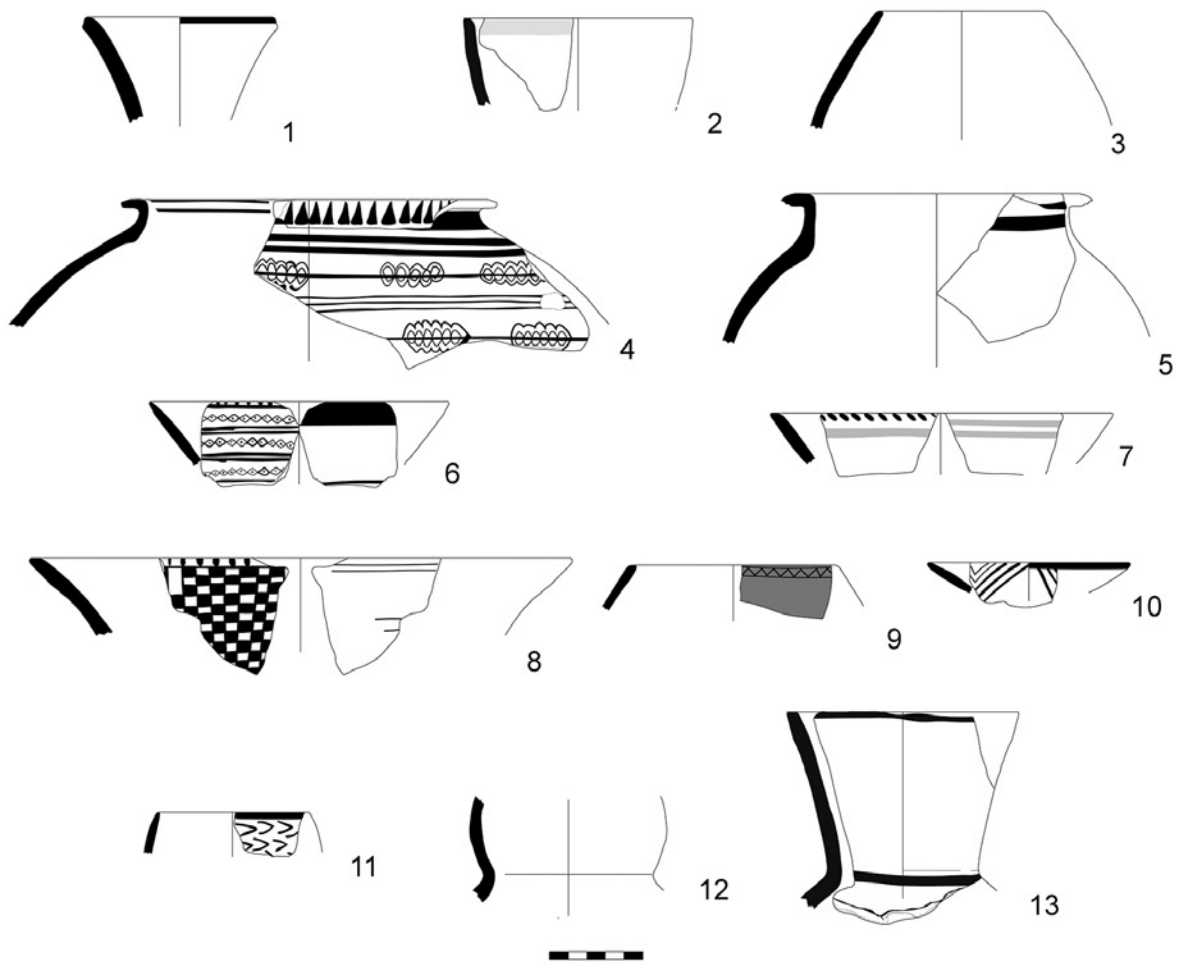


Figure 4. Late Halaf, phase X, pottery assemblage and stratigraphy data 6720±50 BP (5721-5552 cal BC), 6610±50 BP. (5623-5483 cal BC).



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Figure 5. Late Halaf, phase V, pottery assemblage and stratigraphy data 6560±40 BP. (5569-5472 cal BC).

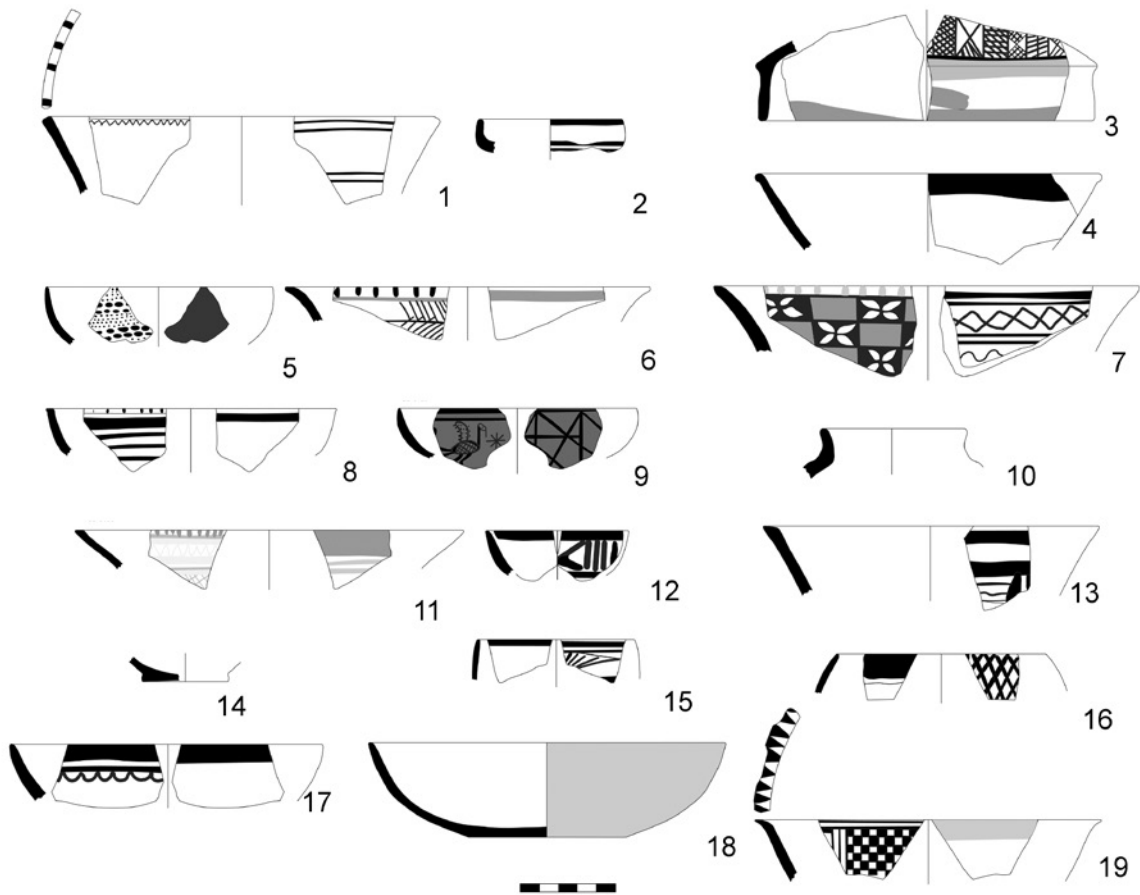


Figure 6. Late Halaf, phase V, pottery assemblage and stratigraphy data 6550±80 BP. (5633-5362 cal BC).

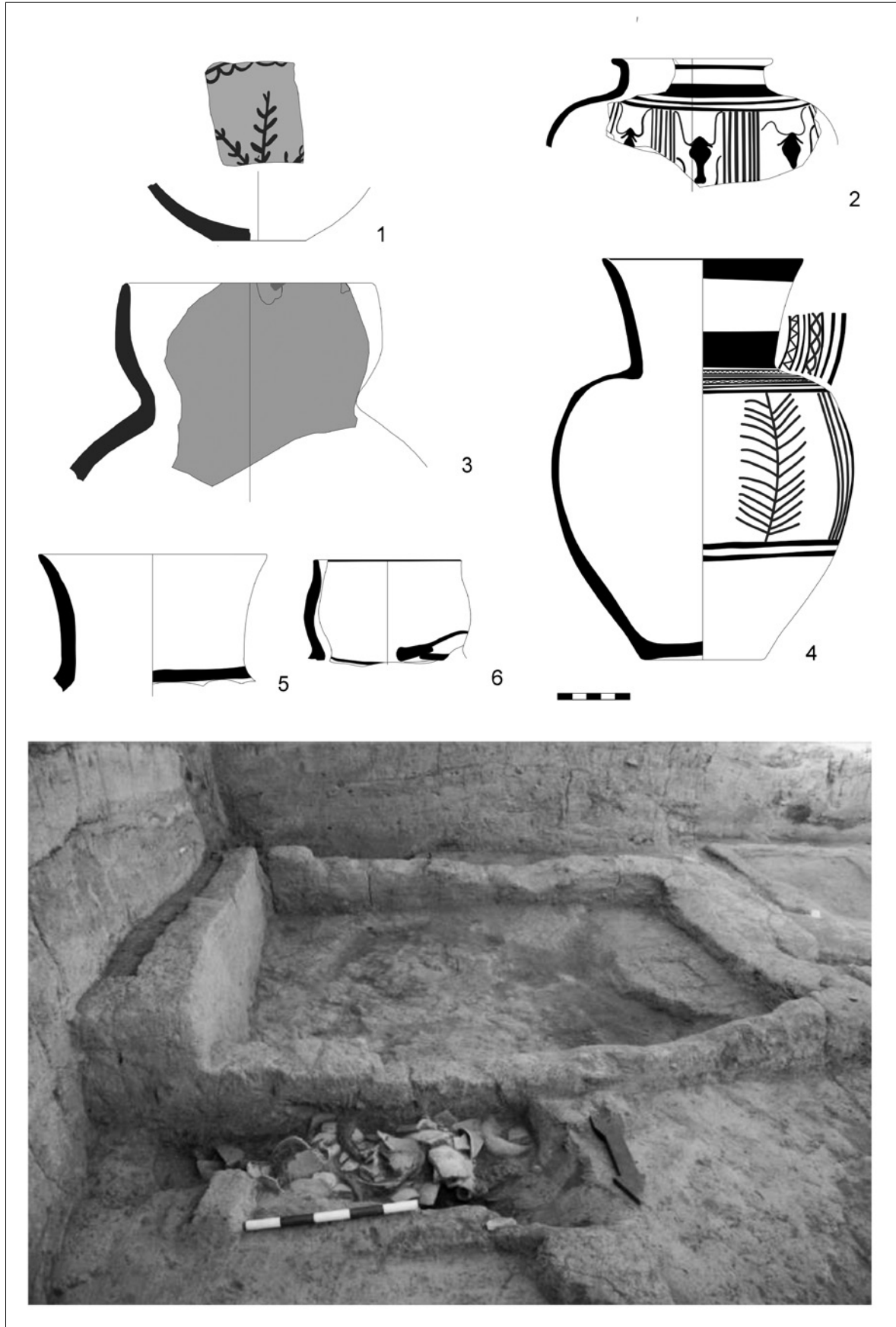


Figure 7. Late Halaf, phase V, pottery assemblage and stratigraphy data 6530±50 BP. (5566-5460 cal BC).

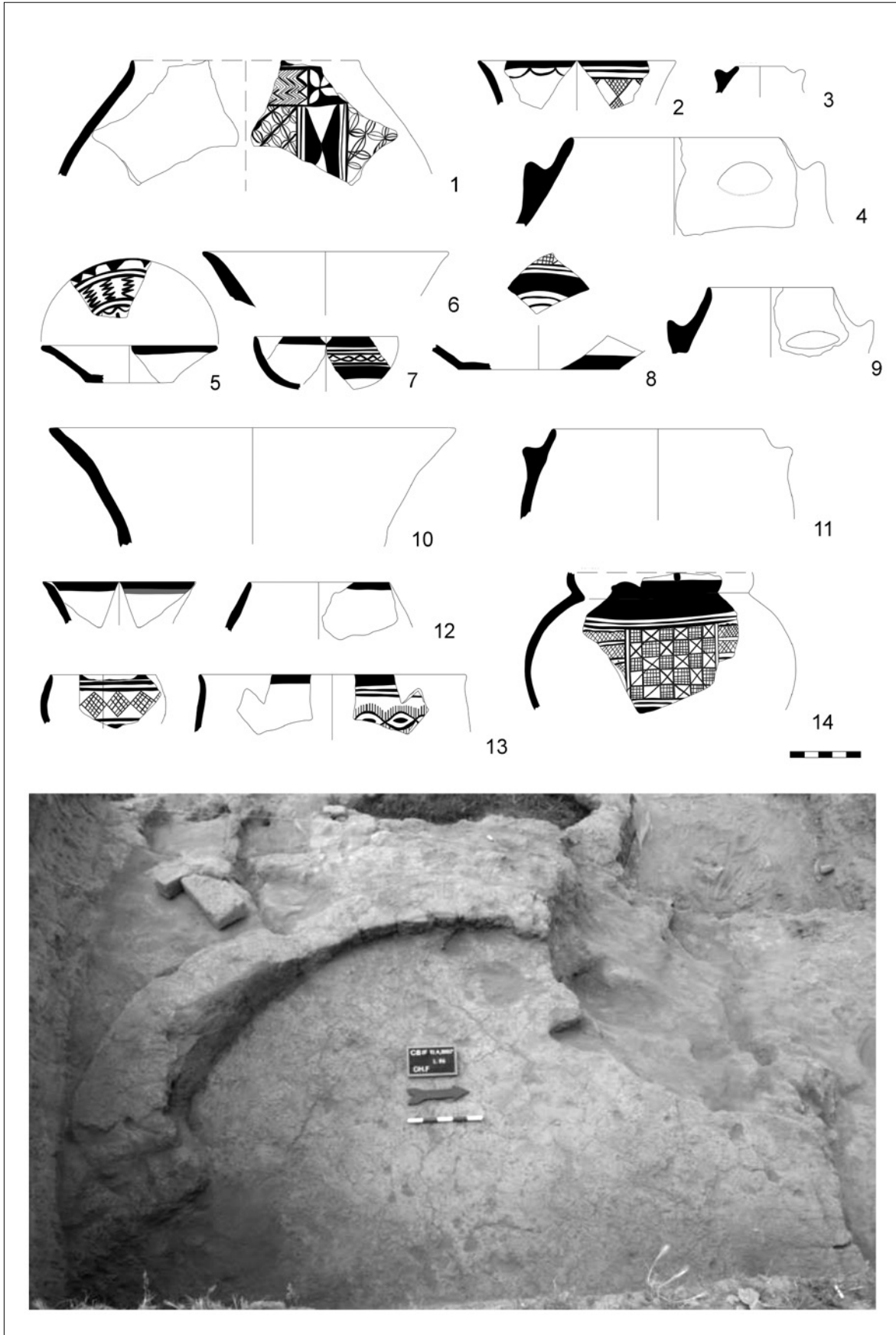


Figure 8. Late Halaf, phase I, pottery assemblage and stratigraphy data 6470±50 BP (5514-5327 cal BC).

Process 6: Coiling technique, for open bowls made with several local fabrics. These correspond both to bowls about 20cm in diameter and to larger pieces.

Process 7: Containers in the form of open bowls, full oxidation firing, made with RKE (Fig. 8). This set was recovered from the last levels.

At a preliminary level and considering that it is difficult for a part-time artisan / craftsman to produce this formal variability, it is thought that the differential characteristics between groups may respond to criteria of a more utilitarian / functional type than that of artisanal flexibility. Some pieces, for example those involving the use of RKE, could have been made by an experienced and consolidated craftsman.

Both sequences allow differences to be established in these productions. First of all, domestic sets are well represented. This huge diversity in pottery production was focused on functionality, albeit in a symbolic way (Nieuwenhuys 2007). Some of the vessels display a great investment in polychrome or colour combination and, others, a profusion of colours in drawings and scenes.

An important element is the lesser investment in the finishing of some products and vessels. A decrease in the investment of labour in finishing and decorating some pieces of fine and coarse wares has been documented. This may respond to a greater demand for vessels and an increase and optimization in their production.

Another phenomenon is the increase in the use of mineral raw materials in pictorial decoration, related to an improvement in firing techniques. The presence of manganese oxide can be considered an element of optimization in production, provided that the process of obtaining and handling the raw material is within the reach of the community.

Another element is the variability in part of the vessels produced. The presence of new typologies with a greater diversity of forms has been evidenced, mainly in groups I, III, VI, VII, VIII and IX, that is, simple and complex bowls, pots, jars, lids and containers with handles and spouts. This extension may indicate a transformation in culinary practices.

The presence of incised and burnished ceramic productions, as well as the documentation of the basketry technique and other technological variables, indicates that these manufacturing traditions seem to have played an important role in the different communities at the end of the Halaf. These pieces, together with vessels for the manipulation and transformation of food, are a new source to identify regional variability.

UNCOMMON ITEMS

Some type of shapes and finishing traditions will disappear during the Halaf. One of them is the husking trays. They appear in early layers at Chagar Bazar (from Proto-Halaf to Early Halaf) but none has been recovered from later levels (Fig.2.3). Another missing element is the investment in finishing surfaces, as impressed and burnished vessels (grey and dark-faced ware) disappear and there is no evidence of these traditions in Phase X (Middle-Late Halaf). Early painted vessels become rare and fine painted sherds become predominant in limited shapes related to “serving ware” (Fig.3, 1-8). In this sense, the increasing early painted and changes in slips are frequent at the very beginning of the early Halaf. Moreover, new shapes such as carinated long-necked jars, bow rim jars, covers and spouts, lids and plates appear in Phase X.

SHARED ELEMENTS

Coarse ware and culinary pottery shapes are very homogeneous throughout the sequence (Fig. 9). Based on a first approximation to the measurements of the set of potsherds studied at Chagar Bazar, we should point out that the ceramic vessels to which they corresponded were almost all of medium size (between 14 and 25 cm) and only a small percentage of vessels can be considered small (less than 0.20 litre). This can be observed at the volumetric level, as can be seen in the following table prepared from the set of whole pieces.

The association of the typologies with the respective volumetric capacities of the different pieces allows us to observe how the closed forms had capacities of 1.14 litres, of 1.55 and 1.93 litres, while the open forms held 1.5 to 2 litres, and up to 3 litres. It is observed, then, how the maximum capacity is provided by a closed form, a jar type, which can reach 5 litres, and in only one case 8 litres volumetric capacity.

It is clear that a strong tradition linked to painted decoration exists. While the whole Halaf sequence presents a “homogeneous” tradition in decorative motifs (geometrical, figurative and symbolic animals as *bucrania*), the Khabur region and Chagar Bazar seem to have a specific code, repeating similar motifs in different sets.

There are numerous geometric patterns of symmetrical type that also have clear parallels in the Khabur valley, particularly the Tell Halaf productions (Oppenheim, 1943, bunttafel I and II), Table of Decorations of Tell Halaf p.25, Typological Table of the sherds from Tell Halaf p.252 and 254.

Decoration in the form of a Maltese cross stands out in Chagar Bazar (Oppenheim 1943: Der Tell Halaf, n.9 p.180, tafel 51) or the reiterative use of the double trian-

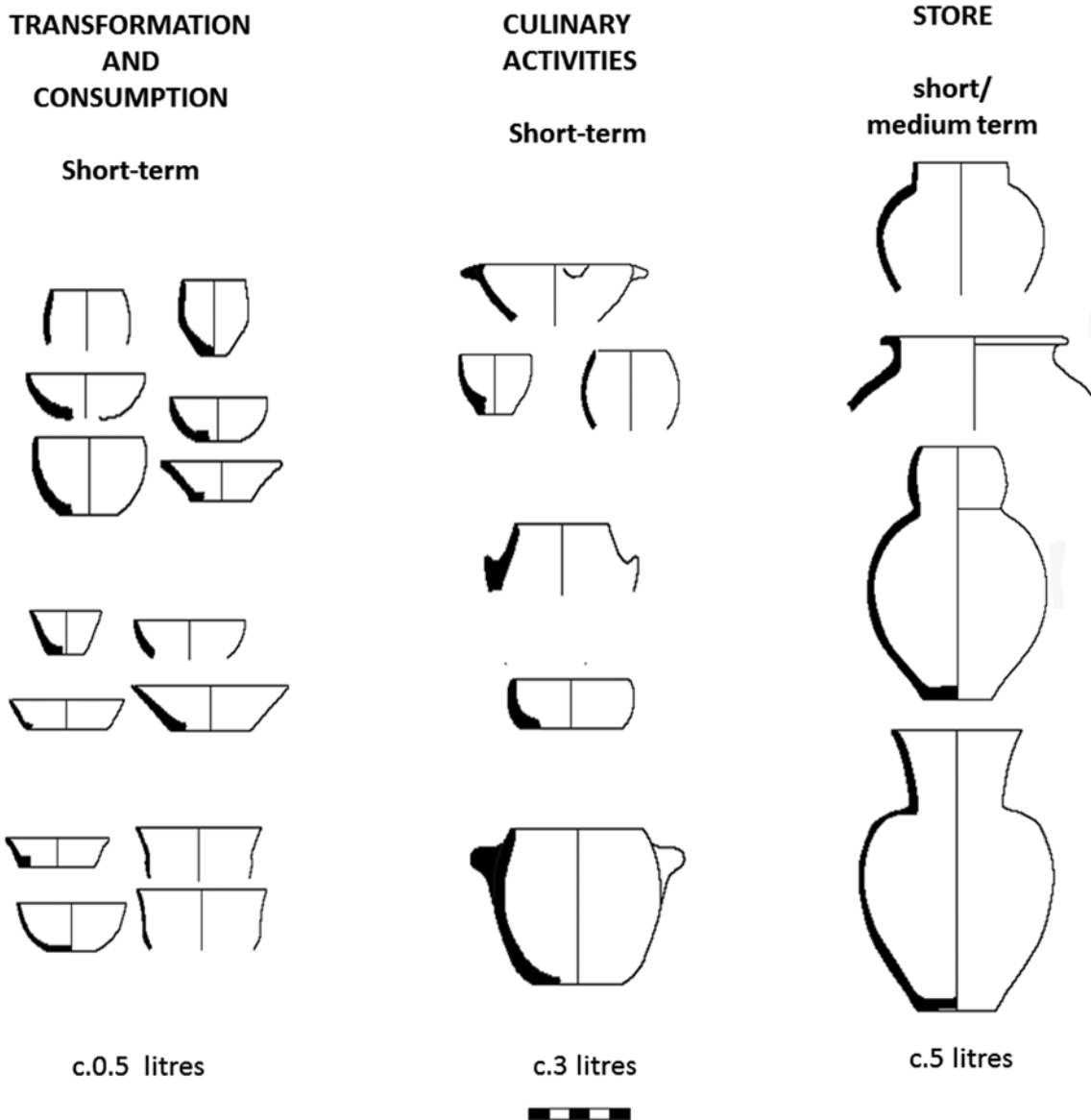


Figure 9. Main sets in a volumetric approach from Late Halaf levels.

gle (Oppenheim 1943: tafel 52) with different geometric motifs next to floral type elements (Oppenheim 1943: tafel 52). Likewise, the vegetal elements are repeated; the most significant is that of cereal, present in Phases V and XI at Chagar Bazar and well documented in Tell Halaf (in Oppenheim 1943: tafel 53) (Cruells 2017).

The recovered zoomorphic representations correspond to seated or standing quadrupeds, namely oxen, bulls, deer and non-determinable. Fragments of the bull's head or bucrania are frequent in the whole sequence.

The next most represented animal group is that of birds. These form scenes in standing position or with wings spread out, as if they were flying; sometimes they

also appear as if they were eating. At the typological level, the presence of pieces reminiscent of the rim jar bowls stands out, but they display an S-shaped profile, a globular type body and a raised foot, which can be associated with very late forms.

FINAL CONSIDERATIONS

Chagar Bazar sequences allow variations to be detected in the spatial distribution and density of artefacts. These data are relative to activities taking place within households and can be identified in them, even though most of them belong to secondary deposits.

Intra-site analysis enables Halaf pottery heterogeneities to be appreciated throughout a valid radiometric data sequence spanning between 6005 and 5327 cal BC. These approaches can be useful for further contemporary Halaf sequences.

At Chagar Bazar, the chronological and stratigraphic position of the ceramic assemblages shows a repertoire consisting, in general terms, of open-pit jars, low and open round bottom bowls, straight wall bowls with decorated lip, small plates, low bowls with flattened lips or open bowls. One clearly identifiable feature is the decoration: the decorative motifs continue to be geometric but their sequence varies and the appearance of polychrome paint on a clear slip is also an innovation. The catalogue differs with forms such as the closed bowls of well-defined low crest with a mixed decoration of incised and painted motifs; this technique is traditionally associated with the final Halaf or Post-Halaf.

One of the difficulties when contextualizing the ceramic productions documented in these deposits lies in the small comparative sample. In the case of Chagar Bazar, the results of the different surveys carried out in the high Khabur allow this site to be complemented with those in the surroundings (Lyonnet 2000), as well as with the excavations at Tell Aqab (Davidson 1977) and at Umm Qseir (Tsuneki/Miyake 1998). More recently, with the Khabur survey project of Yale University (Hole/Tonoike 2016) and Tell Arbid Abyad (Vsiansky/Mateicuicová 2017).

All in all, the site has yielded a complete stratigraphic sequence at a settlement with a long chronology where it is possible to delimit the Neolithic ceramic sequence and to specify the characteristics and typologies of these groups.

Thus, it should be noted that the material studied mainly comes from the 11 anthropic occupation levels so far excavated in area A of Chantier F, associated with architecture and where the material has been differentiated according to its context. Despite these particularities, the Chagar Bazar assemblage has been related to other comparable sites in order to observe concordances and differences.

Both assemblages let us identify shared substrate evidence. Some of them from structural elements like building patterns and other facilities, but others related to cultural traits such as local pottery traditions.

All sets reveal probable exogenous influences. We cannot verify whether these productions (orange ware, Hassuna-related shapes, Ubaid-related shapes) belong to exchange networks or acculturation processes (Gómez-Bach 2011, 2017). In addition, it has been possible to determine specific pottery productions for specific purposes. This seems to be the case of agricultural motifs in decoration that appear throughout the sequences

(Cruells 2017). Sporadically, ritual items related to burial practices or deposits indicate greater investment in time in some shapes, which can be related to complexity, from a technological point of view, or value and prestige from a social point of view.

Finally we would like to note that the Chagar Bazar sequence reveals variations in the spatial distribution and density of artefacts. This is related to activities taking place within households and variation exists in the use and function of each one. Additionally, the Halaf heterogeneity can be appreciated at *intra-site* level within a valid radiometric data sequence and we expect that this exercise will be useful for comparing further contemporary Halaf sequences.

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REFERENCES

- BÖHNER, U., SCHYLE, D. 2006, *Radiocarbon CONTEXT database 2002-2006* <http://context-database.uni-koeln.de/>
- CORNET, Y. 2007, "Approche du contexte géomorphologique de Chagar Bazar et restitution de la paléosurface 'naturelle' sous le tell", in Tunca, Ö.; McMahon, A.; Baghdo, A.M. (eds.), *Chagar Bazar (Syrie) II. Les vestiges "post-akkadiens" du Chantier D et études Diverses*, Publications de la Mission archéologique de l'Université de Liège en Syrie. Louvain-Paris-Dudley, 285-310.
- CAMPBELL, S. 1992, *Culture, Chronology and Change in the Later Neolithic of North Mesopotamia*, PhD, University of Edinburgh.
- CAMPBELL S. 2007, Rethinking Halaf Chronologies, Banning E.B. (ed), *Time and Tradition : Problems of Chronology in the 6th-4th Millennia in the Levant and Greater Mesopotamia/ Temps et Tradition: Problèmes de chronologie aux 6e-4e millénaires dans le Levant et en Mésopotamie septentrionale, Paléorient*, 33, 1, 103-136.

- CHATAIGNER, C. 1995, La Transcaucasie au Néolithique et au Chalcolithique, *Maison de l'Orient Méditerranéen y BAR, British Archaeological Reports, International Series*, 624.
- CRUELLES, W. 2005, *Orígens, emergència i desenvolupament de la ceràmica Halaf a Síria*, PhD, Departament de Prehistòria, Universitat Autònoma de Barcelona, 1-135.
- CRUELLES, W. 2006a, Les sondages préhistoriques (Chantiers E-FI-FII-K), in Tunca, Ö.; Baghdo, A.M (eds.), *Chagar Bazar (Syrie) I. Les Sondages Préhistoriques (1999-2001)*, Ed. Petters Louvain, Paris, 5-24.
- CRUELLES, W. 2006b, La poterie, in Tunca, Ö.; Baghdo, A.M. (eds.), *Chagar Bazar (Syrie) I. Les Sondages Préhistoriques (1999-2001)*, Ed. Petters Louvain, Paris, 25-80.
- CRUELLES, W. 2006c, Les objets, in Tunca, Ö.; Baghdo, A.M. (eds.), *Chagar Bazar (Syrie) I. Les Sondages Préhistoriques (1999-2001)*. Ed. Petters. Louvain. Paris, 81-94.
- CRUELLES, W. 2006d, Chantier E et F. Les datations C14, in Tunca, Ö.; Baghdo, A.M. (eds.), *Chagar Bazar (Syrie) I. Les Sondages Préhistoriques (1999-2001)*, Ed. Petters. Louvain. Paris, 117-119.
- CRUELLES, W. 2006e, Chagar Bazar préhistorique. Esquisse de la séquence d'évolution et la périodisation, in Tunca, Ö.; Baghdo, A.M. (eds.), *Chagar Bazar (Syrie) I. Les Sondages Préhistoriques (1999-2001)*, Ed. Petters. Louvain, Paris, 121-140.
- CRUELLES, W. 2009, Nouvelles données sur les origines et le développement de la céramique Halaf en Syrie, in Astruc, L.; Gaulon, A.; Salanova, L. (eds.), *Méthodes d'approche des premières productions céramiques: étude de cas dans les Balkans et au Levant*, Table-ronde de la Maison de l'Archéologie et de l'Ethnologie (Nanterre, France) 26 février 2006, Verlag Marie Leidorf, 93-103.
- CRUELLES, W. 2017, Transitions and their Chronologies in the Pottery Neolithic of the Near East, in Cruells, W., Mateiciucová, I., Nieuwenhuys, O. *Painting Pots, Painting People*, Oxbowbooks, 11-29.
- CRUELLES, W., NIEUWENHUYSE, O. 2004, Proto-Halaf period in Syria. New sites, new data, *Paléorient*, 30/1, 47-68.
- CRUELLES, W., MOLIST, M., 2006, Chagar Bazar au Sein de la Préhistoire du Bassin du Khabur, in Tunca Ö., Baghdo, A.M. (eds.), *Chagar Bazar (Syrie) I. Les Sondages Préhistoriques (1999-2001)*. Peeters, Louvain - Paris - Dudley (MA), 143-155.
- CRUELLES, W., GÓMEZ, A., BOUSO, M., GUERRERO, E., MOLIST, M., TORNERO, C., TUNCA, Ö. 2013, Chagar Bazar: A new Halafian sequence for Upper Mesopotamia in *Interpreting the Late Neolithic of Upper Mesopotamia*, Leiden 26-28 mars 2009, 467-477.
- CURTIS, J. 1982, Chagar Bazar, Curtis, J. (ed.), *Fifty Years of Mesopotamian Discovery*, British School of Archaeology in Iraq, London, 79-85.
- D'ANNA, A.; BINDER, D. (eds.) 1998, *Production et identité culturelle. Actualité de la recherche*, Rencontres méridionales de Préhistoire récente, Actes de la deuxième session, Arles (Bouches-du-Rhône), Antibes, 8 et 9 novembre 1996.
- DABBAGH, T. 1966, Halaf pottery, *Sumer*, XXII, 23-43.
- DANDRAU, A. 2000, Les enduits peints antiques, *Les Dossiers d'Archéologie*, 253, 41-47.
- DAVIDSON, T.E. 1977, *Regional Variation within the Halaf Ceramic Tradition*, PhD. University of Edinburgh.
- GÓMEZ-BACH, A. 2008, Las producciones cerámicas del Halaf Final en Siria: Tell Halula (Valle del Éufrates) y Tell Chagar Bazar (Valle del Khabur), in Córdoba, J.M.; Molist, M.; Perez, M.C.; Rubio, I.; Martinez, S. (eds.), *Proceedings of 5th International Congress on the Archaeology of the Ancient Near East*, Madrid in April of 2006, UAM editor, 113-122.
- GÓMEZ-BACH, A. 2011, *Caracterización del producto cerámico en las comunidades neolíticas de mediados del VI milenio cal BC: El valle del Éufrates y el valle del Khabur en el Halaf final*. PhD Universitat Autònoma de Barcelona - Université de Liège.
- GÓMEZ-BACH, A. 2013, Las producciones cerámicas del Halaf final en Tell Halula, in Molist, M. (ed.), *Tell Halula: un poblado de los primeros agricultores en el valle del Éufrates, Siria*. Ministerio de Educación y Ciencia, 212-231.
- GÓMEZ-BACH, A. 2017, Investigating painted, incised and impressed ware from the Late Halaf Period, Cruells, W., Mateiciucová, I., Nieuwenhuys, O. *Painting Pots, Painting People*, Oxbow books, 38-51.
- GÓMEZ-BACH, A.; CRUELLES, W.; MOLIST, M. 2013, Black, red and white: characterizing neolithic ceramic productions in middle Euphrates Valley, *7th International Congress on the Archaeology of the Ancient Near East*. *British Museum*, London 12-16 abril 2010, vol III, 527-536.
- GÓMEZ-BACH; CRUELLES, W.; MOLIST, M. 2015, Late Halaf Pottery Productions in Syria: technological approach. Evidences from Tell Halula (Euphrates Valley), *EMAC'09, September 2009, London, European Meeting on Ancient Ceramics*, British Museum, Martinon-Torres, m. ed. Craft and Science: International perspectives on archaeological ceramics, Doha, Qatar, 1-11.

- HOLE, F., TONOIKE, Y. ed. 2016, *Homesteads on the Khabour, Tell Ziyadeh and Other Settlements*, BAR International Series 2827, Archaeopress.
- LAWN, B. 1973, University of Pennsylvania radiocarbon dates XV, *Radiocarbon*, 15, 2, 367-381.
- LYONNET, B. (ed.) 2000, *Prospection archéologique du Haut-Khabur Occidental (Syrie du Nord-est)*, Bibliothèque archéologique et historique CLV, Beyrouth.
- MALLOWAN, M.E.L. 1936, The Excavations at Tall Chagar Bazar and an Archaeological Survey of the Habur Region, 1934-5, *Iraq*, III: 1-86.
- MALLOWAN, M.E.L. 1937, The Excavations at Tall Chagar Bazar and an Archaeological Survey of the Khabur Region: Second Campaign, 1936, *Iraq*, IV: 91-177.
- MALLOWAN, M.E.L. 1946, Excavations in the Balikh valley, 1938, *Iraq*, VIII: 111-162.
- MALLOWAN, M.E.L. 1947, Excavations at Brak and Chagar Bazar: Third campaign, 1939, *Iraq*, IX: 1-266.
- McMAHON, A., TUNCA, Ö.; BAGHDO, A.M. 2001, New excavations at Chagar Bazar 1999-2000, *Iraq*, LXIII: 201-221.
- MOLIST, M. (ed.). 1996, *Tell Halula (Siria): un yacimiento neolítico del valle medio del Éufrates: campañas de 1991 y 1992*. Ministerio de Educación y Cultura. Dirección General de Bellas Artes y Bienes Culturales. Instituto del Patrimonio Histórico Español.
- MOLIST, M. (coord.) 2013, *Tell Halula: un poblado de los primeros agricultores en el valle del Éufrates, Siria*. Memoria Científica – Tomo I y II. Ministerio de Educación, Cultura y Deporte. Secretaria General Técnica. Subdirección General de Documentación y Publicaciones, Madrid.
- NIEUWENHUYSE, O. 2007, *Plain and painted pottery. The rise of Neolithic Ceramic Styles on the Syrian and Northern Mesopotami Plains*. Palma, Near Eastern Archaeology Paper on Archaeology of the Leiden Museum of Antiquities, Brepols Publisher.
- OPPENHEIM M. F. 1943, *Tell Halaf I. Die prähistorischen Funde*. Berlin, bearbeitet von Hubert Schmidt, Berlin.
- TSUNEKI, A.; MIYAKE, Y. (eds.) 1998, *Excavations at Tell Umm Qseir in Middle Khabur Valley, North Syria*, Al-Shark 1, Department of Archaeology, Institute of History and Anthropology, University of Tsukuba.
- TUNCA, Ö. 2006, Introduction, in Tunca, Ö.; Baghdo, A.M. (eds.), *Chagar Bazar (Syrie) I. Les Sondages Préhistoriques (1999-2001)*, Ed. Petters, Louvain, Paris, 1-4.
- TUNCA, Ö.; BAGHDO, A.M. (eds) 2006, *Chagar Bazar (Syrie) I. Les Sondages Préhistoriques (1999-2001)*, Ed. Petters, Louvain, Paris.
- TUNCA, Ö.; McMAHON, A.; BAGHDO, A-M. 2000a, Première campagne de fouille à Chagar Bazar (Syrie), *Orient-Express, notes et nouvelles d'archéologie orientale* 2000/1: 8-9.
- TUNCA, Ö.; McMAHON, A.; BAGHDO, A. M. 2000b,- Deuxième campagne de fouille à Chagar Bazar (Syrie), *Orient-Express, notes et nouvelles d'archéologie orientale* 2000/4, 91-94.
- VSIANSKY, D., MATEICIUCOVÁ, I. 2017, Analysis of paint on prehistoric pottery from Late Neolithic Tell Arbid Abyad (north-eastern Syria), in Cruells, W., Mateiciucová, I., Nieuwenhuyse, O. *Painting Pots, Painting People*, Oxbow books, 38-51.