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Ceramic Vessel Production, Use and Distribution
in Northern Mesopotamia and Syria
during the Middle Bronze Age II (c. 1800-1600 BC).
A Functional Analysis of Vessels from Tell Ahmar,
North Syria

Silvia Perini

DECLARATION

I hereby declare that this thesis is my own work and effort and that it has not been submitted for any other degree or professional qualification.

Where other sources of information have been used, they have been acknowledged.

1st of April 2014

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

ABSTRACT

The aim of this research is to investigate the functions of ceramic vessels from two well-defined contexts at Tell Ahmar that have been dated to the Middle Bronze Age II (c. 1800-1600 BC). In addition, correlations between socioeconomic activities and ceramic production at a local and regional level are further investigated.

Since there is no one-to-one relation between vessel type and vessel function, the research adopts a multi-dimensional approach formed by the following hierarchical investigations. Firstly, a ceramic typology for the Middle Bronze Age pottery from Tell Ahmar, the first to be undertaken, is constructed to provide a working platform for further analyses. Secondly, interpretations of vessel functions are made based on the techno-morphological implications of vessel use. Moreover, since the ceramic assemblage under investigation represents the systemic inventory of artefacts in use in the rooms at the time of the site abandonment, function of the rooms and relative associations with the composition of the ceramic room assemblage at Tell Ahmar are investigated. In addition, comparative analysis from Northern Mesopotamian and Syrian sites are used in conjunction to suggest functional activities for the defined vessel shapes at Tell Ahmar. Inferences of vessel function are finally supported by the results of ceramic residue analysis and by epigraphic and iconographic evidence of vessel use. Functional activities (i.e. transport, storage, and processing) are further discussed in order to make socioeconomic inferences at both local and regional levels.

This analysis indicated that one of the major activities at Tell Ahmar was associated with long-distance transport and storage, while for those shapes characterised by a perforated base, an association with beer production is suggested. At a regional level, a general similarity of vessel shapes is noted, this being stronger among the Euphrates River Valley sites than in Inner Syria or in the Khabur Valley. However, when these similarities are examined in detail, ceramic production indicates some local distinctions. These variations, which are not associated with any ancient political boundaries, may be explained in terms of local preferences and

requirements that emerged within long-distance flourishing relationships established during this period.

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INTRODUCTION

Statement of the problem and originality of the research

The sociopolitical situation in Northern Mesopotamia and Syria during the Middle Bronze Age (c. 2000-1600 BC, abbr. MBA) was mostly dominated by small, autonomous semi-nomadic communities and by regional state systems. Technological developments and the related flourishing of economic relationships led to an opening of both inter-regional and extra-regional commercial trade. Such relationships, having been particularly intense at the end of the MBA (MBA II), find confirmation in the textual evidence, which informs us of the political administration of the territories and the exchange of goods among the regional states (see Chapter 1). Economically speaking, changes in regional and global events directly influenced ceramic production. There was an increase in ceramic mass production that was enabled by the more widespread use of the fast wheel-torn. Jars containing wine, oil and beer were shipped in large quantities across the region, together with grain, metals, and precious food.

Most of the ceramic investigations undertaken (see, for example, Czichon & Werner, 2008; Cooper, 1997; Del Olmo Lete, 1994; Del Olmo Lete, et al., 2001; Iamoni, 2012; Jakobsen, 2011; Kaschau, 1999; Orthmann, 1981; Orthmann, 1989) have used ceramic material to answer chronological issues, such as, to prove the period of occupation of a site, rather than focusing on vessel function and the composition of the ceramic assemblage, which may reflect characteristics of a site's economic system. In addition, in cases where the analysis addressed economic aspects (Gates, 1988; Sallaberger, 1996), then preferably the written evidence of the MBA has been considered, while ceramic function has assumed a marginal role.

A lack of multidimensional approaches in functional analysis, together with a scarcity of MBA ceramic studies at both local and regional level, has discouraged a broad comprehension of the human culture of the societies in Northern Mesopotamia and Syria. In particular, there is the need for a summarisation of Middle Bronze Age

ceramic morpho-technological features among the Northern Mesopotamian and Syrian sites to allow the basis for a better understanding of the intra-sites relationships that were established over the period studied.

The contribution and the originality that this work offers are twofold in terms of the data analysed and the methodology used. Firstly, the typological analysis of the unpublished stratigraphic material discovered at Tell Ahmar will fill in a gap in the general background of MBA ceramic studies in Northern Mesopotamia and Syria, offering new data, which can be used for further ceramic references and chronological comparisons. This data will provide scholars with the necessary information to work on the ceramic material (vessel technical drawings, temper technological analysis, results of residue analysis, MBA ceramic parallels). Secondly, the originality of this work can be seen in the methodological functional approach adopted that considers a ceramic artefact as a container that was involved in the economic system of the period. With this approach in mind, the selected sherds discovered at Tell Ahmar can offer a crucial source of information about ancient society and past economic systems.

The research aim

The aim of this research is to investigate the function of the MBA ceramic vessel types recovered at Tell Ahmar (North Syria) in order to allow inferences about the socioeconomic system that characterised the site at that time.

This analysis moves from a descriptive approach, based on the examination of the pottery that comes from two well-defined architectural complexes, towards a hypothesised function of each vessel shape type identified. With the vessel functions in place, an inferential reasoning of those vessel functional categories that were involved in the production, use and distribution of ceramic artefacts is further investigated.

This study is both hierarchical and multi-dimensional in that different levels of analysis are ranked, one above the other. From the detailed case study of ceramic material coming from Tell Ahmar, a techno-morphological typology has been built

in order to investigate the functional relationships between the design of the recovered complete or fragmentary reconstructed vessels, and the uses they would most likely have had. Subsequently, further examination of the Tell Ahmar ceramic assemblage, both direct (e.g. residue analysis) and inferential (e.g. contextual analysis), has been undertaken in order to evaluate the results of the postulated relationships. In addition, the hypothetical parameters of the major functional categories of vessel forms at Tell Ahmar have been used in comparison with published data from the other Northern Mesopotamian and Syrian sites in order to refine the hypothesised functions for similar vessel shapes. Ceramic vessel functions have been further used by aggregation into functional activities such as storage, processing and transport in order to infer the wider character of the economic activities at Tell Ahmar during the MBA.

Key words definition

Some preliminary considerations on the key terms used in this work are required at the outset.

Function and use

The terms vessel *function* and *use*, which are repeated frequently throughout this work, need to be clarified. Prudence Rice, who dealt with ceramic functional analysis, suggested a definition that has been adopted in this research:

Function refers to the broad roles or activities or capabilities of ceramics, for example as containers (for storage, processing, transport) or structural materials (e.g. bricks), while *use* refers to the specific way(s) in which a vessel was brought into service for a particular purpose (Rice, 1996a, p. 139).

Ceramic vessels can be divided into utilitarian or non-utilitarian (or symbolic). Ceramic functional analyses are directed toward utilitarian value. People have always made pots in order to meet his primary needs: for cooking, transport, storage, serving and consuming food. Non-utilitarian vessels express ideological or ritual meanings,

such as vessels used as a gift. In this work, the term function refers to ceramic containers only.

James M. Skibo identified three types of artefact functions:

- 1) Techno-function, which included extracting, processing, and storing resources, maintaining technology, and fulfilling the biological needs of people;
- 2) socio-function, which symbolically influences[s] social interactions;
- and 3) ideo-function, which symbolized ideology and conveys other information (Skibo, 2013, p. 14).

This study focuses on investigation of artefact techno-function. However, ceramic functional implications are also used to make socioeconomic inferences.

Behavioural and archaeological systems

The definitions of the terms *behavioural (or systemic) system* and *archaeological system* are also essential at this stage. Michael Brian Schiffer, who better has examined such concepts, affirmed that:

Systemic context refers to artifacts when they are participating in a behavioral system [...]. The activities in which a durable element participates during its life, or systemic context, may broadly divided into five processes: procurement, manufacture, use, maintenance and discard. In contrast, artifacts that interact only with the natural environment, such as those in a dump, are said to be in archaeological context. Needless to say, an artifact may move back and forth many times between systemic context and archaeological context [...] (Schiffer, 1987, pp. 3-4).

Behavioural context refers to the human activities, from acquisition to deposition, that have produced tangible archaeological remains, while archaeological system describes materials that have passed through a behavioural system, and which are now the object of investigation by archaeologists (Schiffer, 1972).

Vessel use life cycle and formation of the archaeological record

With these preliminary definitions in place, we can now look at how the vessel life cycle takes place within both behavioural and archaeological contexts. Vessel use life cycle is formed by six phases: the first five refer to the behavioural system, while the last one to the archaeological system and included the formation of the archaeological record (Fig. 1).

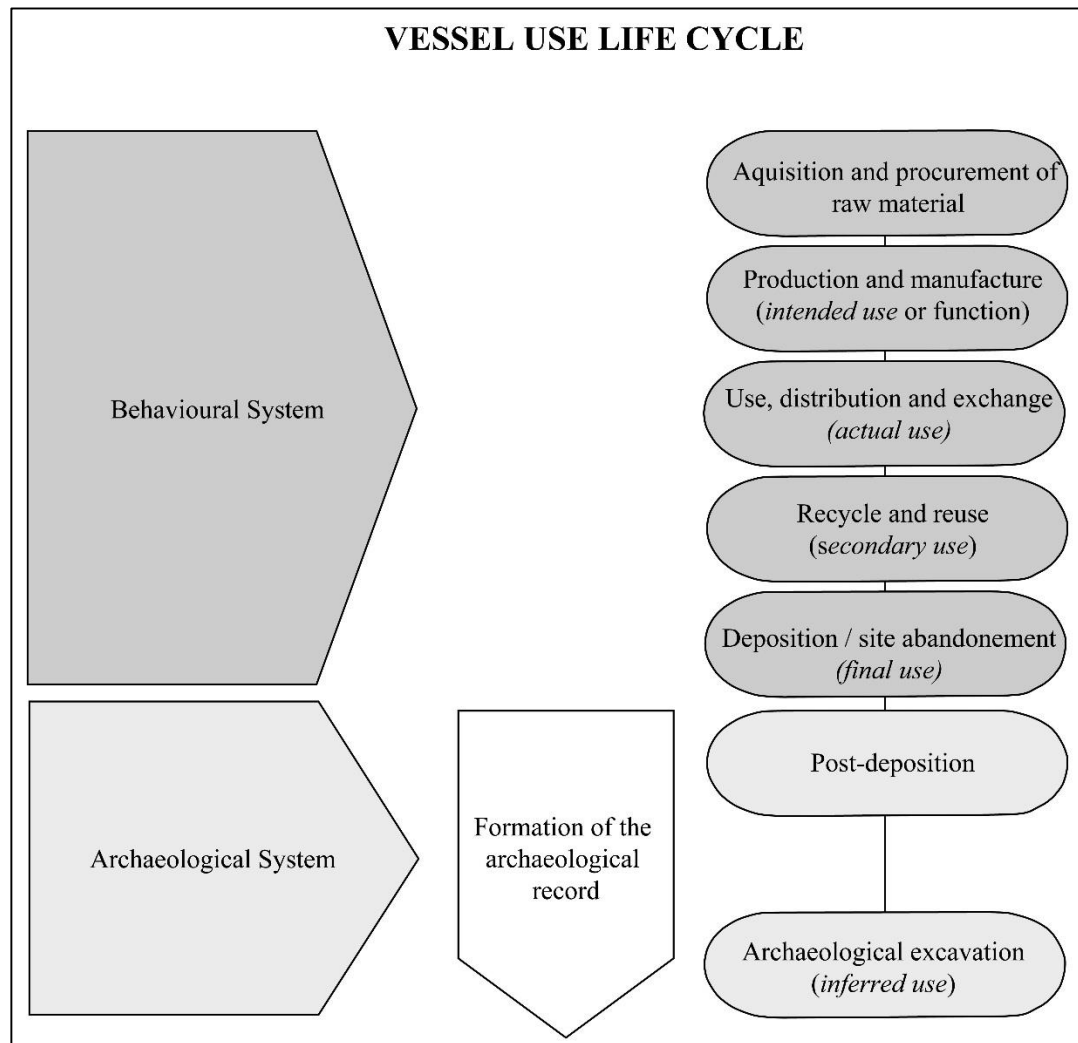


Figure 1. Chart of a vessel use life cycle (illustration: Silvia Perini).

Behavioural system

Vessel use life cycle in a behavioural system includes:

- “Acquisition and the procurement of raw material”, i.e. clay (Tite, 1999). The clay has to be sufficiently plastic for forming. This condition can be achieved by carefully balancing the amount of mineral and vegetal inclusions in the clay. Information regarding the temper and type of clay are studied through microscopic analysis of the ceramic material (see Chapter 5).
- The second phase comprises the processes of “production and manufacture”. It is important to maintain a distinction between these two terms. “Production” is a

broad term comprising the social and economic organisational arrangements within which pottery manufacture is carried out, while “manufacture” includes the techniques that involve the transformation of the raw material into a finished container (Tite, 1999). In the manufacturing process, the *intended use* of a vessel is defined by the potter (Rice, 1996a). Vessel intended use represents the original intention of the potters while making a shape. Vessel intended use can be defined as “the connections between technical choices and function” (Skibo, 2013, p. 2). If we assume that vessels were manufactured to fill in a certain function, it follows that the examination of a vessel technological and morphological features is crucial in order to investigate vessel intended use (see Chapter 6).

- The third phase considers the vessel’s “actual use, distribution and exchange”. *Actual use* is the way in which a container was used in daily practice: for example, in processing, transport, or storage activities (Rice, 1996a) (see Chapter 10). It is important to stress the difference between a vessel’s intended use and its actual use. Actual use is the vessel’s effective employment in the behavioural or systemic context. As Rice has observed, although inferring intended function is an important first step in ceramic functional studies, a complete vessel functional analysis cannot be limited to intended use, but it should proceed with the analysis of vessel *actual use* (Rice, 1996a).

As we seek to make more refined inferences, it is imperative that we start with the most specific information possible for how the container was used throughout its life history (Rice 1996a, p. 140; Tite 1999, p. 182). Understanding intended function is simply not enough in many cases (Skibo, 2013, p. 4).

In terms of actual use, a vessel may also be associated with two further categories: *single use* (for example, where a vessel may have been used exclusively for pouring wine), and *multiple uses* (where the same vessel may have been used for both processing beer and for its subsequent storage) (see Chapter 10).

Vessel “distribution and exchange” also characterizes this phase of the ceramic life cycle. *Exchange* can be defined as the system which promotes the transfer of goods through the use of ceramic containers, while *distribution* can be simply

interpreted as the spatial location of archaeological artefacts (Tite, 1999). In the distribution and exchange processes many factors can come into play. The potter may be the immediate vessel user, or the vessel may be distributed within the settlement (intra-site), or designated for export to another site (inter-sites). Investigations on “distribution and exchange” have been undertaken on both intra-site and inter-sites levels (see Chapters 8 and Conclusions).

- The fourth phase of the vessel use life cycle involves the “recycle and reuse” process which may have taken place within the behavioural system in which it was produced. One should differentiate between *reuse*, which may imply that either a vessel is used again for the same function (e.g. a broken vessel used to transport water vessels can be restored by the potter and reused in the same manufacturing behavioural system), or for a different function (e.g. a storage jar reused as jar burial), and *recycling* which refers to the breaking down of the used vessel into raw materials which are used to make new items (e.g. for tools, in games, or employed in construction such as mud-brick, or as an architectonic ornamental element). Vessels involved in the process of recycle and reuse acquire an alternate, later, or *secondary use*, which, in some cases, may dramatically differ from its original function (see Chapter 4).
- In the last phase of the behavioural system, the “deposition”, artefacts are discarded. In this phase the artefact moves from the use (whether actual or secondary) within the behavioural system to the archaeological system (*final use*) (Rice, 1996a).

Archaeological system

The movement of the material between behavioural and archaeological systems is directly responsible for the accumulation of archaeological sites, and it constitutes the dominant factor in the formation of the archaeological record. Vessel use life cycle in the archaeological system includes “post-depositional process”, which refers to all the processes that happen to artefacts from the time they were abandoned by past people to their discovery during archaeological excavation. During this phase,

vessel use changes from *final* to *inferred use*, which is the use supposed by the archaeologist (Rice, 1996a). As Rice observed:

The most abundant and varied approaches to archaeological analyses are those involving indirect evidence of use, yielding conclusions that must be phrased as ‘inferred uses’. Early studies of ceramic function tended to dwell in this realm, and were based on fast and loose reasoning drawn from intuitive expectations, ethnographic analogies on the uses for which certain forms were deemed to be ‘best suited’, and ceramic engineering (design principles based on high-fired industrial ceramics) (Rice, 1996a, p. 140).

The factors that create the behavioural and archaeological records at a site are known *formation processes*. *Formation processes* refer to the total of the transformations, both natural and cultural, that occurs at a site from its habitation, through abandonment, to post-abandonment. Natural formation processes refer to natural or environmental events (i.e. activities of plants and animals, natural processes of chemical action in the soil, hydrology, etc.), while cultural formation processes include deliberate or accidental activities of humans (i.e. later rebuilding, agriculture).

Cultural formation processes are responsible for retaining items in systemic context (by reuse) to form the historic record, for depositing artifacts, thus creating the archaeological record, and for subsequent cultural modifications of material in either record (Skibo, 2013, p. 7).

The ceramic material taken into consideration in this work comes from two specific architectural units, which were destroyed by a fire and subsequently abandoned. In order to make inferences about past cultural behaviour based on present observations of archaeological context, it is necessary to take into account the natural and cultural processes which operated in the past and that influenced the current archaeological record (Baker, 1975) (see Chapter 3).

Research questions

This work aims to answer two complementary questions:

- 1) What were the Tell Ahmar ceramic vessel shapes used for?

- 2) What does the vessel functional analysis from Tell Ahmar reveal about the site's socio-economic system?

Answer to the first question requires a multi-dimensional approach, which included ceramic technological, morphological, residual, distributional, epigraphic and iconographic implications of vessel function. In addition, with the socioeconomic inferences of Tell Ahmar in place, this work offers a broader view of the site and its significance within the wider MBA in Northern Mesopotamia and Syria.

Organisation of this thesis

This thesis is made up of three parts, consisting of ten chapters, as well as an introduction and a conclusion. At the end of each chapter, a summary of the research findings is given.

The Introduction provides a general background of the problem along with a clarification of the key words used in this work. The vessel use life cycle offers an outline of the distinctive steps of the ceramic functional analysis undertaken in this work.

Part 1 (Background of the Research) is formed by four chapters. Chapter 1 introduces the topic of this research from a geographical, chronological and historical point of views. In particular, the historical background, mainly based on epigraphic sources, stresses the administrative and economic relationships among the MBA kingdoms, representing the framework upon which ceramic functional categories discussed in the Conclusions can be understood. Chapter 2 provides a critical summary of ceramic functional studies undertaken so far, emphasising the lack, but promoting the potentials of such approaches. Chapter 3 deals with the Middle Bronze Age archaeological evidence from Tell Ahmar, focusing in particular on stratigraphic and chronological sequences. Calibrated dates undertaken at the site are discussed and compared with ¹⁴C dates from contemporary Northern Mesopotamian and Syrian sites. In addition, ceramic relative contemporaneity from Middle Bronze Age sites is also examined in this chapter. The research methodology is discussed in Chapter 4, along with a discussion on the significance of the site formation process.

Ceramic multi-dimensional analysis from Tell Ahmar is discussed in three chapters in Part 2, which represents the core of the ceramic analysis investigations. Chapter 5 and Chapter 6 focus respectively on ceramic technological and morphological classifications and typologies. In Chapter 6, in addition, an insight of the composition of the ceramic material recorded at the site is given. In Chapter 7, outcomes of vessel residue analysis are discussed based on the data offered by the examination of the occurrences of two main compounds, oxalic and tartaric acids.

With the ceramic data analysis in place, Part 3 deals with vessel functions suggesting socio-economic inferences for the ceramics discovered at the site. Interpretation of the room functions and ceramic distributional analysis is investigated in Chapter 8. In Chapter 9, MBA ceramic, epigraphic and iconographic evidence of vessel function is examined, while Chapter 10 deals with the function of the vessel shapes according to the outcomes of the multi-disciplinary approach of Part 2.

With the vessel functions in place, alongside their associated functional activities (i.e. storage, transport, processing), in the Conclusions the Tell Ahmar socioeconomic system has been discussed and linked into contemporary textual evidence. Moreover, a broader view of the significance of this study along with some suggestions for further studies has been provided in this conclusive part.

Three additional appendices have been added at the end of this thesis. Appendix A displays the morphological types identified at Tell Ahmar (i.e. bases, body decorations, handles, and pot-stands). Appendix B provides the temper typology in table form, while photographs of the tempers are also included. Appendix C exhibits the drawings of the vessel shape types according to the technomorphological categories discussed in Chapter 6. It also illustrates regional comparisons for the key functional shapes discussed in Chapter 3.

PART 1 – BACKGROUND OF THE RESEARCH

From the mouth of the Sajur a number of mounds are visible on the farther bank of Euphrates. The nearest, which rises at the water's edge, about a mile downstream, was, we were informed, Tell-Ahmar, where, as our information went, was to be seen “writing like nails”. Two ferryboats ply from a small village at the foot of the mound to serve the increasing wagon traffic which now takes the direct route from Aleppo to Urfa. The river is very broad at this point, and it was early afternoon ere we landed at Tell-Ahmar. There proved to be much more there than we had expected (Hogarth, 1909a, p. 177).

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

1. Northern Mesopotamia and Syria during the Middle Bronze Age

This chapter offers a geographical, chronological and historic framework of the MBA in Northern Mesopotamia and Syria. The historical background is discussed according to the textual evidence coming from the most important MBA archives. With the cultural framework in place, this chapter offers the basis to understand the political and economic context in which Tell Ahmar belonged. This context is a crucial element which will help and further discussed in the final part of this work together with the evidence from the ceramic material.

Geographical background and regional provinces

The term “Northern Mesopotamia and Syria” refers to the modern countries of Turkey, Syria and Iraq. Tell Ahmar and the other sites taken into consideration in this research are located in this geographical area. According to their distribution, sites were groups in seven regional provinces, which included the Euphrates Valley (Upper and Middle sectors); the Sajur Valley (Euphrates’ western tributary); the Balikh Valley (Euphrates’ eastern tributary); the Upper Khabur Valley (Euphrates’ eastern tributary); the mid-Orontes Valley; and the Inner Syria (Fig. 2).¹

¹ Please note that the MBA sites located on the Syrian Mediterranean coast (e.g. Ugarit, Tell Tweni, Tell Sukas) have not been taken into consideration in this research because they belong to a different regional tradition (Levant). These settlements share cultural links with Palestine, forming a distinct unit from the Northern Mesopotamian and Syrian sites (Tubb, 1983).

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

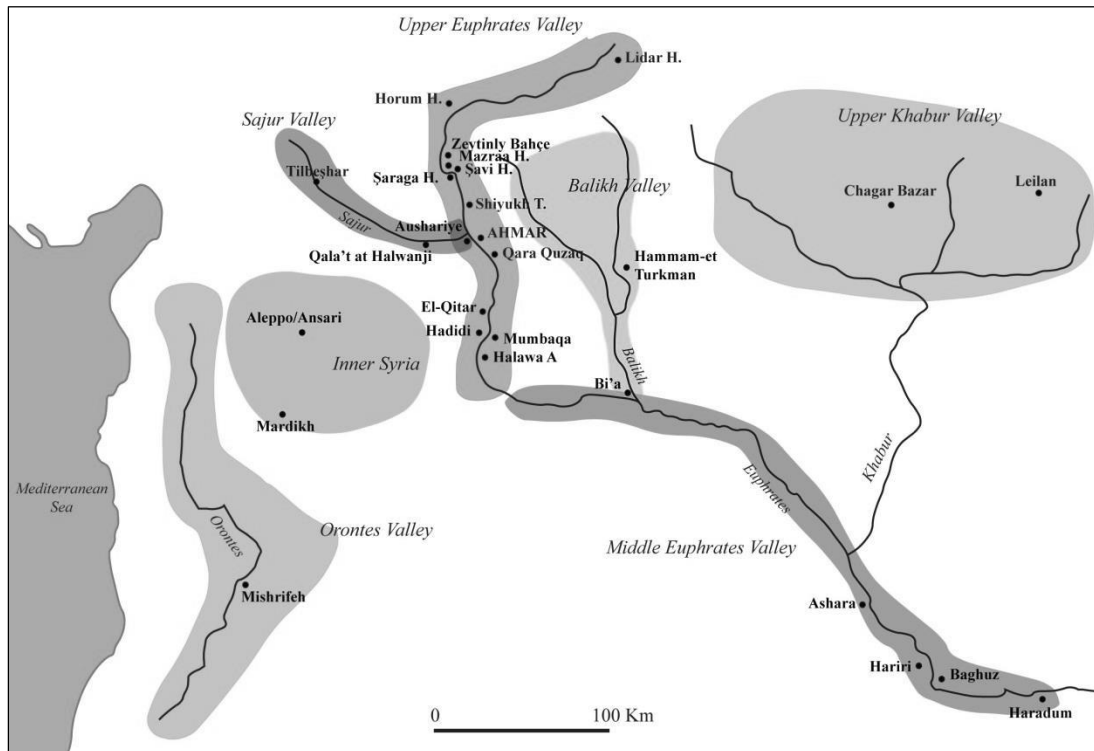


Figure 2. Map of the MBA sites taken into consideration in this work (map: Silvia Perini).

The Euphrates is the longest (c. 2700 km) and one of the most historically important rivers of Western Asia. It originates in eastern Turkey, it flows through Syria and Iraq where it joins the Tigris in al-Qurnah, and it empties into the Persian Gulf (Fig. 3). Several archaeological sites have been excavated in this area especially after the construction of the dams projected to generate electricity and irrigate the plains in the region.

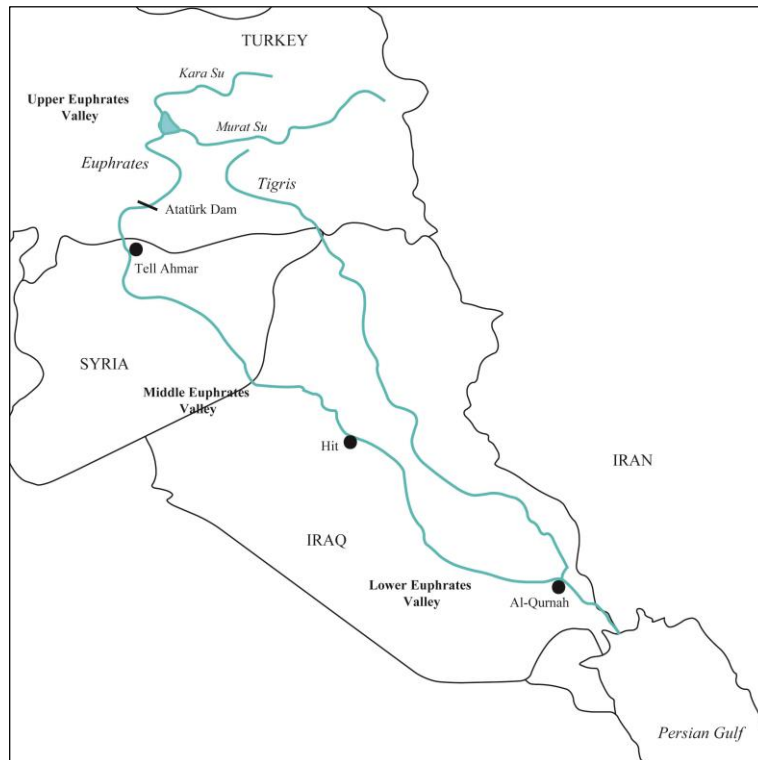


Figure 3. Sectors of the Euphrates River (map: Silvia Perini).

The Euphrates has been divided into three sections: upper, middle and lower (Fig. 3). The upper Euphrates section begins where the river emerges from the confluence of the Kara Su (or Western Euphrates) and the Murat Su (or Eastern Euphrates) in the Armenian plateau downstream to the Atatürk Dam (originally Karababa Dam), in the Anatolia Region of Turkey. The middle Euphrates sector extends from the south of the Atatürk Dam to Hit, a city in northern Iraq, which stands almost at the head of the alluvial deposit, which characterised the Lower Euphrates Valley (Fig. 3). Middle Euphrates Valley sites can be placed according to the dams they belong to that from the north to the south are Birecik, Carchemish, Tishrin, and Tabqa. Although several excavations and surveys have been undertaken in the Birecik and Carchemish area (Kohlmayer, 1984; Geyer & Monchambert, 1987; Algaze, 1989; Algaze, et al., 1994; Tuna & Öztürk, 1999; Tuna, et al., 2001), consistent MBA ceramic publications are still lacking. As for the northern sites, excavations in the Tishrin and Tabqa dams sector began in response to the

international appeal launched by the Directorate of General Antiquities and Museums of Syria to rescue the archaeological sites (Van Loon, 1967; Freedman & Lundquist, 1977; Del Olmo Lete & Montero Fenollòs, 1999; Wilkinson, 2004). However, although some of the sites here investigated are currently underwater, only a couple of them have produced a final publication with a full description of the MBA excavated levels.² Finally, the site located in the southern portion of the middle Euphrates (Mari region) included some of the first sites been excavated in this area (see Fig. 3). To the south of the middle Euphrates Valley there is an area known as lower Euphrates, which extends from Hit to the town of al-Qurnah in the Basra Governorate of southern Iraq, where the Euphrates and Tigris closely approach each other emerging into the Persian Gulf. The Lower Euphrates Valley, also known as “Plain of Babylonia”, has not been taken into consideration in this study, which is limited to Northern Mesopotamia.

The Sajur River is 108 km long, originating in Turkey and flowing into the Euphrates in Syria at Tell Aushariye (see Fig. 2). It is the smallest of the Euphrates’ tributaries, and the only one that joins the Euphrates on its right bank. Recently, two important projects have been focused in this area: the Land of Carchemish Project directed by Edgar Peltenburg and Tony Wilkinson (Peltenburg & Wilkinson, 2008; Peltenburg, 2010) and the survey conducted by Jasper Eidem, which led to the discovery and subsequent excavation of Qala’at Halwanji (Eidem, 2008; Eidem, 2009; Eidem, 2010).

The Balikh River is a perennial river that originates on the Syro-Turkish border. It flows due south and joins the Euphrates at nearby Tell Bi’a (Fig. 2). The sites on the Balikh played an important role during the MBA, as they were located between the Khabur and the Euphrates Valley (Curvers, 1991; Wilkinson, 1993; Bartl, 1994).

² Please note that in this resume, MBA ceramic from Tell Amarna are not taken into consideration since it has been dated to the transitional period EBA IV and MBA I (Pons, 1999; Pons, 2001). Evidence from Tell es-Sweyhat are not taken into consideration either, since the ceramic material dated to MBA I level (Area IV- Period D) does not show a clear distinction between the pottery forms in use during the end of the EBA and the beginning of the MBA I. No evidence of MBA II pottery has been recorded at the site (Holland, 2006).

The inner Syrian sites taken into consideration in this research are Tell Mardikh (Idlib Plain) and Aleppo. However, no archaeological publications on the MBA level of Aleppo are available, but only information on ceramics from a site located in the neighbourhood of Aleppo, called Ansari. The Orontes is a river that originates in the Baalbek District in Lebanon, and flows through Syria to the Amuq valley in the southern region of Turkey (for surveys in the Syrian Orontes Valley see Philip, et al., 2002; Philip, et al., 2005).

Finally, the Khabur, originates in Turkey, is the largest perennial tributary to the Euphrates in Syrian territory. Several important *wadis* join the Khabur north of Al-Hasakah, together creating what is known as the Khabur Triangle, or Upper Khabur area (Mallowan, 1936; Mallowan, 1937; Meijer, 1986; Wilkinson, 2000; Ur, 2002). Together with the Upper Khabur, this river has been divided into Middle Khabur and Lower Khabur (the part that flows into the Euphrates). The MBA sites taken into consideration in this research are located in the Upper Khabur only. Contrary to the Euphrates and the Tigris rivers, the Khabur River was never navigable (Mallowan, 1936).

Middle Bronze Age chronology

Although the main aim of this work is not to establish MBA ceramic chronological sequences, some considerations regarding the chronological system used in Northern Mesopotamia and Syria, as well as the methodology of cross correlation between sites, should be discussed. The major purpose of this analysis is to establish the strengths and weaknesses of evidence for contemporaneity between the material from Tell Ahmar and other sites included in this study (see Chapter 3).

Relative chronology

The MBA in Northern Mesopotamia and Syria lasted about 400 years, from 2000 to 1600 BC. This period has been divided into MBA I (c. 2000-1800 BC) and MBA II (c. 1800-1600 BC) (Akkermans & Schwartz, 2003). This chronological span and the subdivisions of MBA into I and II were based on the stratigraphic material that came

from Tell Mardikh (ancient Ebla, see Chapter 3). The ceramic sequence at Tell Mardikh allowed the archaeologists to make a further partition of both MBA I and II. These periods were subdivided into two more phases, named A and B (Tab. 1) (Matthiae, et al., 1995; Matthiae, 1997a; Nigro, 1999; Nigro, 2003; Nigro, 2009).

DATE (BC)	PERIOD	TELL MARDIKH
2000-1900	MBA IA	III A1
1900-1800	MBA IB	III A2
1800-1700	MBA IIA	III B1
1700-1600	MBA IIB	III B2

Table 1. MBA sequence based on the stratigraphic assemblage from Tell Mardikh (Nigro, 1999).

Based on Ebla's relative chronology, correspondences among sites have been made according to similarities in archaeological finds. Once a ceramic site typology has been built, the most representative vessel shapes were used to cross-date other sites' assemblages. When similarities are noticed, the archaeologist assumes that these shapes were in use at the same period. Although the ceramic material from Tell Mardikh has only been partially studied and published, its stratigraphic sequence of MBA levels is one of the most complete so far (see Chapter 3).

The chronological division presented in Table 1 has also been adopted in this work. Recently, however, different subdivisions of the MBA have been suggested and they propose a different breakdown of the period based on ceramic evidence that comes from sites other than Ebla.

For example, based on the analysis of the ceramic material from Tell Hadidi (Middle Euphrates Valley), Rudolph Dornemann included a further period in the MBA chronological subdivision, which he called "MBA IIC" (Dornemann, 2007). The MBA IIC corresponds to the transitional period between the end of the MBA (MBA II) and the beginning of the Late Bronze Age (LBA I) (Tab. 2).

DATE (BC)	PERIOD	TELL HADIDI
2000-1900	MBA I	Stratum 4
1900-1775	MBA IIA	Stratum 5
1775-1650	MBA IIB	Stratum 5
1650-1550	MBA IIC	Stratum 5

Table 2. MBA sequence based on the stratigraphic assemblage from Tell Hadidi (Dornemann, 2007).

However, from a ceramic point of view, this distinction is not always visible and the majority of the shapes found at Tell Hadidi shows very little change between these two periods (for a discussion of the MBA evidence at Tell Hadidi, see Chapter 3).

Dornemann concluded his analysis by arguing:

Fuller publication is clearly needed to determine whether greater precision is possible in defining distinct MBA IIC and LBA IA assemblages or whether it is indeed best to consider them together as a transitional phase (Dornemann, 2007, p. 46).

More recently, Marco Iamoni has also proposed a different subdivision of the MBA II (Iamoni, 2012; see also Morandi Bonacossi & Iamoni, 2010/2011). The author argued that the MBA ceramic subdivision based on the Ebla ceramic assemblage cannot be representative of the entire region. In particular, the ceramic differentiation into MBA I and II does not show sufficient distinction between the two periods. According to the ceramic material from Tell Mishrifeh (ancient Qatna), the author argued that the MBA should be extended to include the entire 16th century with the introduction of an additional phase, that he called “MB III” (Iamoni, 2012) (for a discussion of the MBA evidence at Tell Mishrifeh, see Chapter 3). Iamoni’s MB III corresponds to the early part of the LBA I in the traditional subdivision (c. 1600-1400).

DATE (BC)	PERIOD	TELL MISHRIFEH
2000-1850	MBA IA	J 18
1850-1770	MBA IB	J 18
1770-1700	MBA IIA	J 16–14; T16–15 (N. & S. Buildings) T14–13 (E. Palace)
1700-1600	MBA IIB	J 13–11; T14–13 (E. Palace)
1600-1500	MBA III	J10; T12

Table 3. MBA sequence based on stratigraphic assemblage from Tell Mishrifeh (Iamoni, 2012).

For the time being, however, the MBA chronological system adopted in this work is based on the Ebla relative chronology (i.e. MBA I and II). Regarding the subdivisions into sub-phases, both I-II and A-B, there are just a few other Euphrates sites (apart from Tell Hadidi) which managed to associate pottery to MBA A or B partitions (see Chapter 3). For the majority of the sites under investigation, there is simply no distinction between these sub-stages.

Absolute chronology

A more exact method used to establish chronologies is through absolute dating. Absolute dating defines age with reference to a specific timescale, based on measurable physical and chemical qualities (e.g. ^{14}C), or on historical associations such as written records. However, an incompatibility between historical and archaeological data and calibrated according to the date of the Hammurabi's reign has generated different chronological systems that range from the ultra-low to the ultra-high chronologies (Albright, 1966; Dever, 1992; Gasche, et al., 1998; Lacambre & Tunca, 1999).

The “Middle” chronology, which dated Hammurabi of Babylon's reign to 1792-1750 BC, has found favour with many scholars and it is also used in this study. Although recent developments in radiocarbon dating have been used to date some Northern Mesopotamian and Syrian ceramic assemblages, the chronological sequences of the sites considered in this work are mainly based on ceramic relative chronology (see Chapter 3).

Historical and political background

Crisis at the end of the Early Bronze Age

At the end of the Early Bronze Age, a crisis took place among the Eastern Early Bronze Age cultures: namely, the collapse of urban sites. This phenomenon affected various parts of the Middle East: Egypt, Palestine, Anatolia, Syria and the Aegean. However, thanks to a number of textual sources that shed some light on the issue, the

situation in southern Mesopotamia can be assessed with more clarity (Barton, 1925; Kamp & Yoffee, 1980). By contrast, in northern Syria, this event is still obscure, while the lack of homogeneous evidence makes the nature of its collapse more difficult to understand (Gerstenblith, 1980; Kupper, 1992). For this reason, this period of Syrian history, which began after the destruction of the archives at Ebla, is known as the "dark age" (c. 2100 BC) (Cooper, 1998; Akkermans & Schwartz, 2003; Cooper, 2006; Kuzucuoğlu & Marro, 2007).

Archaeologically speaking, different forms of evidence characterize this phenomenon: many sites were abandoned, while others showed a considerable reduction in their size (Cooper, 1998; Finkebeiner, 2007). However, there were also some other sites that showed no signs of having been decreased or abandoned. Regarding this issue, some scholars, by studying the existing archaeological evidence, and through paleo-botanical and faunal analyses, wonder which cause or circumstance was the trigger, or cause, of this crisis. Subsequently, they have thought about how and why such a crisis occurred, and finally, they have begun to ask what could have made a difference? Scholars have adopted different positions over the last few years on this issue. Although this is not the place to analyse these in detail, a brief excursus of the main opinions is here given. These opinions have included discussion of various kinds of environmental shocks: catastrophic natural disasters such as continuous earthquakes (Schaeffer, 1948), volcanic eruption, and the later climatic changes (Weiss, et al., 1993; Weiss & Bradley, 2001; Weiss, in press), and decreases in the available sources of water (Bell, 1971) or a drop in flood levels along the major rivers. The arrival of the Amorite, a semi-nomadic people who had come from the west, has been also investigated to understand this phenomenon (Kupper, 1959; Albright, 1966; Kenyon, et al., 1970; Kupper 1992).

More recently, some changes to aspects of this crisis have been proposed. The crucial point of this new research emphasizes that the collapse should not be accepted as an individual phenomenon, but instead that it was formed by a number of different aspects. These facets are defined by variables of place and time. Therefore, it is now considered a common opinion that climatic changes could have been the

trigger, but not the cause of the decline of the urban civilization (Wossink, 2009). Variability may depend on socioeconomic (Butzer, 1997), and environmental local features (Wilkinson, 1994; Wilkinson, 1997; Peltenburg, 1999; 2000; Peltenburg 2007b; Wilkinson et al., 2007). However, one could argue that, by emphasizing the peculiarity of the behaviour of the Middle Euphrates settlements, it would paradoxically seem that their rural nature, as opposed to the urban centres, was, in fact, helpful in avoiding the collapse of the end of the Early Bronze Age. This is because the diversity of their subsistence base enabled the lifestyle of the population to adapt to the transformation in progress (Cooper, 2006).

These distinctive interpretations add a lively contribution to this debate, despite the fact that they can occasionally be deemed as being inconsistent due to recent archaeological material, or because of their use of different methodological approaches. However, researching causes and reasons for this crisis from a climatic, socioeconomic and political point of view is now a common approach.

The Amorites

Textual documents from the Ur III Dynasty in South Mesopotamia refer that during the end of the Third Millennium BC, the semi-arid area of the Djebel Bishri, a region northeast of Palmyra (Fig. 4), was inhabited by a semi-nomadic group known as the Amorites (Barton, 1925; Gelb, 1968; Kamp & Yoffee, 1980; Fleming, 2004). The term “Amorite” (Sumerian MAR.TU; Akkadian Tidnum or Amurrūm) was used for a compass direction designating “the west” (Whiting, 1970; Van Seters, 1972; Sallaberger, 2007). This term, however, does not necessarily refer to a well-defined tribal or ethnic group, but is more a general designation for semi-nomadic people coming from the west (Van de Mierop, 2007; Wossink, 2009).

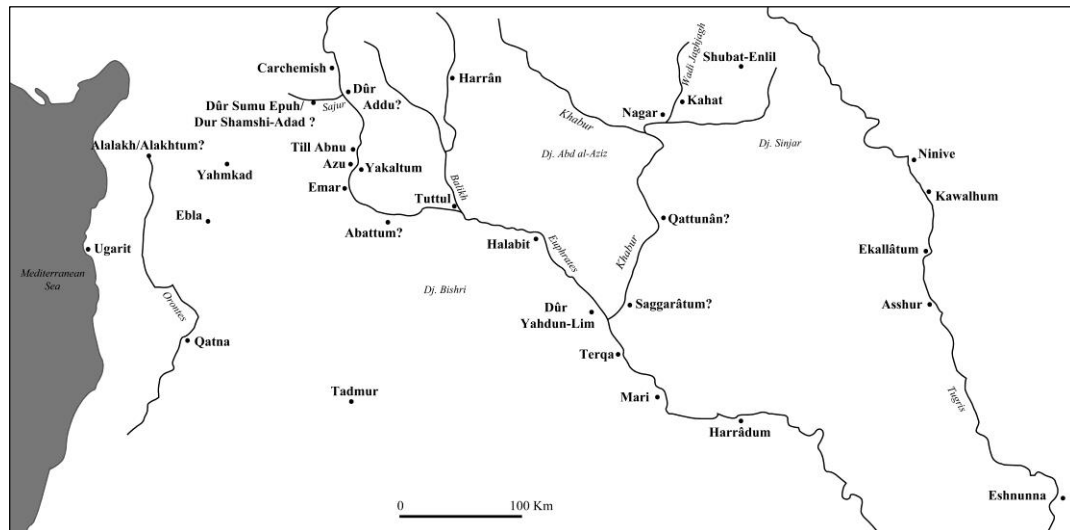


Figure 4. Historical map of the MBA sites in Northern Mesopotamia and Syria (map: Silvia Perini).

As Mari textual sources inform, there were several semi-nomadic ethnic groups who gravitated along the river and around Mari: among these were the Khaneans, who named the region of Khana, and who occupied lands around Mari, Terqa and the Khabur River; and the Suteans, who occupied lands to the west of Mari, to the oasis of Palmyra (Tadmur), and as far as Qatna (Tell-El-Mishrife) in the west. In particular, around Mari there were two main tribes: namely, the Sim'alites (in the north), and the Yaminites (in the south) (Kupper, 1957; Kupper, 1959; Kamp & Yoffee, 1980). Amorite documents do not exist. The only evidence that we have from these people are personal names and the names of deities. The different structure of their names indicates their language was West Semitic, in contrast to the East Semitic Akkadian language.

Today, one can assume that these people were not completely nomadic, as had previously been thought, but were contemporaneously both nomadic and sedentary (Fleming, 2004; Porter, 2007). They adopted both life-strategies depending on the economic, political and climatic circumstances of the day. The interaction between semi-nomadic and sedentary people took place on several levels. They were economically dependent (one producing animal products and the other agricultural goods), and were thus often in a peaceful relationship with each other (Van de

Mieroop, 2007). On the other hand, geographical proximity and economic interdependence were also causes of contention between them (Oppenheim, 1967; Charpin, 2004).

The kingdoms of Mari, Shubat-Enlil and Yamkhad

Around 1815 BC, Mari, having already been weakened after the death of the dominion of the Shakkanakku Period (c. 1900 BC), fell under the control of the first Amorite leader, Yakhdun-Lim (c. 1810-1794 BC), who had extended his land from Mari to Tuttul (Tell Bi'a), including part of the Upper Khabur Region up to the Wadi Jaghjagh, and to Eshnunna in the south (Charpin, 1991; Charpin & Ziegler, 2003; Fleming, 2004). Yakhdun-Lim built a canal between the Khabur and the Euphrates (Ishim-Yakhdun-Lim) and founded a new city, Dûr-Yakhdun-Lim. This city has been identified with Tell Mohasan, and is placed not far from the confluence of the Khabur River and the Euphrates (Cooper, 1997) (Fig. 4). Later, Yakhdun-Lim's kingdom extended as far as the Mediterranean Sea. This was a great achievement, both from an economical point of view (the area being rich in cedar trees), and a symbolic one (as extending to the coastline symbolised the concept of "universal empire"). However, across the Jaghjagh, the reign of Shamshi-Adad I (c. 1835-1778 BC) had begun, and after several years of conflicts, Yakhdun-Lim lost territory to him.

Shamshi-Adad created a tripartite administration for his kingdom, known as the "Kingdom of Upper Mesopotamia". He established himself at Shubat-Enlil (Tell Leilan) (Charpin, 1987; Eidem, 2011). His youngest son, Yasmakh-Adad, was installed as governor of Mari and ruled the area to the west of the Euphrates River (Villard, 1970; Veenhof, 1985; Durand, 1987) while his eldest son, Ishme-Dagan, became governor of Ekallatum and controlled the banks of the Tigris, and the region up to the Sinjar mountains (Fig. 4) (Fleming, 2004). Shamshi-Adad I, moreover, agreed an alliance with Qatna, sealed by his son's marriage to the princess Bêltum (Klengel, 1992).

Contemporary to Yasmah-Adad at Mari, the Amorites also established themselves in Yamkhad (Aleppo). The reign of Sumu-Epuh, the first king of Yamkhad (Villard, 2001), was very long, dating from approximately 1810-1780 BC (Charpin, 1984). The extension of his territory is still unclear, but it certainly controlled the rich agricultural region as far as Tuttul stretching to the Orontes River in the west, and bordered with Qatna to the south (Klengel, 1992). Because of the hostile relationship between Shamshi-Adad I and Sumu-Epuh, the territory between the Old Assyrian Empire and the kingdom of Yamkhad was carefully demarcated. In this case, the Euphrates served as a convenient political boundary. The fortress of Yakaltum and two citadels named Dûr-Addu and Dûr-Sumu-Epuh (the latter's name was probably changed later to Dûr-Shamshi-Adad) were situated in the territory between Mari and Yamkhad (Durand, 1990b). Nevertheless, although the city of Yakaltum can arguably be identified with Tell Mumbaqa in the Euphrates Valley (Wu, 1992; Villard, 1993), the exact location of Dûr-Addu and Dûr-Sumu-Epuh is still not clear (see also Chapter 3).

The final period of Shamshi-Adad I's empire was a very difficult one because of the continuous attacks made by Yamkhad from the west. In addition, the war between Yamkhad and Shubat-Enlil also involved other kingdoms: Eshnunna and Babylon, for example, were supporters of Yamkhad, while Qatna supported Shamshi-Adad I (Klengel, 1992). However, probably after a short illness, Shamshi-Adad I eventually died (Charpin & Durand, 1985). After his death, neither Yasmakh-Adad nor Ishme-Dagan managed to keep the vast kingdom of their father.

In Yamkhad, after Sumu-Epuh's death, his son Yarim-Lim (c. 1780-1765 BC) acceded to the throne. He inherited not only a wide range of kingdoms (the kingdoms of Upper Mesopotamia, Mari and Qatna), but all the enemies of his father as well. The war between Yarim-Lim and the Old Assyrian Empire brought a number of other kingdoms into the equation, Eshnunna and Babylon supported Yamkhad, while Qatna gave its support to the Old Assyrian Empire. The strategy that Yarim-Lim exercised in northern Syria was supported by a tactical plan based on maintaining good relationships with all the kingdoms of the north: these were Carchemish, under

King Aplahanda; Urshum, a north-eastern Syrian centre under King Shennam; and Mari, where there was also a change of ruler, Zimri-Lim (c. 1775-1762 BC) having replaced Yashmah-Addu (Larsen, 1976).

The king of Mari Zimri-Lim was not only in a very good relationship with Yamkhad, he married the daughter of Yarim-Lim of Yamkhad to maintain a friendly relationship with the strong western power, but he also established profitable commercial contacts with Qatna (Durand, 1984; Sasson, 1984b; Durand, 1985). During the Zimri-Lim Empire, the city of Abattum belonged to Mari, while Emar, which controlled the transit trade from the Euphrates to the east, belonged to the kingdom of Yamkhad (Klengel, 1988; Klengel, 1992). It would seem that the territories under the jurisdiction of Mari included the entire left bank of the Euphrates River, stretching as far as the town of Abattum in the north. Yamkhad controlled Emar and probably the entire right bank of the river as far as Carchemish in the north. This, therefore, replicated the situation that existed during the reigns of Yakhdun-Lim and Shamshi-Adad I. In Yamkhad, after the death of Yarim-Lim, his son Hammurabi I (c. 1765-1760 BC) acceded to the throne. His reign was characterised by good relations with the neighbouring kingdoms of Mari (Zimiri-Lim), Carchemish (Aplahanda), Ugarit and Babylon (Hammurabi), maintaining the precepts of his father. From a letter of Zimri-Lim, however, it appears that the kings of Mari and Yamkhad discussed a question on the pastureland territories of Carchemish, obviously a point of great interest to both kings. Emar also belonged to Yamkhad (Durand, 1990a). On the other hand, towards the south, Qatna (Amutpi'el) remained an independent and powerful state.

Zimri-Lim reigned at Mari until Hammurabi, king of Babylon (c. 1792-1750 BC), destroyed the city in 1761 BC, and it was never again rebuilt. The kingdom of Apum (Upper Mesopotamia) fell under the influence of Yamkhad to the west. During this period, it is possible that the state of Carchemish was also included in the kingdom of Yamkhad, even though the presence of a dynasty in Carchemish is attested (King Yatar-ami and King Yakhdun-Lim). Texts from Shubat-Enlil also indicate the dominant rule of Yamkhad in the Khabur Region (Eidem, 2011).

After the reign of Hammurabi I, his son, Abba'el, became king of Yamkhad. He ruled over a territory of North Syria from the Mediterranean Sea up to the Euphrates (Klengel, 1992), while his brother, Yarim-Lim II, ruled at Alalakh. During this period, Emar belonged to Yamkhad, while Carchemish was probably under Aleppo's rule as well. Abba'el's reign at Yamkhad was followed by the reigns of Niqmi-Epuh, Irkabtum, Yarim-Lim III and Hammurabi II (c.?-1595 BC), all of whom belonged to the same dynasty. It is, therefore, quite clear that the sequence of kings of Yamkhad extended over a period of about two centuries, although it is often difficult to prove whom exactly did what during that period. Nevertheless, we can affirm that during the MB II period, Yamkhad remained the strongest power in Northern Mesopotamia, at least until its conquest by Murshili I of Hatti.

The Kingdom of Khana

After c. 1761 BC, when Hammurabi destroyed the city of Mari, it was replaced by the kingdom of Khana as the principal power on the Middle Euphrates (Podany, 2002). Thus, geopolitically, the Khana region, which had always been controlled by Mari, changed dominion, and was ruled by Terqa (Tell Ashara). Significantly, even before the discovery of the administrative material from Mari, the city of Terqa was a precious source of epigraphic documents (Buccellati, 1988). These documents show significant information about the kingdom of Khana, under both Mari and the later Terqa rule, and, although there is not an official list of the kings of Khana, excavations at Terqa have made possible a probable sequence of kings. From this, it would seem that there have been at least eleven kings of Khana.

Under Terqa, the kingdom of Khana controlled the territory of the Khabur basin, at least to the south of the Khabur triangle. To the west, it ruled the steppe land, probably as far as Palmyra, while to the south it bordered on the kingdom of Babylon. This proximity has been the cause of several conflicts between the two kingdoms.

The minor kingdoms: Qatna, Carchemish, Ugarit, Alalakh and Ebla

Contemporary to the two major kingdoms of Mari and Yamkhad, other vassal states shared this territory during the beginning of the MBA (Dossin, 1952). During these hegemonies, some places more or less continuously retained their independence. Cities such as Qatna, Carchemish, Ugarit, Alalakh and Ebla, in fact, seem to have avoided the occurrences of political and military upheaval. They also had, in all probability, their own kind of local dynasties.

The Kingdom of Qatna (Tell Mishrifeh), in the middle Orontes region, was one of the major states during the period between c. 1800-1600 BC. Qatna, ruled by Ishhi-Adad (Dossin, 1954; Durand, 1987) was united with Shamshi-Adad I against Yamkhad. Along the route between Qatna and Mari, goods such as timber, tin, horses, and other important merchandise from Syria, northern Palestine and Levant were transported and traded to the Euphrates, and from there to either north or south Mesopotamia (Durand, 1987). In addition, part of the territory of the Qatna region was an area of steppe that served as a place for both periodical pasture and semi-nomadic people.

Carchemish was the most important neighbour of Yamkhad in the north (Kupper, 1992). It represents a key site in the understanding of the historic and political issues of the Middle Bronze Age. Textual information on Carchemish derived from the archives of Mari (Dossin, 1938; Kupper, 2002) and Alalakh (Wiseman, 1953). The beneficial relationship between Carchemish and Mari was not compromised by occasional problems about the passage of messengers and goods. Carchemish was one of the most important river ports in the northern area, while Emar was predominant in the western area (Finet, 1974/1977; Baffi-Guardata, 1994). Mari texts refer that Ugarit was a centre of inter-regional trade between the Euphrates region and the Aegean. Because of its strategic location on the coast of the Mediterranean Sea, Ugarit was the main harbour for the commercial activities of both Yamkhad and Mari.

The ancient city of Alalakh (Tell Atchana) is located in the Plain of Antioch (Turkey), to the northwest, in a key location benefiting from both the natural

agricultural resources of the area, and in controlling the trade from the Mediterranean Sea to inland Syria. The texts that come from the MBA II of Alalakh (Wiseman, 1953; Goetze, 1997; Juan, 2005) are abundant in number. From these texts, one can work out that Alalakh was the capital of the region of Musikh, and a vassal of the Yamkhad kingdom.

Also in the MBA II, the city of Ebla (Tell Mardikh) remained independent from the main powers of Yamkhad and Mari. From the archaeological evidence, archaeologists suggested that the temples and palaces discovered in Ebla were devoted to the veneration of the deceased rulers (Matthiae, 1997a). However, one can argue that such buildings could have been delegated to a ritual and cultic glorification, and not to political use (Akkermans & Schwartz, 2003).

The Hittite invasion and the Old Hittite Kingdom

The last phase of the MBA is recorded from texts that come mainly from the archives of Hattusha (Bryce, 1998). The Kingdom of the Hittites appeared suddenly in Upper Mesopotamia with the emergence of two kings: Hattushili I (c. 1650-1620 BC) and Murshili I (c. 1620-1590 BC). The Hittite invasion took place in Syria around the middle of the 17th century.

The reason for the Hittite invasions has to be connected to a particular factor: the emergence of a state (Hatti) and a monarchical rule. In addition, natural wealth and productive resources, such as precious metals, objects of prestige, and so on, also contributed to the development of political and economic centres in the region. By the beginning of Hattushili I's kingdom, he already dominated the central part of Anatolia in the area from the Black Sea to the Mediterranean Sea. Two other powers dominated in the same period: the kingdom of Yamkhad in northern Syria (and in some places that depended on it, for example, Alalakh and Carchemish); and the Hurrians, in northwestern Mesopotamia. Hattushili invaded the kingdoms of Yamkhad and Alalakh, although the city of Aleppo remained uncaptured (Van de Mieroop, 2007).

Subsequently, Murshili I, Hattushili's grandson, completed the northern Syrian invasion and overcame Yamkhad. Although there is not enough accurate information about this attack, one can assume that the Hittite power also extended to other centres under the Yamkhad kingdom, and probably included Ebla. Later, Murshili moved to Babylon and destroyed the city in 1595 BC, before returning north, leaving Babylon on its own. It was impossible for Murshili I to extend his power as far as Babylon. His intention was probably to help the kingdom of Khana, in return for Khana's help against Yamkhad. After Babylon, Murshili returned to his own kingdom, where he was later murdered. After his demise, his empire was reduced to the neighbourhood of the Hittite capital, until the coming of the Hurrians.

To summarise, the following table shows the synchronisms of the ruling kings during the MBA (Tab. 4).

	Yamkhad	Mari	Shubat-Enlil	Carchemish	Qatna
c. 1900-1761 BC	Sumu-Epuh Yarim-Lim Hammurabi I	Yakhdun-Lim Yasmakh-Adad Zimri-Lim	Shamshi-Adad I	Aplahanda	Ishni-Adad Amutpi'e I
c. 1761-1600 BC	Abba'el Niqmi-Epuh Irkabtum	Kingdom of Khana		Yatar-ami Yakhdun-Lim	
Old Hittite Kingdom	Yarim-Lim III Hammurabi II		Hattushili I Murshili I		

Table 4. Synchronisms of MBA kings in Northern Mesopotamia and Syria.

The beginning of the Late Bronze Age in Northern Mesopotamia: the Hurrians

Scholars define the beginning of the Late Bronze Age (c. 1600-1500 BC) as the “dark age”, because of the scarcity of information about it.³ Texts are very rare and there is no information about the political and economic organisation of this period. However, together with the existing Hittite Kingdom in Anatolia (Hattusha), new population groups seemed to characterise this period: these were the Hurrians in the north, who established the Mitanni Kingdom, and the Kassites in the south.

The Hurrians probably came from the Caucasus and entered Syria from the north; they set themselves up as rulers of small kingdoms throughout northern Mesopotamia. Several Hurrian principalities were in competition against each other, while their rulers supported the Syrian defences against the Hittites as well. It is not well-defined, however, how the Mitanni Kingdom succeeded in obtaining control of northern Syria. Nevertheless, the military superiority of the Hurrians, founded upon the usage of light horse-drawn war chariots, was probably a decisive factor.

Summary

The geographical region under investigation in this study (i.e. Northern Mesopotamia and Syria), includes seven provinces, namely the Euphrates Valley; the Sajur Valley; the Balikh Valley; the Upper Khabur Valley; the mid-Orontes Valley; and the Inner Syria.

The Middle Bronze Age in Northern Mesopotamia and Syria extends from 2000 to 1600 BC. Chronological subdivision into MBA II and I has been established by scholars according to the ceramic sequence of Ebla, given that radiocarbon dates coming from the region are still very scarce.

During the MBA, three main powers based in Yamkhad (Aleppo), Mari (later replaced by Terqa), and Shubat-Enlil (Tell Leilan), ruled the territories. In addition, several minor kingdoms remained independent for at least short periods (e.g. Carchemish and Qatna).

³ Despite the epigraphic material coming from the Alalakh's archives, the chronology of this period is still not clear.

2. Ceramic functional studies: an overview

This chapter offers a critical review of the research literature that is relevant to the specific research methods applied to the ceramic functional analysis. However, because of the paucity of functional analysis in Northern Mesopotamia and Syria, it has been decided to also discuss some of the key works that refer to several regions of the ancient world over different historical periods.

The purpose of the literature review is to provide a general overview of the relevant information available on ceramic functional studies in order to emphasize their potential. The goal of this analysis is not to discuss these in detail, as this is done throughout the course of the thesis, but rather to emphasise the imbalance between the many attempts undertaken on functional analysis studies in ceramic studies, and on the scarcity of approaches in fact attempted in Near Eastern studies.

The publications taken into consideration in this section include a range of media, such as textbooks, articles, monographs, conference proceedings, journals, and dissertations. This overview follows a thematic and chronological order. The thematic order groups the literature into two main areas: first, an overview of the theoretical studies is given; second, ceramic function and use studies in Northern Mesopotamia and Syria are discussed. These contributions are examined from the oldest to the most recent.

A theoretical background of ceramic functional analysis

Anna Shepard's book *Ceramics for the archaeologist*, first published in 1956, is a pioneering work in ceramic studies that responded to a set of different needs over five decades ago (Shepard, 1956). Referring to the vessel shape in particular, the author argues that:

The relationship between use and shape is rarely unique. The same shape may have a variety of uses, and conversely the same purpose may be served by many forms. Furthermore, we do not know all the uses prehistoric people had for pottery and we are often at a loss even to guess the purpose of

particular forms. Consequently, function is not a satisfactory criterion for general classification” (Shepard, 1956, p. 224).

However, she also emphasises:

It does not follow from this condition that the study of function is unfruitful or unimportant. There are various indirect means of learning how some vessels were used, as, for example, by the conditions under which they are found, by their contents, and from scenes of murals and codices that show vessels in use” (Shepard, 1956, p. 224).

This argument is very important because it represents perhaps the first attempt at an analysis, which connects ceramic vessel shape and its use. According to the author, such a connection can be applied through ethnoarchaeological studies. With this in mind, Shepard concluded, “Vessel function is something to test the archaeologist’s alertness to indirect evidence and his resourcefulness in checking and interpreting it” (Shepard, 1956, p. 224).

During the 1960s, a new approach took hold in ceramic studies: it has been defined as “Ceramic Ecology”. Manifestations of this new approach emerged at the *Ceramics and man* conference held in Austria in 1962, where report proceedings were later published by Frederick R. Matson in 1965 (Matson, 1965a). With the aim of moving the focus of ceramic studies away from vessel technological aspects towards a fostering of the relationship of ceramics with the environment and other aspects of culture, Matson coined the term “ceramic ecology”. Ceramic ecology relates to “the raw materials and technologies that the local potter has available to the functions in his culture of the products he fashions” (Matson, 1965b). Matson’s volume is concerned with the social, psychological and economic factors influencing ceramic production. One paper represented in the book seems to fit very well with the theoretical background of this research, given that it shows a “primitive” explanation of ceramic use and function. The author of that paper, Wilhelm G. Solheim II, examines the uses of pottery in modern Southeast Asian communities (Solheim, 1965). Remarkably, he identified three different levels of pottery functions: its function to the user (which has been further divided into utilitarian pottery and ceremonial pottery); its function to the manufacturer (subdivided into

economic function and psychological function); and, finally, the pottery functions to the community (which include economic, diffusional, and artistic functions). Even if his approach is built upon a strong ethnographic background, Solheim's ceramic function divisions represent an important step forward in creating a new approach to ceramic studies. This approach relied not just on asking questions about what happened when, but about why something had happened, its goal being to explain the processes of change.

Towards the end of the 1960s and throughout the 1970s, a number of primarily American archaeologists, tired of the paradigms of cultural history, proposed a "New or Processual Archaeology", characterised by a more scientific and anthropological approach. The appropriate procedure to study the past, they argued, was in formulating hypotheses and using new methods of deduction, which then had to be tested through the analysis of the archaeological evidence. In this regard, an original ceramic approach based on the functional interpretation of pottery also took form in this period, as discussed by Martin Millett in 1979. The aim of his work, *Pottery and the archaeologist*, was to understand the pottery's "form, structure and context: hence its nature" (Millett, 1979a, p.v). The author presented his work on the pottery of a Roman-British site, where the research had been conducted using a functional analysis approach (Millett, 1979b). This study can be seen as the first attempt at using a ceramic function analysis methodology that was not supported by ethnographic parallels. The methodology used by Millett was based on the assumption that "the shape of a vessel is related to its function" (Millett, 1979b, p. 37). His research, however, considered only complete vessels that had been assigned into functional types (dish, bowl, flagon, beaker, jar, storage jar, lid, mortars), as defined by the relationships between vessel height and rim diameter. A further limitation of his research was that he failed to consider that the vessel could also be a multi-functions container. Nevertheless, Millett's attempt demonstrates just how pottery could be informative in explaining the organisation of a site, and thus, ultimately, explain its society.

It is hoped that similar methods for examining functional differences across a site, or an area, may be used in the future perhaps, for instance, to help determine how a town was organised internally (Millet, 1979b, p. 47).

At the end of the 1970s, a new postmodern movement arose led by some British and American archaeologists. Their approach was called “Post-Processual Archaeology”, and centred on changes in how archaeologists view the various elements of ancient pottery, including the symbolic and political use of form and decoration.

On the basis of Millet’s work, the functional analysis approach seemed to gain in influence throughout the 1980s. Several publications, for example, emphasised the use and function of the ceramic material, as well as its distribution and production aspects. One of these was a book by Hilary Howard and Elaine L. Morris, entitled *Production and distribution: a ceramic viewpoint*, which was published in 1981. It includes a collection of twenty-three contributions by scholars from Britain, Europe and America (Howard & Morris, 1981). The main point of discussion raised by these authors is the role of cross cultural analogy, and ceramic local and non-local production variability, based, again, on ethnographic evidence. Furthermore, in 1982, Jacqueline S. Olin and Aland D. Franklin published several papers presented at a seminar on ceramics and archaeological material held in Washington in 1980 (Olin & Franklin, 1982). Nevertheless, in this volume, entitled *Archaeological ceramics*, the contributions referring to a theoretical and methodological background are, in fact, not many, although in the introduction to her contribution, Prudence M. Rice rightly notes the recent enthusiasm in ceramic studies’ discussions and conferences. She affirms:

A great diversity of approaches has developed from the ethnoarchaeological to the technical [...] an early concern with chronology has been largely replaced by questions involving more social, behavioral, or, in the currently fashionable jargon, “processual” issues. Among these [...] we might include such matters as technological development, and socioeconomic organization of production and trade” (Rice, 1982, p. 47).

However, the focus of this paper is more methodological than theoretical.

In 1983, James A. Moore and Arthur S. Keene published *Archaeological hammer and theories* (Moore & Keene, 1983). One contribution in particular in this volume is worthy of analysis, namely “Pots as tools” edited by David P. Braun (Braun, 1983). Braun’s aim was to encourage a change in the method of pottery analysis in order to fill in the gap between analytical methods and interpretative theory. The ceramic research directions suggested by Braun are, however, limited to analysis of the technological aspects and mechanical performances of ceramic vessels.

A second conference, organized by Sander van der Leeuw, and co-chaired by Frederick Ronald Matson, this being a sequel to the earlier symposium, “Ceramics and Man”, was held in Holland in 1981. The papers presented there have been collected in a book entitled *The many dimensions of pottery. Ceramics in archaeology and anthropology*, by Sander van der Leeuw and Alison C. Pritchard, and was published in 1984 (Van der Leeuw & Pritchard, 1984). Even if the crux of this book is about ethnoarchaeology studies, an important part of the volume also deals with economic organization, trade and exchange (Riley, Vossen and Allen).

During this decade, one of the most active experts in the ceramic studies field was probably Prudence M. Rice. Following the emphasis of *Ceramic and man*, Rice, persisted with the analysis of ceramic technology and the potter’s environment seen through an ethnoarchaeological frame, and published *Pots and potters: current approaches in ceramic archaeology*, in 1984 (Rice, 1984b). This monograph presents several contributions by ceramic experts in the three sections of the volume (potters and their environment; ethnoarchaeological studies; and the technological analysis of pottery). However, no major space is reserved for functional analysis.

Decoding prehistoric ceramics, edited by Ben A. Nelson in 1985 (Nelson, 1985) represents a further step forward in the development of key aspects of ceramic studies: first, in Part One, towards an understanding of ceramic stylistic variation and social organisation; in Part Two of the organisation of production; of form and function in Part Three; and of ethnoarchaeology in Part Four. In the third part, the contribution from Marion F. Smith Jr.’s research entitled “Toward an economic

interpretation of ceramics: relating vessel size and shape to use” fits particularly well with the aim of the current research (Smith, 1985). Based on ethnographic ceramic material from southwest America, the main goals of the author’s research were to connect domestic pottery functions to the size and shape of artefacts; and to collect as much information as possible about the original complete vessel shape from its sherds to determine its function. This included original analysis conducted on ceramic sherds (and not only on complete vessels), as well as considerations about the vessel’s multiple uses, some of which could affect the final interpretation of the artefact.

At the end of the 1980s, Prudence M. Rice published another volume, which today is probably still the most comprehensive survey of American and British approaches to the analysis of archaeological pottery, namely: *Pottery analysis: a sourcebook* (Rice, 1987). This reference book covers the study of pottery from a number of different perspectives: ethnographic, archaeological, ethnoarchaeological, experimental archaeological, chemical and physical. Although no major topic is entirely omitted, most of the space in this book is given to the technological aspects of pottery production (Chapters 2-5, 7, 11-13), and to the theoretical and methodological framework (Chapters 1, 9-10, 14-15). Somewhat less space is given to the ceramic economic and social aspects (Chapter 6), ceramic function (Chapter 7), and style (Chapter 8). In Chapter 7, entitled “Vessel Function: form, technology and use”, a ceramic vessel has been considered as a container whose morpho-technological characteristics “are closely related to their suitability for a particular activity” (Rice, 1987, p. 207). The author places the function of domestic ceramic containers into three main domains: storage, transformation or processing, and transfer or transport, which are then further divided into several sub-categories. Interestingly, Rice discusses the four strategies used by archaeologists to infer some general statement about vessels and function. The first kind of data consists of written evidence; the second is the context of the recovery; the third is about ethnoarchaeological studies, comparative analysis and experimental archaeology; the last is about the chemical analysis of the container’s residue. Given the particular

importance of such a methodology, and being one that has been extensively adopted in this research, it is right that Rice's arguments will be further debated throughout this work (see in particular Chapter 10).

From the 1990s onwards, reaction against the development of materialism and functionalism has increased, particularly through researches on human and environmental aspects. Attention seems to have moved towards contextual approaches to production use, re-use, and function that integrate frequently with ethnoarchaeological studies. A book that delineates both theoretical and methodological issues by using ceramics to answer questions about the past is *Approaches to archaeological ceramics*, edited by Carla M. Sinopoli (Sinopoli, 1991). Even though at first sight this contribution might seem very similar to Rice's *Pottery analysis*, Sinopoli's aim is not to publish another compendium or sourcebook:

First, I hope to provide a general overview of what ceramics are and why they are important in archaeological analysis. Second, I hope to provide a framework for some of the anthropological and historical questions we can ask of the past through ceramic analysis (Sinopoli, 1991, p. 7).

These questions are concerned with ceramic ethnoarchaeology and ceramic chronology (Chapter 4); ceramic use, production and distribution (Chapter 5); ceramic and social organisation (Chapter 6); and ceramic and political organisation (Chapter 7). Within these chapters, Sinopoli includes an example of a case study, in addition to several ethnographic and archaeological works carried out by colleagues. However, in the chapter devoted to ceramic use and ceramic production and distribution, specific reference to ceramic functional analysis theories are not exhaustively offered. Sinopoli lists those analyses that should be conducted in order to investigate the topic of ceramic use. In this chapter (Chapter 7), she argues about the analysis of the evidence of uses (e.g. wear traces, chemical residues); the examination of the vessel shapes; the spatial analysis and the context of recovery; and ethnoarchaeological comparisons and microscopic analyses (e.g. petrography). This chapter, together with the chapter contained in Rice's *Pottery analysis*,

represents an essential part of the theoretical background upon which this research is built.

The *Pottery function: a use-alteration perspective*, by James M. Skibo, published in 1992 (Skibo, 1992) focuses on vessel function analysis through studies of surface attrition, and the absorption of fatty acids and carbon depositions on containers. In this study, Skibo combines ethnoarchaeological observations with experimental data, in specific, use alteration data (absorbed residues, surface attrition, and carbon deposition), to determine archaeological correlations to pottery function. This book, however, focuses on food preparation vessels, cooking pots only, and especially on characteristics that distinguish vessels used to prepare rice from vessels used to cook meat and vegetables. In Chapter 3 (“Pottery Use Alteration”), Skibo discusses the definition of the term *function* and its meaning in a ceramic prospective (see Introduction).

The function of any single artifact is determined by how it performs in a society’s technology – technofunction, sociofunction and ideofunction. Technofunction refers to utilitarian aspects of an artifact’s use, and socio- and ideofunctions are components of artifact variability traditionally placed within the stylistic category (Skibo, 1992, pp. 33-34).

In 1993, Clive Orton, Paul Tyers and Alan Vince’s, *Pottery in archaeology* was published (Orton, et al., 1993). The three authors of this volume belong to the British tradition which, unlike the American anthropological and ethnoarchaeological tradition (see e.g. Rice, Sinopoli), focuses on closely defined culture-historical reconstructions of intensively investigated and relatively well documented contexts⁴ (Roman and post-Roman pottery from urban excavations in Britain). A general, but encouraging, approach to functional analysis is discussed only briefly in the last chapter of the book, entitled “Pottery and Function.” This chapter presents a re-elaboration and synthesis of the functional analysis studies proposed by Rice in 1987. In *Pottery in archaeology*, however, there is more emphasis on written sources and pictorial representation, and on traces of use and wear, and on residual analyses, as well, all of which refer to the Roman pottery taken under consideration in that

⁴ For more information about differences in American and British approaches, see: Orton, et al., 1993; Rice, 1996a; and Rice, 1996b.

research. Unfortunately, this book, if used in order to answer questions about ancient human behaviour, and the social and economic past, appears promising, but is not relevant enough to meet the current research aims.

After the publication of her successful book, *Pottery analysis: a sourcebook*, at the end of the 1980s, Rice returns to the issues of functional analysis, which are argued in two very interesting articles: *Recent ceramic analysis: 1. Function, style, and origins* (Rice, 1996a) and *Recent ceramic analysis: 2. Composition, production, and theory* (Rice, 1996b). In the first article, in particular, Rice offers an overview of the recent contributions on ceramic studies, based on three specific areas: functional analysis, stylistic studies, and pottery origins. Focusing on ceramic functional analysis, Rice observes how the adoption of such analysis has changed over the 90s, and how experts, who have recently adopted a functional analysis methodology, address their research on three particular subject areas: experimental archaeology, ethnoarchaeology, and physical sciences.

One of the most recent contributions on ceramic study analysis and, more specifically, on ceramic vessels' production, use, and distribution can be assigned to James M. Skibo and Gary M. Feinman. In their book, *Pottery and people. A dynamic interaction*, published in 1999 (Skibo & Feinman, 1999) the authors collected eleven papers presented at the "Pottery and People Conference", held in Illinois, in 1996. Three of these papers deal mainly with ceramic use, function and shape. Philip J. Arnold III presents an interesting research on the relationship between ceramic production and residential mobility in Coastal Lowland Mesoamerica (Arnold, 1999). Basing his research on models of mobility, occupation and social organization, the aim of his paper is to discuss the multi-functional use of a processing food jar. Although this investigation affects only a single type of jar, the analysis conducted by Arnold represents a valid discussion on the treatment of the organization of ceramic technology, starting from the vessel's function determination. The paper presented by James M. Skibo and Eric Blinman considers Colorado Plateau vessel morpho-technological properties and vessel use-alteration traces to define ceramic functional categories (processing food, in particular) and the

vessel's possible multi-functionality (Skibo & Blinman, 1999). In addition, Karen D. Vitelli investigates the function of early ceramics in Greece through experimental studies, to answer questions about the people who made these ceramics, along with the societies who used the ceramic shapes that were analysed (Vitelli, 1999).

Ceramic functional studies in Northern Mesopotamia and Syria

Ceramic function and use approaches are not very common among studies of Northern Mesopotamia and Syria. In fact, no one yet has published a functional investigation on the Middle Bronze Age pottery of Northern Mesopotamia and Syria. However, some limited attempts, mainly published in forms of short reports and referring only to a particular type of vessel shape, have been taken into consideration and discussed in Chapter 3.

One obvious reason for the lack of classification systems based on functional aspects in Northern Mesopotamia and Syria studies is the rarity of finding complete vessels in an archaeological context. Without a sufficient number of complete shapes, investigations on vessel functions would not be reliable. Another reason for the neglect of a ceramic functional approach may lie in what Schaub identified as the “pragmatic success of the type-variety system in America and the historical-index typologies of the Near East” (Schaub, 1996, p. 232).

Chronology, rather than ceramic use and function, has been the main emphasis upon which Middle Eastern archaeologists have based their ceramic analyses (see Chapter 1). The “historical-index typologies of the Near East” have used pottery to associate shapes to a specific stratigraphic sequence of a site, and have thus provided a reconstruction of the ceramic chronology using the principle of stratigraphy. Consequently, what they have produced are detailed sequences of ceramic types that emphasise differences among ceramic shapes. Such representations of pottery shapes are chosen to investigate a particular culture at a particular time. However, the chronological classification approach is a process *a posteriori*, which is built by the archaeologists in order to determine proper sequences of past events. Obviously, this classification does not coincide with the

ceramic production classification that was actually in use among ancient populations. As with the paragraph above, the studies are presented following the chronological order of publication, from the oldest to the most recent.

The first application of a functional analysis of ceramic study in the Middle Eastern area dates back to the 1980s.

The function and morphology of ceramic vessels are related by definite physical properties and that vessels within a functional class are designed and made according to a specifiable set of morphological boundary conditions (Henrickson & McDonald, 1983, p. 630).

Elizabeth F. Henrickson and Mary M. A. McDonald demonstrated the potential of such an assumption in 1983 in their analysis of the ceramic assemblage discovered at two early sites in central western Iran. Starting from a classification of ceramic vessels into functional categories (cooking vessels, cooking trays, serving and eating vessels, dry-storage vessels, liquid-storage vessels, water-transport vessels, and containers), the aim of this work was to infer relations between a vessel's morpho-technological characteristics and its function. The ceramic shapes taken into account in this contribution belonged to those functional categories which were not considered in previous studies, which meant examining vessels that were not only used for processing and consumption activities, but those used for storage and transport as well. In order to determine vessel function, the ceramic attributes investigated in this study converged on shape, size, capacity and volume, along with vessel fabric and surface treatment.

In 1984, Rosemary Ellison published two papers that focused on vessel functional analysis, with particular emphasis on food preparation (Ellison, 1984a; Ellison, 1984b). In an article entitled *The uses of pottery*, Ellison argues that more attention should be paid to the functional aspect of a pot.

What is really needed is a study of the actual pottery itself, not just from a chronological viewpoint nor even as a cultural indicator but as items giving information about how the people lived (Ellison, 1984a, p. 67). The author proposes a methodology, which draws inferences about vessel function based on the vessel recovery provenance and condition analysis. She takes into consideration seven ceramic shapes in particular, namely: bevel-rim bowls, funnels,

steamers, sieves and strainers, mortars, low-spouted vessels, moulds and bean-pots, and examines their function according to their techno-morphological characteristics. This analysis, however, focuses on ceramic shapes used for the processing of food only.

Marie-Henriette Gates used an original approach for the determination of vessel function in 1988 (Gates, 1988). In the article, *Dialogues between Ancient Near Eastern texts and the archaeological record: test cases from Bronze Age Syria*, the author endorses a new approach to the issue, one that had not been considered before: information that comes from textual evidence. A prerequisite of historical periods only, the case studies under examination in this research were that of two Syrian sites, Tell Hadidi and Mari, respectively, during the Late Bronze and Middle Bronze ages. Coming from ancient texts, words such as *namzitu*, *tebibtu* and *karpātu* were analysed in conjunction with archaeological evidence in order to assign them a specific role: for example, vessels used during brewing processes, shipment containers, and jar units of measurement. Considering the large amount of written evidence discovered in Northern Mesopotamia and Syria during this period, the approach of Gates should be seen as a profitable and successful method for inferring ceramic shape and architectonic space functions from cuneiform text information. For the contribution led by this work, and for its particular suitability with the topic of this research, specific outcomes of this investigation are further discussed in Chapter 9.

Over the 1990s, more work was carried out with a broader anthropological and historical view that considered models in the organisation of craft production, and of patterns in the evolution of ceramic economic activities of a specific political system. In particular, numerous publications focused on history and on food and drink. For example, Marcella Frangipane in the paper *Repertorio ceramico e consumo di liquidi alimentari in alcune società pre- e proto urbane del Vicino Oriente* (Frangipane, 1994), which was presented at the symposium held in Rome in 1990 (Milano, 1994) discussed the ceramic shapes used for liquid consumption and storage activities, in connection with socio-economic growth and development

among pre- and proto-urban Mesopotamia, and related regions and societies. Particularly interesting is her attempt to define the morphological attributes, which characterise such ceramic production, all of which are graphically summarised in the ceramic shapes represented in the eight tables at the end of the paper. A similar approach, but with more involvement in the topic of the current research, was presented by Francesca Baffi Guardata in a paper held at the same symposium (Baffi-Guardata, 1994). In this case, the author also focused the research on ceramic vessels used for liquid, but with specific reference to the Middle Bronze Age in Syria. Baffi Guardata's investigation of ceramic function is based on the analysis of both textual documents and ceramic context of the recovery. The author's effort, in connecting drinks, such as beer, wine and water, to a specific ceramic shape, is quite remarkable. Moreover, in this investigation of the relationships between content and container, the extra-regional exchanges and economical contacts undertaken among Mesopotamian, Palestinian and Anatolian sites during the MBA have also been considered. In this case, eight tables show a synthesis of the ceramic shapes described in the paper. However, they mainly refer to the Ebla excavation.

A further contribution towards the spread of a ceramic functional approach in Northern Mesopotamian and Syrian studies is Peter Pfälzner's dissertation, entitled *Mittanische und Mittelassyrische Keramik. Eine chronologische, funktionale und produktionsökonomische Analyse* (Pfälzner, 1995). The Northern Mesopotamian Mittanian and Middle Assyrian assemblage pottery are investigated in this volume with respect to chronology, function and the economy of the ceramic production. Functional analysis and vessel use considerations, however, are only generally drafted. Despite this, Pfälzner mentions five approaches that can lead to a vessel's function determination. These are: 1) the associations between form and function, 2) the interpretation of ancient texts, 3) the information coming from ancient iconographic representations, 4) ethnoarchaeological comparisons, and 5) the study of the context of the recovery (Pfälzner, 1995, pp. 22, Fig. 9). In fact, the extremely accurate typology in this research is based on vessel morphological characteristics. The main aim of Pfälzner is to present a detailed ceramic chronology, whilst

arguments about ceramic production and use are only summarily drawn. Moreover, even if the author places the functional types identified (bowls, dishes, goblets, bottles, pots, jars, strainers and stands) into a few functional classes, namely: distribution (“Verteilung”), processing (“Verarbeitung”), storage (“Lagerung”), and transport (“Transport”) (Pfälzner, 1995, p. 24), the aspects of vessels’ functions and the discussion of vessel functional classes, especially regarding the context of the recovery, remain rather superficial. Nevertheless, this analysis, combining ceramic chronological and functional aspects, represents an important step towards the adoption of a functional analysis approach in the Northern Mesopotamian and Syrian sites’ ceramic study. Pfälzner’s approach to pottery analysis, based on a rigorous quantitative analysis, has been subsequently reused in his investigation of the ceramic material discovered in the Third Millennium BC Northern Mesopotamian houses (Pfälzner, 2001).

Two essays in the book *Retrieving the past. Essay on archaeological research and methodology in honour of Gus W. Van Beek*, edited by Joe D. Seger (Seger, 1996), which are concerned with ceramic production and ceramic function in the Levant are definitely worth discussing. The first essay, edited by Bonnie Magness-Gardiner, examines the excavation of a Middle Bronze Age site in the northern Jordan Valley (Magness-Gardiner, 1996). Assuming that “ceramic vessels are tools” (Braun, 1983), the first goal of the author is to investigate vessel function classes according to vessel morphological characteristics, while some consideration of ethnoarchaeological analogies is also assumed. Mainly based on Henrickson and McDonald’s previous study (Henrickson & McDonald, 1983), few ceramic classes are identified: storage vessels being further sub-divided into short and long usage, cooking pots, and serving and eating vessels. The aims of Magness-Gardiner’s analysis are threefold: to build a typology, to calculate the frequencies of the ceramic functional classes identified, and then to show their distribution among the excavated site.

The second essay, entitled *Pots as containers*, is edited by R. Thomas Schaub (Schaub, 1996). It examines the relationship between ceramic sizes and function,

explicated in a Jordan Early Bronze Age case study, based on the vessel accessibility of contents, stability, transportability, and capacity. Eight size-related measurable attributes are taken into consideration: the width of the opening, maximum diameter, height, height of neck, base width, thickness of walls, thickness of the base, and volume (Schaub, 1996). Schaub offers a complex functional analysis of the ceramic material, involving correspondence and distributional analyses, statistic and ceramic shape frequency calculations, and petrographic thin section analysis. However, the author requires more research in this field.

New approaches which incorporate technological features and the role of function through size attributes, particularly capacity, are needed [...]. Inherent problems in determining valid size and volume ranges for partial profiles, including bases, can be overcome by utilizing more extensive vessel reconstruction efforts to develop predictive equations for diagnostic sherds with measurable diameter. The success rate in applying these equations to a broad range of vessels may be increased by complementary studies of temper correlation with basic forms (Schaub, 1996, p. 240).

The monograph by the assyriologist, Walter Sallaberger, entitled *Der babylonische Töpfer und seine Gefässe nach Urkunden altsumerischer bis altbabylonischer Zeit sowie lexikalischen und literarischen Zeugnissen* (Sallaberger, 1996), represents an example of ceramic functional analysis based on the analysis of ancient texts. Sallaberger investigates the relationships between words and pottery types from the Ur III to the Old Babylonian period. In particular, his research focuses on the followings areas: the terminology of pots according to lexical texts; the potter's social status; references to clay vessels in the Old Sumerian and Ur III texts, and in texts from Girsu, Umma, Isin and Babylonia; the use of vessels as containers for oils, fats, and beer; the storage vessel dug kur-KU.KAKid (identified by Sallaberger as pithos); clay vessels for eating, drinking, and cultic use; and clay vessels in literary and magical texts.

A similar approach on ceramic form and function has been used by Daniel T. Potts in 1997 (Potts, 1997). Potts argues that an analysis based only on the interpretation of vessel morpho-technological characteristics is not enough to determine vessel functions.

The modern European conception of what it is or is not appropriate to drink from, eat off, prepare food in, etc. need have little or no relation to ancient perceptions (Potts, 1997, p. 139).

The alternative approach suggested by the author focuses on the interpretation of the written documents. In the Akkadian and Sumerian tablets, terms that refer to a specific ceramic container, are common. Apart from some very general terms, Potts observes that there are recurrent references to ten particular kinds of vessels: “vessel for water (*a*), beer (*kaš*), milk (*ga*), oil (*i*), sesame oil (*i-giš*), ghee (*i-nun-na*), lard (*i-šah*), fine (sesame) oil (*i-dùg-ga*), wine (*geštin*), and honey (*lāl*)” (Potts, 1997, p. 140).

A ceramic functional study that deserves special attention is the one by Andrew Jamieson titled *Identifying room use and vessel function: a case-study of Iron Age pottery from Building C2 at Tell Ahmar, North Syria*, published in 2000 (Jamieson, 2000). The ceramic analysis approach used by Jamieson, at the same site as the one under examination in this research, has doubtless influenced the methodology of my work. Jamieson’s approach is very innovative, and probably represents one of the first efforts at ceramic functional analysis in Syrian studies. After presenting in detail the stratigraphic and architectural contexts of the ceramic recovery, as well as the research method adopted, Jamieson’s further investigation focuses on the determination of vessel function. In accordance with Magness-Gardiner’s assumption that:

There is no one-to-one correlation between form and function, but that form is one of the several indicators that should be used with other factors in conjunction to arrive at a determination of vessel function (Magness-Gardiner, 1996, p. 184),

Jamieson adopts a “multi-correlate” method (Jamieson, 2000). According to morpho-technological analysis, ethnographic comparisons,⁵ chemical and residual analyses, interpretation of textual evidence, vessel life span, and analysis of the artefact context of recovery, Jamieson identifies seven ceramic functional classes:

⁵ Besides the enormous literature available on this topic, Jamieson himself has conducted experimental archaeology investigations examining ethnoarchaeological parallels between ancient and modern ceramic production at Tell Ahmar, and its neighbourhood (Jamieson, 1989/90, pp. 12-27; Jamieson, 1999a, pp. 99-103).

domestic/serving food/eating; domestic/storage liquids; domestic/cooking; transportable/moveable liquid/storage; domestic/storage non-moveable liquid/dry; domestic/specialised serving; and specialised/status-ritual drinking (Jamieson, 2000). Subsequently, and depending on the functional analysis of the ceramic assemblage collected, as well as on their frequency, Jamieson argues the determination of room use.

While such analysis does not establish the precise uses to which the ancient vessels were put, general functional classes and associated uses can be inferred and used as an independent data set for comparison to other archaeological evidence about past behaviour. [...] Information on the possible usages of intact and restored vessels, especially when combined with functional and distributional data on other classes of artefacts, features, architecture, and floral and fauna remains, can lead to new insights into past subsistence systems and intra-settlement activities (Jamieson, 2000, pp. 302-303).

In 1995, a workshop was held at the University of Durham on Early Bronze Age ceramics in the Levant. Its aim was to bring a standardised level of understanding of the ceramic material of this period so that effective inter-site and intra-sites comparisons could be made. Graham Philip and Douglas Baird, the authors of the publication, proposed that in order to achieve more consistency in the ceramic data (e.g. in regional ceramic and historical periodization, and in the facilitation of inter-regional comparisons through uniformity of recording methodologies), then more specific focus should be concentrated on ceramic functional investigations (Philip & Baird, 2000). Among the contributions, the paper by Meredith S. Chesson, entitled *Ceramics and daily life in the EBA household: form, function and action in residential compounds at Tell el-Handaqq South Jordan* is one that effectively deals with functional investigations, these having been undertaken in conjunction with lithic, architectural and faunal remains studies (Chesson, 2000). To Chesson, the aim of the ceramic functional analysis is to “facilitate an understanding of the types of economic activities associated with residential units” (Chesson, 2000, p. 365), whilst morphological classification into open and closed forms represents the preliminary step in her analysis. Expert summaries of each vessel’s daily and specialised uses are displayed in two distinct

tables, emphasising the multidimensional nature of each vessel type. In addition, according to the analysis of the decoration of the vessel types, she also notes that non-utilitarian uses, such as weddings or mortuary rituals, characterise several vessel shapes, suggesting that life in these households involved more than simple utilitarian activities. Furthermore, Chesson analyses the differences in the relative proportion of ceramic use and production from a diachronic prospective through the four phases that have characterised the history of the site during the EBA. She concludes by stressing how the results of these analyses can be used to improve knowledge of socioeconomic mechanisms, such as, in this particular case, the abandonment of the town.

A first attempt at ceramic functional analysis of a Syrian site has been proposed by Ralph Hempelmann on the EBA IV-MBA I ceramic material at Tell Halawa (Hempelmann, 2005). Hempelmann bases his interpretation of the vessel functional analysis on a combination of several attributes, namely: form and dimension, iconographic sources, volume, ware, and the context of recovery.⁶ From this analysis, and influenced by Pfälzner's publication (Pfälzner, 1995), he defines three broader categories of vessel functions: distribution ("Verteilung"), storage ("Lagerung"), and processing ("Verarbeitung"). Within distribution, he specifies three further sub-categories, namely: drinking, eating, and distribution of liquid; within storage, short and long-term; and within processing, cooking (Hempelmann, 2005). According to this classification, the data results have been summarised into several tables. Even more noteworthy, however, is the comparative analysis, which refers to the sites on the Euphrates River, in Inner Syria (Ebla), and in the Balikh Valley (Hammam et-Turkman). Hempelmann's contribution, therefore, can be defined as one of the first attempts to carry out a successful MBA Northern Mesopotamian and Syrian functional investigation.

A recent view of ceramic function and use analysis has been discussed in *Alltag und Gesellschaft zur Spätbronzezeit: Eine Fallstudie aus Tall Bazi (Syrien)*,

⁶ In the distributional analysis, Hempelmann considered the frequency of the identified functional types according to the excavated squares, rather than to the rooms (Hempelmann, 2005, pp. Tafeln 155-182). Unfortunately, this methodology does not help in the interpretation of the room function.

edited by Adelheid Otto in 2006 (Otto, 2006). In this monograph, Otto presents an accurate functional analysis of both the ceramic material and architectonic contexts of the Late Bronze Age site of Tell Bazi. The ceramic analysis undertaken by Otto is based on a multiple-approach, which includes: 1) vessel morpho-technological analysis (“primäre Merkmale”), 2) use-alteration analysis (“sekundäre Merkmale”), 3) residual and micro-analyses, 4) pot style and decoration analysis, 5) ceramic context of recovery, 6) ethnoarchaeological comparisons and ethnographic analogies, and 7) information coming from textual sources (Otto, 2006). According to this methodology, the author groups together nine ceramic functional types: large vessels used for beer (“Großes Biergefäß”); large storage vessels with combed decoration (“Großes Vorratsgefäß mit Kammstrichdekor”); large pots (“Große Töpfe”) with a rim max diameter of between 50 and 80 cm; medium dimension vessels (“Mittelgroße Gefäße”) with a rim max diameter of between 20 and 50 cm; small dimension vessels (“Kleine Gefäße”) with a rim max diameter of between 6 and 20 cm; cooking pots; special containers (“Sondergefäße”); stands; and lids. Otto discusses the function of the pottery in parallel with the functional analysis of the house at the site. At the end of this analysis, she identifies seven ceramic functional classes: containers used to eat and drink; vessels used for storage; vessels used for transport; vessels used for processing food activities that do not involve heating; vessels used for processing food activities that do involve heating; vessels which emphasise a social status; and vessels connected to the house cult activities. The author’s analysis goes beyond a simple functional analysis of the ceramic material: her final goals are to investigate the social organisation at the site by reconstructing a typical house of Tell Bazi, then by identifying the activity zone inside it, and researching how the people lived. In addition, even people’s dietary habits, and which kind of activities were carried out in the house, are investigated in order to understand the manufacturing, cultic and social activities that took place there. Finally, Otto focuses on an examination of the specific subsistence products (bread, meat, fish, beer, wine, oil, dairy products, vegetable, fruits and honey) to build upon

the general economic system of that period, and the specific commercial activities undertaken at the site.

In a monograph entitled *The pots and potters of Assyria. Technology and organisation of production, ceramic sequence and vessel function at Late Bronze Age Tell Sabi Abyad, Syria*, edited by Kim Duistermaat, and published in 2008, the author offers an interesting example of a ceramic functional analysis adopted at the Late Bronze Age site of Sabi Abyad (Duistermaat, 2008). The author's purpose is to develop a multi-dimensional approach to the ceramic material in order to answer questions related to the individual and the society, rather than focusing on the mere determination of chronology ("Weren't all pottery publications boring lists of types and shapes?") (Duistermaat, 2008, p. 17). Duistermaat's functional approach is based on the following related perspectives: archaeological context of recovery; morpho-technological analysis; technological performance characteristics; traces of use; and information coming from contemporary texts or iconography (Duistermaat, 2008). Duistermaat identifies thirteen functional groups among the ceramic assemblage of Tell Sabi Abyad, namely: cooking pots; serving, eating and drinking vessels; vessels used in food processing and craft activities; storage; long-term storage in bulk; transport; pot and jar stands; strainers; lamps; lids and covers; vessels used in burial and ritual; measuring vessels; and special shapes (Duistermaat, 2008). In this work, moreover, the techniques and organization of pottery production are also discussed, together with an analytical description of the many pottery workshops and kiln areas discovered at the site. Together with the book published by Otto, this work represents a very important change in the traditional approach to the ceramic study material of this area.

In the last few years, there have been three more contributions to the identification of vessel function. Lorenzo Nigro in his study of the ceramics coming from the Royal Graves at Ebla has proposed a functional analysis of the jar grave goods (Nigro, 2009). These may have been used for pouring liquid during the feast or as containers for: a) liquid or semi-liquid drinks (i.e. wine, water); b) oils and perfumes; c) solid food (i.e. dry fruits, legumes, lard, and meat or fish preserved

under salt), and d) seeds. However, this analysis refers to vessel containers associated with a funeral context only.

The ceramic analysis of the Old Babylonian Period at Chagar Bazar, discussed in *Once there was a place. Settlement archaeology at Chagar Bazar, 1999-2002*, moved beyond a simple morphological classification of diagnostic sherds (McMahon, 2009). The description of the ceramic material analysed by Augusta McMahon and Julie Frane:

Aims to present its site-specific variations in forms but also to explore the assemblage and wares in a holistic way, in terms of social and economic inferences (McMahon, 2009, p. 161).

The authors proposed a morphological typology subsequently subdivided to create “functional and size-related categories”. In each category (e.g. plain-side bowls, cups, wide-mouth jars, cooking pots etc.), a morphological and technological description is given, while an attempt to define the vessel function is also offered.

Finally, Marcella Frangipane’s volume *Economic centralisation in formative states: the archaeological reconstruction of the economic system in 4th Millennium Arslantepe* (Frangipane, 2010), offers a further contribution towards an understanding of ceramic function that is based on the reconstruction of a past economic system. Here, the ideal scenario offered by the site of Arslantepe (Turkey) has made it possible “to conduct a cross-cutting and interdisciplinary analysis aimed at a global anthropological reconstruction” (Frangipane, 2010, p. 5). Together with historic, architectonic, and economic details, as well as a discussion on the craft activities at the site, part four of the book is devoted to an investigation of the ceramic functional activities at Arslantepe. According to both technological (ware) and morphological characteristics, along with epigraphic evidence of vessel use in Period VI A (Late Chalcolithic), functional groups such as storage, transporting, serving, processing, and consumption have been identified (D’Anna, 2010). Moreover, the ceramic assemblage that was dated to Period VI B2 (the beginning of the Third Millennium BC) was classified into cooking, storage, consumption and serving activities (Piccione, 2010). Apart from these functional classifications, which have obviously been adapted to the specific archaeological and contextual

circumstances of the site, the main step forward of this study is the development of a research methodology that is directed toward the reconstruction of past activities, elements of which have clearly been demonstrated through the inferring of economic system organisation by comparing the frequency of ceramic types within assemblages associated with different periods (D'Anna & Piccione, 2010).

Summary

Interest in the function and use of ceramic vessels is relatively new in the history of archaeological investigation. Aside from a few pioneering attempts (Shepard, 1956; Matson, 1965a; Millett, 1979a) most of the praiseworthy efforts devoted to this topic have emerged from the 1980s. From this period onwards, a number of books and monographs have focused on pottery analysis (Howard & Morris, 1981; Moore & Keene, 1983; Rice, 1984b; Nelson, 1985; Rice, 1987; Sinopoli, 1991; Skibo, 1992; Orton, et al., 1993; Skibo & Feinman, 1999). To these, one must add the proceedings of various national and international conferences and symposiums (Olin & Franklin, 1982; Van der Leeuw & Pritchard, 1984).

Although the richness of the theoretical studies' overview on ceramic function and use, a scarcity in the number of researchers who look at the effective practical uses of ceramic functional methodologies among Near Eastern studies has been noted. Moreover, when a functional approach has been adopted, it has often been used in conjunction with a different research method (Henrickson & McDonald, 1983; Pfälzner, 1995; Magnes-Gardiner, 1996; Schaub, 1996; Pfälzner, 2001; Hempelmann, 2005). In fact, there are potentially several characteristics or variables that can be used for determining vessel use and function, namely: morpho-technological properties, context of the recovery, ethnographic observations, written documents, and chemical analyses. Deciding which variables to investigate depends on the scale of the material available and its preservation, as well as on the archaeological resources which the particular region, or site under examination, offers.

The modern tendency in ceramic studies is to combine many variables together, rather than focusing on a single aspect (i.e. multi-disciplinary approach). This is preferable because adopting an approach based on one variable only (e.g. technology) may lead to some misinterpretations of vessel function. This trend appears to be corroborated by the rare, but remarkable ceramic functional studies that have characterised the research in the last few years in Syria (Jamieson, 2000; Otto, 2006; Duistermaat, 2008; McMahon, 2009). The investigations of the Late Bronze Age ceramic studies recently undertaken by Adelheid Otto and Kim Duistermaat in particular, demonstrate the practical worth of a functional analysis, as well as offering the promise of a ceramic function and use investigation that can be expanded to different historical periods of the same cultural area.

3. Middle Bronze Age archaeological evidence

The aims of this chapter are threefold. First, it focuses on the stratigraphic and chronological evidence of MBA levels at Tell Ahmar that were brought to light in two different buildings on the acropolis, in Area M and Area S14.⁷ Second, it examines Tell Ahmar absolute dating in the light of results from the ¹⁴C samples collected. Finally, it discusses comparative analysis (both absolute and relative) with the information coming from Northern Mesopotamian and Syrian sites to evaluate chronological cross-correlations for the MBA horizon.

Tell Ahmar: the site

Tell Ahmar (36°40' 20.70" N 38°7'36.41" E) is located on the east bank of the Syrian Euphrates River, about 20 km south of the ancient city of Carchemish, on the other side of the Turkish border, and about 100 km northeast of the ancient capital city of Yamkhad (Aleppo) (Fig. 5).

⁷ Information about the Middle Bronze Age archaeological background discussed in this chapter has been supplied by Guy Bunnens, through frequent discussions, revisions, and exchanges of opinion from 2005 to the final submission of this work. Bunnens has provided unpublished material such as the preliminary excavation reports (from 2004 to 2010) and the volume “Tell Ahmar. Masuwari – Til Barsib – Kâr-Salmanasar. Fouilles 1988-2008”, both of which represent an essential source of information. Bunnens has also supplied maps, plans and photos of the architectonic structures at the site, as well as photographs of complete vessels and objects. Finally, he provided the archaeological features database (FileMaker files). Preliminary information on Middle Bronze Age levels at Tell Ahmar have been presented by Bunnens during the 6th *International Congress on the Archaeology of the Ancient Near East* held in Rome in 2008 (Bunnens, 2010) and by the author during the 7th *International Congress on the Archaeology of the Ancient Near East* held in London in 2010 (Perini, 2012).

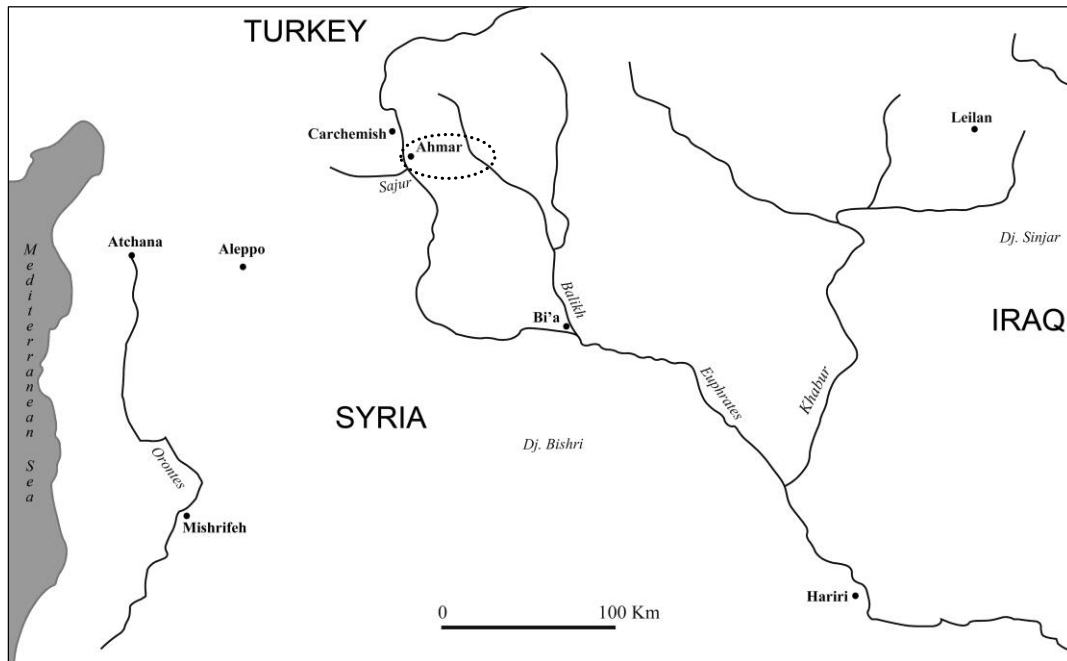


Figure 5. Map showing the location of Tell Ahmar (map: Silvia Perini).

The site is situated on the edge of the terrace overlooking the fertile flood plain of the Euphrates, approximately opposite to the confluence of the Sajur River (Fig. 6).



Figure 6. View of Tell Ahmar from northeast (photo: Silvia Perini).

Thanks to this strategic position, Tell Ahmar was one of the major crossing points of the river in this area. Even more recently, and still in use until the 1960s, a ferry service connected the opposite banks of the Euphrates. Communications with the other side of the river, however, are made difficult because of the imposing barrier cliff that characterises the western bank of the Euphrates River at this point (Bunnens, 1989).

The full extent of the tell is around two hectares. However, it is difficult to know what the dimensions are precisely, mainly because of Thureau-Dangin's old excavation dump that accumulated around the tell, and because of erosion at the southern part of the site.

At the time of its maximum extent (during the Iron Age), the entire site had a semi-circular shape, about 1200 m in diameter. It has been subdivided into three distinct areas: the acropolis located at the centre of the semi-circle, 250 by 150 m and originally 2 m high above the surrounding plain; the middle town, a natural terrace, situated to the west of the acropolis; and the lower town, with its semi-circular shape to the north.

The oldest information about Tell Ahmar (an Arabic name that means "Red Hill") appeared in an article published in 1909 by David George Hogarth (Hogarth, 1909b), a British archaeologist and scholar associated with R. Campbell-Thompson and Thomas Edward Lawrence. Hogarth visited Tell Ahmar in 1908 and his short report gave a description of the ancient surrounding wall and the numerous Hittite steles and reliefs of the site (Hogarth, 1909b). In his article, a few photos and sketches of the reliefs were also published. Subsequently, R. Campbell-Thompson, contributing to the publication of the cuneiform inscription on the basalt lions of the northwest gate of Tell Ahmar, confirmed the identification of Tell Ahmar as the ancient city of Til-Barsib (Campbell Thompson, 1912).

In the following year, 1909, the British writer, traveller and archaeologist Gertrude Lothwian Bell,⁸ went to Tell Ahmar at the suggestion of Hogarth, who asked her to:

⁸ Some of Bell's photos taken on this trip are published at <<http://www.gerty.ncl.ac.uk>>.

Go there to take squeezes of some stones of an important Hittite inscription which he had discovered at Tel Ahmar, some of the stones having been, at the time of his visit, partly under water and therefore difficult to work upon (Bell, 1910, pp. 513-514).

She affirmed:

The river had not yet risen when I was there in February; the stones were dry, and I succeeded in getting the squeezes which he desired (Bell, 1910, pp. 513-514).

She also noted that the ancient crossing of the Euphrates at Tell Ahmar was in use again.

Coming from Aleppo via Bab and Membij, I crossed the river at a point opposite Tel Ahmar. This is the road which is now invariably followed by caravans from Aleppo to Urfa, though but a few years ago, when the Mesopotamian desert was still more unsettled than it is at present, caravans were obliged to go up to Birijik and skirt the northern limits of the desert to Urfa (Bell, 1910, p. 513).

During her visit to the Carchemish region in 1910, Bell met the British military officer, T. E. Lawrence, who had been working in Carchemish with Thompson. In 1911, Thomson and Lawrence left Jerablus to spend a few days in Tell Ahmar (Wilson, 1989). Thompson explains the purpose of their visit:

Here abutting on the river, was a mound a hundred yards long, running steeply down to the water, where an ancient ramp, cut into the conglomerate, marked the old Hittite state. Round this citadel, on the landward side, was an earth wall enclosing an area half a mile long by a quarter wide, and close outside this lay the pieces of the great basalt obelisk, inscribed in Hittite pictographs... this had been first noticed by Hogarth (Wilson, 1989, p. 91).

History of the excavations

The first excavations at Tell Ahmar were undertaken by a French expedition under the direction of Thureau-Dangin from 1929 to 1931 (Thureau-Dangin & Dunand, 1936). Previous soundings had been realized in 1927 and 1928 (Thureau-Dangin, 1929). Thureau-Dangin's excavations brought to light a large funeral chamber, the "Hypogeum" (Thureau-Dangin & Dunand, 1936), dated to the Third Millennium BC. Excavations on the acropolis also revealed part of the Assyrian palace (Thureau-

Dangin & Dunand, 1936). In the lower city, the French excavated the eastern monumental lion gate, with the inscription, which confirmed Tell Ahmar as having once been named Til-Barsib. Numerous Assyrian steles and orthostats were also discovered (Thureau-Dangin & Dunand, 1936).

Fifty-eight years later, in 1988, the University of Melbourne started a new excavation at Tell Ahmar under Dr Guy Bunnens' direction, as part of the archaeological salvage project of the Tishrin Dam area (Bunnens, 1990; Roobaert & Bunnens, 1999). From 1988 to 1997, the Australian team explored the western area of the site, near the surrounding wall, where a large Neo-Assyrian complex was discovered (Area C). This residential area produced several tablets and important decorated ivory plaques. In the northern area of the lower town, Neo-Assyrian buildings have also been revealed (Area E). On the acropolis, the Australian expedition re-excavated the hypogeum area, arguing that it could be part of a vast funerary and monumental complex (Area A). In addition, the opening of a trench on the southeastern slope of the tell (Area S), uncovered several occupations and building periods of the settlement, especially in the Second and First Millennium BC (Bunnens, 1998).

In 1999 and 2000, a British-German collaborative project, directed by Anthony Green and Arnulf Hausleiter, joined the Australian University project to conduct two autumn survey seasons focused mainly on the lower town of Tell Ahmar, with the purpose of saving as much surface material as possible from the immanent flooding due to the Tishrin Dam construction. Pottery, clay figurines, grinding stone tools and architectonic debris were collected and dated to the Iron II period. In addition, from the base of the main mound came much later material, datable to the Roman period (Green & Hausleiter, 2000; Green & Hausleiter, 2001).

From 2000 to 2010, the excavations at Tell Ahmar were conducted under the auspices of the *Mission Archéologique de l'Université de Liège en Syrie*, directed by Professor Önhan Tunca (Bunnens, 2001; Bunnens, 2003). The excavations of the Belgium team were focused mainly on the tell. However, three soundings were carried out in the middle city (Areas K, L, N), to the west of the acropolis (Verardi,

2007). On the acropolis, the team brought to light the northeastern corner of the Room XLV of the Neo-Assyrian Palace, in the area between the already excavated Areas A and S. Excavations focused on Area S, where Middle Bronze Age levels were revealed. In 2004, a new area was opened on the western part of the acropolis (Area M). A large Iron Age black-and-white pebble mosaic, similar to the mosaic found in Area C was discovered, as were several rooms, which form part of a public building dating from the late Middle Bronze Age.

Tell Ahmar archaeological evidence

Middle Bronze Age levels of Tell Ahmar are located on the acropolis, in two different areas: Area M (western and central parts of the acropolis) and Area S14 (to the east) (Fig. 7). The structures of Area M seem to cut the acropolis in a west-east orientation. The house in Area S14 is located on the eastern slope of the acropolis. In order to avoid the problems of sloping floors here, the house was terraced into the tell slope during construction.

Excavations in the rest of Area M have shown MBA archaeological structures found approximately only 20-30 cm below the present surface (i.e. the level reached by the French excavations). In most of the excavated rooms, floor levels have been achieved at around 1-2 m below the surface. However, because excavations in this area have not yet been completed, the stratigraphic sequences of the rooms of Area M are still provisional.

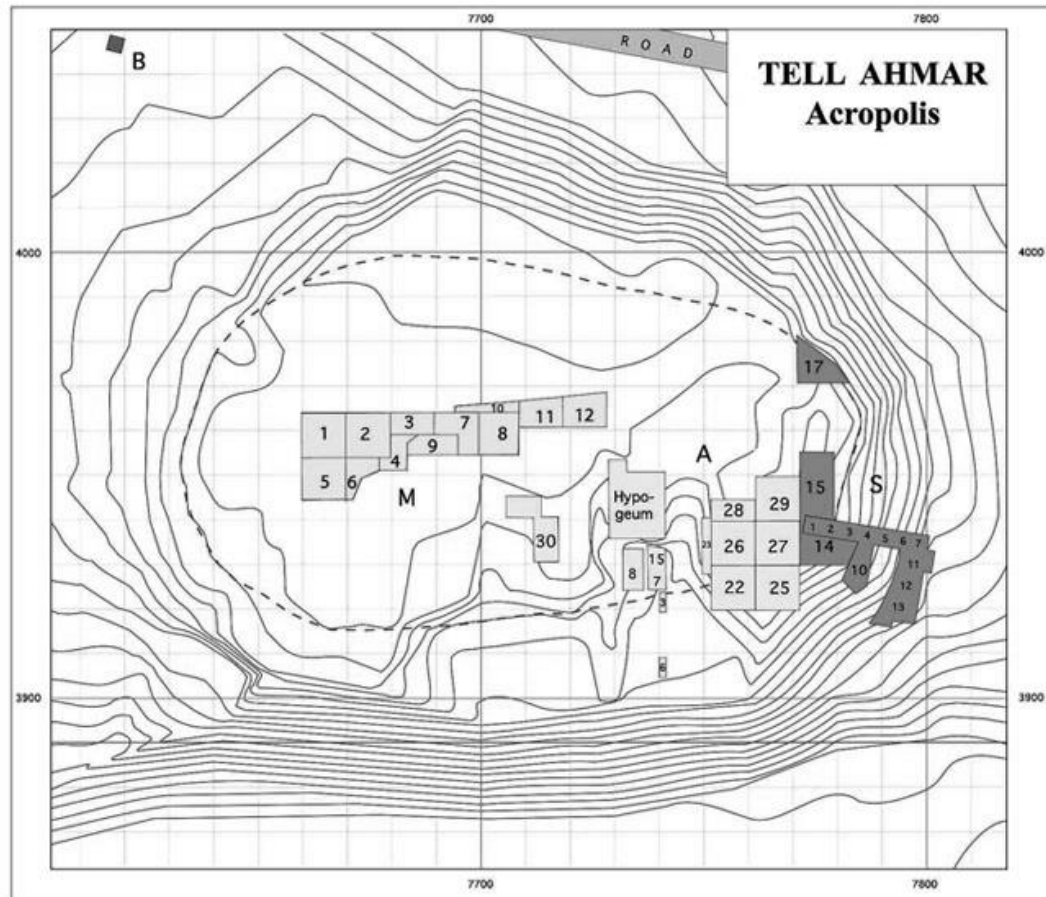


Figure 7. Acropolis of Tell Ahmar showing the location of the MBA excavated areas (map: Guy Bunnens).

Area M

The excavation of Area M in the western part of the tell started in 2004. Excavations in this area have revealed different periods of occupation over three main historic periods: the Iron Age, the Late Bronze Age, and, most substantially, the Middle Bronze Age. In addition, in 2009 Early Bronze IV levels were identified in the southeastern part of Area M.

The pebble mosaic found in the western extension of Building M8 is from the Iron Age and was discovered below the level of the Assyrian palace. It may be assumed that the mosaic pavement belonged to an important building of the Aramaean period (Iron II), perhaps a palace. This mosaic, very similar to the mosaic found in the courtyard of the residence in Area C, has not been removed due to the

difficulties of excavation that this would have taken. Thus, excavations were not extended further west.

Five rooms resting on stone foundations located to the north-west of the main construction of Area M (M1 and M2) are dated to the end of the Middle Bronze Age or the beginning of the Late Bronze Age. A sounding made in this area in 2008 confirmed this dating (Bunnens, 2010). These rooms may have belonged to private houses. Belonging to the same period seems to be the street (c. 1-1.50 m wide) that bordered the five rooms to the south.

Along the southern slope of the street, a MBA structure has been discovered. This structure is formed by a series of rooms set in line, namely three central blocks (Blocks 1-3) and two buildings at the both western (Building M8) and eastern (Building M9) extremities of the blocks (Fig. 8).

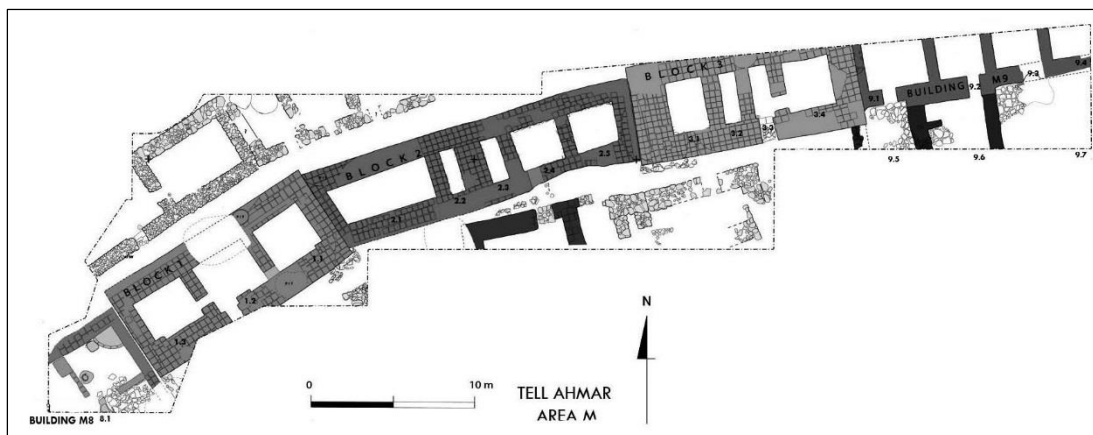


Figure 8. Map of Area M showing (from west to east): Building M8; Block 1; Block 2; Block 3; and Building M9 (map: Guy Bunnens).

Buildings M8 and M9, despite being of lesser quality, form an architectural unit with Blocks 1-3. The complex in Area M measures c. 48 m in length altogether. Its width is between 5.20 m and 5.60 m and its total area is c. 430 m².⁹

Blocks 1-3

⁹ The total area has been determined using the Arcane Program.

Block 1 comprises three rooms that from west to east are Room 1.3, Room 1.2 and Room 1.1. The walls of Block 1 were very thick: the south wall was four bricks wide (1.60 m) and the north wall was two and a half bricks wide (1 m). The southern wall of Block 1 was leaning towards the inside of the structure. This appears to be an intentional building technique and was not caused by the blast.

Block 2 seems to have been an intermediary structure between Block 1 and Block 3. It was probably built after Block 1 and Block 3. Its walls are slightly narrower: 1.40 m compare to 1.60 m of the other two blocks. Block 2 is made up of five rooms.

To the east of Block 2, another block, called Block 3, was discovered. Its walls are as thick as Block 1. However, the southern walls seem to be not as inclined as in Block 1 and Block 2. Block 3 is formed by four rooms: Room 3.1, Room 3.2, Room 3.3 and Room 3.4.

Building M8

Building M8 has a square shape and its walls are thinner in comparison to the eastern construction (c. 60 cm). The finished dimensions of the building are not known. Its western wall was not excavated given its proximity to a modern house and the presence of the Iron Age pebble mosaic. The north wall was partially damaged by a pit, and there was no south wall.

Building M9

To the eastern part of the excavated Area M, another building was discovered that seems to continue the orientation of Blocks 1, 2 and 3, called Building M9. However, its walls are slightly thinner than the walls of the other three blocks, being only two bricks (c. 80 cm) in width. Four rooms (9.1, 9.2, 9.3 and 9.4) and three connected open spaces (9.5, 9.6 and 9.7) were excavated. Building M9 has to be considered a different building, even if it is a continuation, and not a new block.

Stratigraphic sequence in Area M

Bunnens argues that the MBA level may consist of only one stratum with two building phases (a and b).¹⁰ South of Building M9, moreover, in Area M13, EBA IV evidence has been found. The excavation in this area has shown so far three different levels dated from the MBA II to the EBA IV (Bunnens, 2010) (Tab. 5).

The material taken into consideration in this study comes from Stratum 9.

Area M Strata	Evidence	Square	Relative chronology
Stratum 4	Neo-Assyrian palace	M1, M2	IA III
Stratum 5	Building with mosaic pavement	M1, M2, M5	IA II
Stratum 6	Mud-brick houses	M1, M2	IA I/II?
Stratum 7	Five houses with stone footings	M1 - M3	MBA/LBA
Stratum 8	Re-occupation of Blocks 1, 2, 3 – Cooking area in M7		MBA/LBA
Stratum 9	Building M8, M9 Block 1, Block 3 Block 2	M2 - M13	MB II
Stratum 10	M13 Northern Section	M13	MBA I/II?
Stratum 11	M13 Southern Section	M13	EBA IV?
Stratum 12	M13 Casemates	M13	EBA IV

Table 5. The stratigraphic sequence of Area M.

Area S14

The first MBA evidence in Area S was recognized during the seventh excavation season in 1994. A step trench was opened in the eastern slope of the tell. Some very important MBA material was found: a remarkable pedestal bowl, the neck and the spout of a Syro-Cilician jar (Jamieson, 2005) and five jar burials. They included an inhumation in a jar containing human bones (Roobaert, 1998), three pots (Jamieson, 1998), a cylinder seal (Otto, 1998) and a bronze toggle pin.

In 1999, excavations started in Area S14 with the intention of reaching the EBA levels by extending the excavation towards the south. In 2007, a five-room private house was identified, which belonged to the MBA (Fig. 9).

¹⁰ For a definition of the stratigraphic terms used (*level*, *stratum*, *phase*) see Chapter 3 - Excavation Methodology.

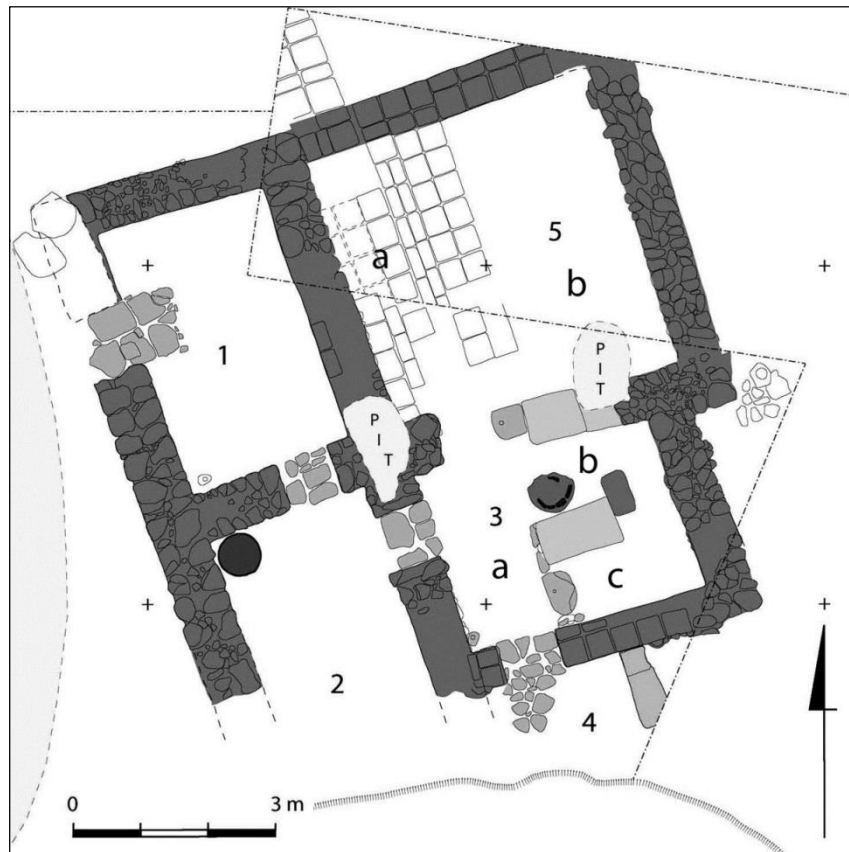


Figure 9. MBA House in Area S14 (map: Guy Bunnens).

The house in S14 has a rectangular shape; its complete dimensions are 9 x 8 m. Its external walls are 60 cm thick (one and a half bricks), as are the partitioning walls of each room. Its total area is c. 85 m². However, the complete plan of the house could not be entirely exposed because a deep sounding during Thureau-Dangin's excavations destroyed its southern part.

Stratigraphic sequence in Area S14

As for Area M, the stratigraphic sequences of the rooms and the definitive stratigraphy of Area S14 are still provisional. Regarding Area S14, however, Bunnens has identified the following strata (Tab. 6):

Area S (S1-3+14) Strata	Evidence	Relative chronology
Stratum 4	Assyrian palace	IA III
Stratum 5	Monumental building (“Aramaeian” level)	
Stratum 6	Houses with stone footing, Building S1	IA II
Stratum 7	Open occupation surfaces	IA I/II
Stratum 8	Stone and mud-brick structures	LBA
Stratum 9	Building S2	
Stratum 10	Stone structures	
Stratum 11	Burnt House S3 and Building S4	MBA II
Stratum 12	Building S5 (jar burial)	
Stratum 13	Open surfaces	
Stratum 14	Pedestal jar PL458	
Stratum 15	Building S6 (Syro-Cilician Ware)	
Stratum 16	Large tannurs	
Stratum 17	Temple S7	EBA

Table 6. The stratigraphic sequence of Area S.

The ceramic material taken into consideration in this thesis belongs to the Burnt House of level 11. Immediately below a small room of level 11, stones forming a kind of triangle in the north section were discovered to the north of house S3. This structure, which has been identified as a stone tomb, is 1.10 m high, 1 m wide on the inside and 1.60 m in the outside, and 1.70 m long (Bunnens, 2010).

Just a few meters to the west of S14, another area has been opened (Area A27-29). Stratigraphic relations between these two areas, however, are not clear because a large Iron Age pit (more than 10 m in diameter) occupies the space between them.

Tell Ahmar during the Middle Bronze Age

Calibrated dates

Radiocarbon analyses have been undertaken for selected material at Tell Ahmar. Two samples have been collected from Area M Stratum 9, and one from Area S14 Stratum 11, namely: seeds from the floor of Room 3.1 (Sample KIA-28274, Fig. 10), a charcoal sample from the floor of Room 1.2 (Sample KIA-36444, Fig. 11), and a charcoal sample from the floor of Room 14.3 (KIA-36445, Fig. 12).

Analyses were undertaken by the *Institut Royal du Patrimoine Artistique* (Belgium). The charts of calibrated dates have been generated using the OxCal v.4.2 dataset (Bronk Ramsey, 2009).

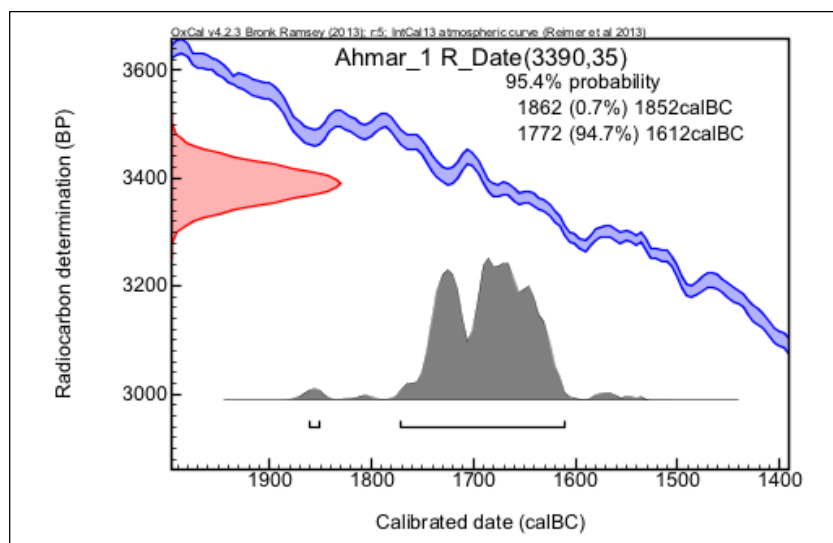


Figure 10. Plot showing calibration result of Sample Ahmar_1 (KIA-28274) obtained from seeds coming from Room 3.1 (Area M).

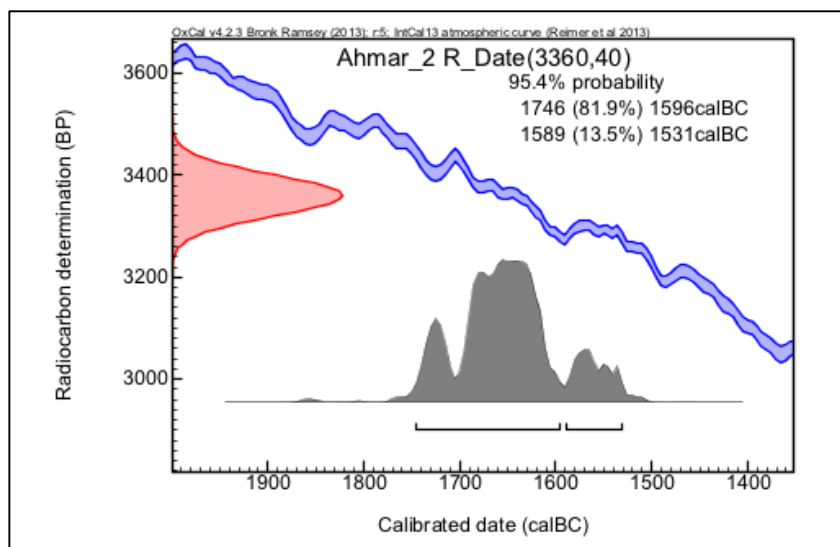


Figure 11. Plot showing calibration result of Sample Ahmar_2 (KIA-36444) obtained from charcoal coming from Room 1.2 (Area M).

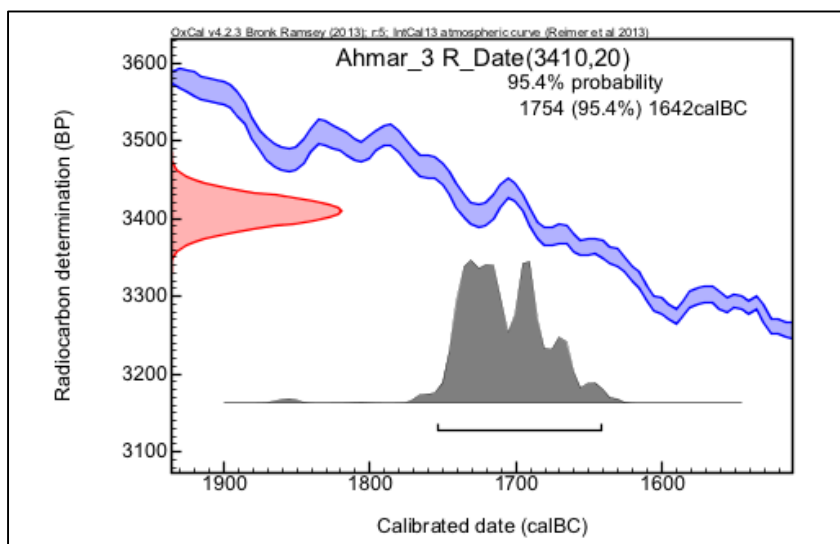


Figure 12. Plot showing calibration result of Sample Ahmar_3 (KIA-36445) obtained from charcoal coming from Room 14.3 (Area S14).

The results from this analysis are generated as marginal posterior densities (probability distributions) for each of the samples. Ranges are calculated at 95.4% of the total area of the distributions (Bronk Ramsey, 2009). This analysis calibrates Ahmar_1 to an age of 1862-1612 cal BC (95.4% probability), Ahmar_2 to 1746-1531 cal BC (95.4% probability), and Ahmar_3 to 1754-1642 cal BC (95.4% probability) (Tab. 7).

SAMPLE			¹⁴ C age yr BP	95.4 % (2σ) cal age ranges %
Code	Provenience	Type		
Ahmar_1 KIA-28274	Floor Room 3.1	seeds	3390±35	cal BC 1862-1612
Ahmar_2 KIA-36444	Floor Room 1.2	charcoal	3360±40	cal BC 1746-1531
Ahmar_3 KIA-36445	Floor Room 14.3	charcoal	3410±20	cal BC 1754-1642

Table 7. Calibration results range.

A comparison of these calibrated dates is shown in the following chart (Fig. 13).

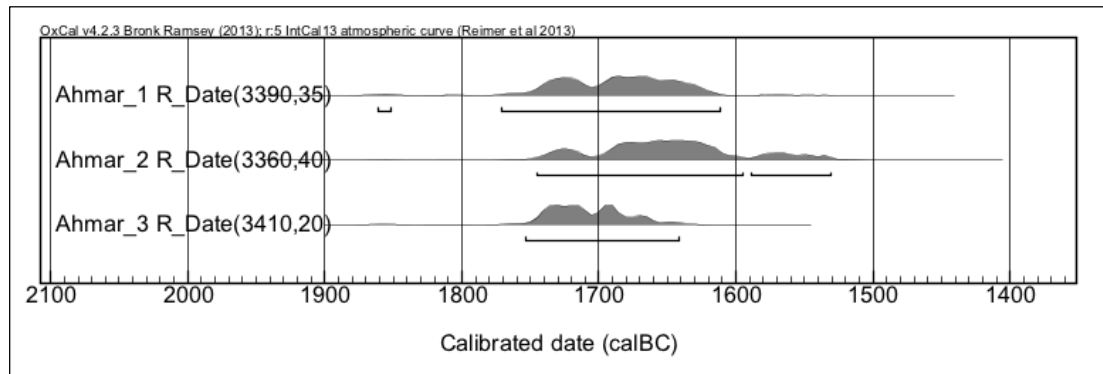


Figure 13. Comparison of the calibration results of Tell Ahmar samples (dates calibrated with OxCal 4.2.2).

Textual information

Although much information comes from the MBA archives of Mari, Alalakh, and Tell Leilan, no specific references to the site of Tell Ahmar have been found. Nevertheless, Shamshi-Adad, in a letter to the king of Yamkhad, mentions two fortresses, named Dûr-Addu, and Dûr-Sumu-Epuh (or Dûr-Shamshi-Adad), which were located in the contested area between Mari and Yamkhad (Fig. 14).

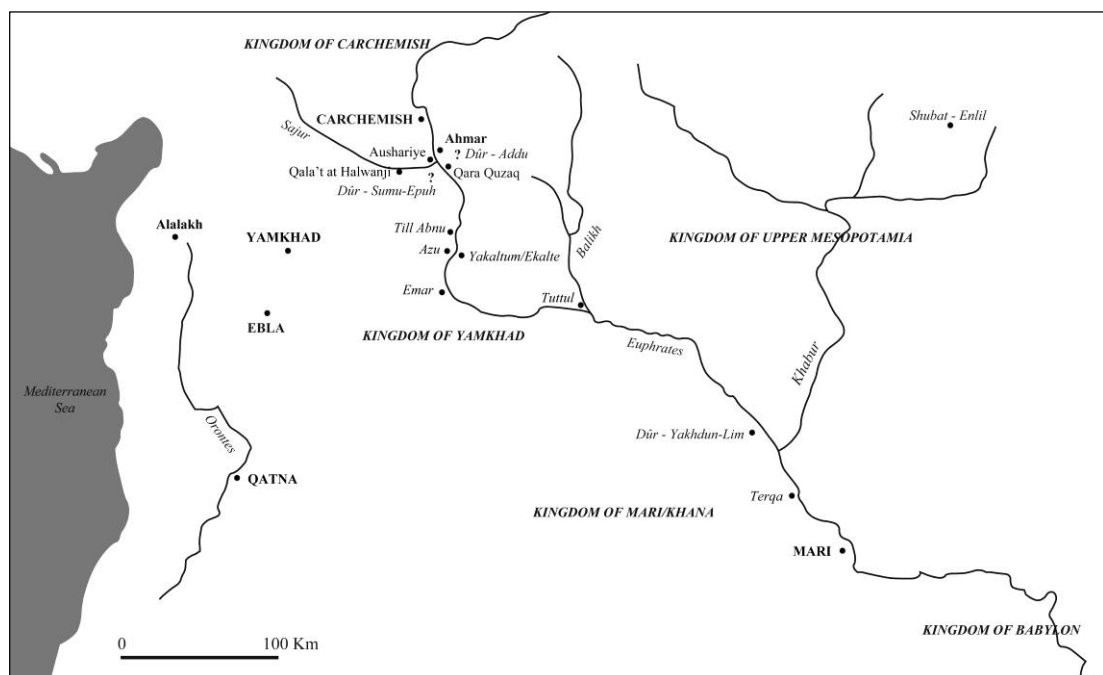


Figure 14. Ahmar and the MBA II kingdoms in Northern Mesopotamia and Syria (map: Silvia Perini).

Using information from the texts of the archive at Mari, Durand suggested that these two fortresses, located opposite each other on the Euphrates, might have defended an important fort or bridge (Durand, 1990a). Durand, in particular, argued that Dûr-Sumu-Epuh might have been a place on the frontier of Yamkhad, giving access to the kingdom of Carchemish. He placed Dûr-Sumu-Epuh on the right bank of the Euphrates River, and Dûr-Addu opposite it on the left bank, near Tell Ahmar (Durand, 1987; Durand, 1990a) (Fig. 14).

More recently, however, Jesper Eidem has proposed a different interpretation of the two fortresses. After the discovery of an MBA site at Qala'at Halwanji, Eidem linked this site with the fortress of Dûr-Sumu-Epuh, which guarded the border between the two main powers of northern Syria and Mesopotamia. In addition, he interpreted the other fortress of Dûr-Addu (located by Durand on the left bank) as Tell Aushariye, which is also situated on the right bank of the Euphrates, where it joins by the Sajur (Eidem, 2008; Eidem, 2009; Eidem, 2010).

Although the exact location of Dûr-Addu and Dûr-Sumu-Epuh is uncertain, it is reasonable to suggest that both were located opposite each other in the upper Syrian Euphrates region, divided by the river. They would probably have determined the northeastern boundary of the kingdom of Yamkhad (see also Conclusions).

Northern Mesopotamian and Syrian sites: a comparative analysis

The comparative analysis of this work aims to answer four main questions:

- 1) Which Northern Mesopotamian and Syrian shapes and wares can be compared with shapes and wares from Tell Ahmar?
- 2) In which context were they found and in what period of the MBA?
- 3) What information about vessel evidence has been discussed by the archaeologists?
- 4) What does the spatial distribution of similar vessel shapes tell us about the economy during the MBA?

This chapter answers the first two questions, and provides a general framework of the archaeological evidence of the period. With this in place, the Northern Mesopotamian and Syrian evidence of vessel function (Question 3) is

investigated in Chapter 9 and in Chapter 10, while the last question (Question 4) will be discussed in the Conclusions (i.e. trade and exchange during the MBA).

The ceramic materials from 27 Northern Mesopotamian and Syrian sites are investigated in this research. Most of these sites have been dated to the MBA according to ceramic relative sequence and regional comparison (see Chapter 1). These sites do not represent the totality of the MBA sites excavated in this area, but are a selection of the most representative ones. This selection was based on two criteria: the current publications available and each site's geographical vicinity to Tell Ahmar. However, since the majority of the sites located close to Tell Ahmar has only been recently excavated (especially the sites located in Turkey) and the ceramic material published is very scarce, it has been decided to extend the geographical area of comparison. Therefore, not only have the Upper Euphrates sites been taken into consideration, but also the ceramic assemblages that come from the most representative sites of the other regions (for the geographical background of this area, see Chapter 1). The MBA sites investigated in this study are shown in the following map (Fig. 15).

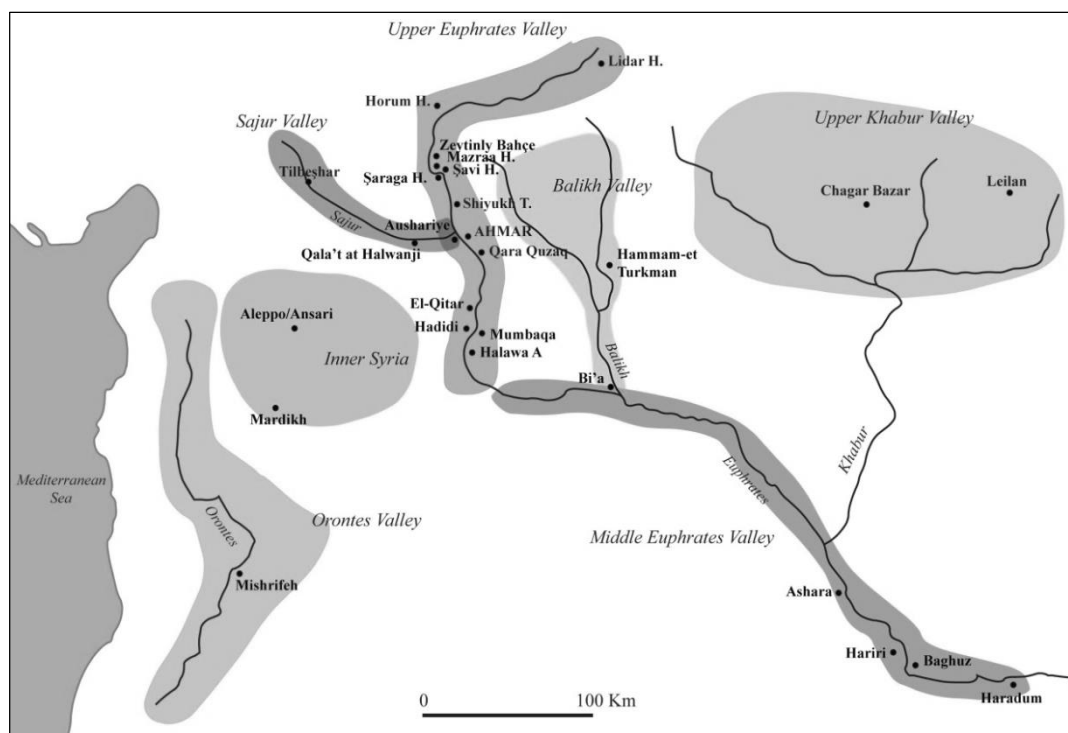


Figure 15. Map of the MBA sites taken into consideration in this work (map: Silvia Perini).

While undertaking the analysis of the comparative material, it is noticeable that each site published its findings in an extremely diversified form according to the specific approach used. The most common ceramic analysis methodology adopted is chronological, which means that it focused on establishing ceramic chronological sequences, while less effort towards an understanding of vessel function has been made (see Chapter 2).

The data offered from these studies (both chronological and non-chronological) was published in different forms, either through exhaustive monographs or preliminary reports. These differences are obviously based on the condition of each excavation, some of which are concluded, while others have only recently commenced. Thus, the ceramic material published can range from information on hundreds of sherds or vessel shapes to only a few specimens (Tab. 8).

The following table summarises the amount of ceramic material published and the type of approach used by the scholars involved in the ceramic analysis of the sites shown in the map above (Fig. 15). The sites highlighted in grey in Table 8 are discussed in the following paragraph “Comparison of calibrated dates”, while ceramic evidence from the remaining sites are fully investigated in both relative chronology analysis (in this chapter) and functional investigation (Chapter 9 and Chapter 10).

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

Site name and status of the excavation	MBA Publication (reference and type)	Amount of MBA ceramic published	Absolute dating	Approach used
Lidar Höyük (concluded)	Kaschau, 1999 Monograph (final publication)	c. 2500	YES	CHRON.
Horum Höyük (concluded)	Marro, 2007 Article in conference proceedings	c. 10	NO	CHRON.
Zeytinli Bahçe H. (concluded?)	Balossi, et al., 2007 Article in conference proceedings	c. 10	NO	CHRON.
Mezraa Höyük (concluded)	Yalçikli & Tekimalp, 2002 Article in a monograph	c. 20	NO	CHRON.
Şavi Höyük (concluded)	Dittmann, et al., 2002 Article in a monograph	c. 60	NO	CHRON.
Şaraga Höyük (concluded)	Sertok, et al., 2007; Sertok & Kulakoğlu, 2002 Article in conference proceedings; article in a monograph	c. 10	NO	CHRON.
Tell Shiyukh T. (suspended)	Falsone & Sconzo, 2012; Sconzo, 2007 Articles in conference proceedings	c. 30	NO	CHRON.
Tell Aushariye (concluded)	Jakobsen, 2011 Unpublished MA thesis	c. 220	NO	CHRON.
Tell Qara Quzaq (concluded)	Del Olmo Lete, 1994; Del Olmo Lete, et al., 2001 Book sections (final publication)	c. 400	NO	CHRON.
Tell el-Qitar (concluded)	Culican & McClellan, 1983-84; McClellan, 1986; McClellan, 1984-85 Journal articles	c. 20	YES	CHRON.
Tell Hadidi (concluded)	Cooper, 1997; Dornemann, 1979; Dornemann, 1985. PhD thesis; journal articles	c. 1700	NO	CHRON.
Tell Mumbaqa (concluded)	Czichon & Werner, 2008 Monograph (final publication)	c. 640	NO	CHRON.
Tell Halawa A (concluded)	Orthmann, 1981; Orthmann, 1989 Monographs (final publication)	c. 400	NO	CHRON.
Tell Ashara (suspended)	Buccellati & Kelly-Buccellati, 1983; Kelly-Buccellati & Shelby, 2007; Kelly-Buccellati & Shelby, 1977; Journal articles; book sections	c. 70	NO	CHRON.
Tell Hariri (suspended)	Parrot, 1956; Parrot, 1959a; Parrot, 1959b Book sections	c. 60	NO	CHRON.
Tell Baghouz (concluded)	Du Mesnil du Buisson, 1948 Book section	c. 250	NO	CHRON.
Khirbit ed-Diniye (concluded)	Kepinski, 1992 Book section	c. 4250	NO	CHRON.
Tilbeshar (ongoing?)	Kepinski, 2007a; Kepinski & Önal, 2008; Kepinski, 2010 Journal articles	c. 15	NO	CHRON.

Site name and status of the excavation	MBA Publication (reference and type)	Amount of MBA ceramic published	Absolute dating	Approach used
Qala'at Halwanji (suspended)	Weidemann, 2011 Unpublished MA thesis (survey material)	c. 100	NO	CHRON.
Tell Bi'a (concluded)	Einwag, 1998 Book section	c. 200	NO	CHRON.
Tell Hammam et-Turkman (concluded)	Van Loon, 1988 Book sections (final publication)	c. 215	NO	CHRON.
Tell Mardikh (suspended)	Marchetti & Nigro, 1997; Matthiae, 1980a; Matthiae, 1984; Matthiae, 1989b; Nigro, 1999; Pinnock, 2001; Pinnock, 2005 Journal articles and a monograph	thousands (mainly from monumental contexts)	YES	CHRON.
Ansari (concluded)	Suleiman, 1984 Journal article	c. 70	NO	CHRON.
Tell Mishrifeh (suspended)	Iamoni, 2012 Monograph	c. 300	YES	CHRON.
Chagar Bazar (suspended)	McMahon, 2009 Book section	c. 1100	NO	FUNCT.
Tell Leilan (suspended)	Pulhan, 2000 PhD thesis	c. 1600	NO	FUNCT.

Table 8. Précis of MBA sites and relative ceramic publications (the status of excavations defined as “suspended” refers to Syrian archaeological researches affected by the Syrian uprising of March, 2011).

From Table 8 results clear that, although being an indispensable source of information about ceramic sequences, the majority of the publication available does not tackle one essential aspect: why the ancient society produced and used the vessel shapes archaeologists find today. Given the scarcity of functional studies undertaken, and the particular condition of the archaeological record at Tell Ahmar (see Chapter 4), it is believed that it would be more useful for this field of research to concentrate the ceramic investigation on more innovative aspects such as vessel use and function, rather than on producing a catalogue of MBA vessel shapes. This means that the ceramic comparisons undertaken in this work do not aim to build classic chronological sequences or define changes in ceramic forms over time, but instead they are directed at producing evidence upon which socioeconomic inferences can be made (see Conclusions). Therefore, this study does not aim to be a comprehensive analysis of the MBA ceramic evidence, and ceramic studies that offered an emphasis on vessel function have been preferred over those that have merely focused on a

discussion of ceramic chronological development (see Chapter 2 and Chapter 9). That is one of the reasons why sites such as Chagar Bazar or Tell Leilan, although located far away from Tell Ahmar, are also included in this study. The ceramic analyses of those sites give valuable information about the use that vessel shapes would have accomplished in the systemic context, and they can be further used in conjunction with similar vessel shapes found at Tell Ahmar to discuss vessel function and use (see Chapter 9 and Chapter 10).

For all of these reasons, the MBA ceramic evidence from the sites in Table 8 has been treated in different ways and so makes up different parts of this work: in the first section of this chapter, calibrated dates coming from Northern Mesopotamian and Syrian sites are discussed (sites highlighted in grey in Table 8), while in the second part ceramic relative chronologies are investigated (the remaining sites of Table 8). Lastly, ceramic functional evidence of the sites highlighted in yellow in Table 8 will be examined in Chapters 9-10.

Comparison of calibrated dates

The only Northern Mesopotamian and Syrian sites that have undertaken and published radiocarbon dates are Lidar Höyük, Tell el-Qitar, Tell Mishreh (Qatna) and Tell Mardikh (Ebla) (highlighted in grey in Table 8). Radiocarbon dating is a relatively modern approach in archaeology (1950s), and so this method was just not available when the oldest sites in the region were excavated (see Table 8: MBA Publication).

Information on these four sites such as location, the history of each excavation, the ceramic context of recovery, the chronology (absolute and relative) and ceramic vessel shape parallels with Tell Ahmar are all investigated. In addition, a table (Tab. 21) and a chart (Fig. 16) showing the comparison of the calibration results are given at the end of this section.

Lidar Höyük

Location and excavations: Lidar Höyük is located in the Turkish province of Şanlıurfa (37°33'42.60"N 38°36'25.37"E). The site located on the east bank of the Euphrates, it is today inundated by the Atatürk Dam reservoir. The site was excavated from 1979 to 1987 by the “Institut für Ur und Frühgeschichte und Vorderasiatische Archäologie” of the University of Heidelberg, under the direction of H. Hauptmann (Hauptmann, 1981; Hauptmann, 1982; Hauptmann, 1985). MBA levels at Lidar Höyük were excavated between 1983 and 1987.

MBA archaeological evidence and stratigraphy: The most complete MBA sequence is located in the excavated Northern Area, in particularly in areas E and D. Five stratigraphic phases have been individuated that have been named, from the most ancient to the latest, Phases 1-5 (Tab. 9). Areas E and D have been associated with a residential area. In addition, within these areas, 209 tombs, mainly jar burials, have been also excavated.

Lidar H.	Period
Phases 1-2	MBA I
Phases 3-4	MBA II
Phase 5	LBA I (Kaschau's MBA III)

Table 9. MBA II-LBA I relative chronology and stratigraphy at Lidar Höyük.

MBA absolute dating: Six charcoal samples were collected at Lidar Höyük (Tab. 10). The samples are coming from the floor of a domestic building of Area E 45 (Görsdorf, et al., 2002). Two samples come from Phases 3-4 (Bln-5269, 5130) and three from Phase 5 (Bln-5133, 5398, 5401). Regrettably, the radiocarbon analysis of the samples has followed Kaschau's ceramic publication (Kaschau, 1999), so Kaschau could not specifically investigate associations between ceramic material and calibrated dates. The author, however, proposed a subdivision of the ceramic material in five phases, which dated to the MBA I-III (c. 1950-1550 BC, referring to the short chronology, see Chapter 1) that seem to fit accordingly with the results of the charcoal samples.

Sample	cal BC	Period
Bln-5269	1886-1700	MBA II
Bln-5130	1890-1695	MBA II
Bln-5398	1736-1529	MBA II-LBA I
Bln-5401	1683-1505	MBA II-LBA I
Bln-5133	1611-1454	MBA II-LBA I

Table 10. MBA II-LBA I absolute chronology at Lidar Höyük.

MBA ceramic comparative analysis: In total, 2448 MBA vessels were found in Areas E and D, and they have been associated with either a residential or a burial context. This pottery was published by G. Kaschau in 1999 (Kaschau, 1999). The most representative shapes recovered at the site are small and medium dimension bottles (Ahmar CS01a/b), large dimension vessels with a grooved rim (Ahmar CS04a/OS09), medium dimension jugs (Ahmar CS07a/b), jars with a medium/high neck (Ahmar CS08/CS09), medium dimension flask (Ahmar CS11), medium dimension bowls with a carination under the rim (Ahmar OS01), and small dimension carinated bowl (Ahmar OS08) (Tab. 11).

Ahmar vessel type	Lidar Höyük name	Context	Period	Reference
CS01a	Krüge/Flaschen K/F	domestic	MBA II	Kaschau, 1999, p.53, fig.32
CS01b	Krüge/Flaschen K/F 7b; 13b	domestic	MBA II	Kaschau, 1999, pp.51-53 figs.30; 32
CS04a/OS09	Kessel Ke 1 - Ke 2; Ke 4-6	domestic	MBA II	Kaschau, 1999, pp.69-71, figs.52-56
CS04b	Kessel Ke 2	domestic	MBA II	Kaschau, 1999, p.70, fig.53
CS07a	Krüge/Flaschen K/F 3	domestic	MBA II	Kaschau, 1999, p.49, fig.27
CS07b	Krüge/Flaschen K/F 9a-c	domestic	MBA II	Kaschau, 1999, p.52, fig.31
CS08a	Krüge/Flaschen K/F 1a - K/F 2a	domestic	MBA II	Kaschau, 1999, p.47, fig.24
CS09a	Krüge/Flaschen K/F 2b-d; 4a-c	domestic	MBA II	Kaschau, 1999, pp.48-50, figs.25-26; 29
CS10	Pithoi Pi 4; Pi 6b-c	domestic	MBA II	Kaschau, 1999, pp.67-68, figs.49; 51
CS11	Krüge/Flaschen K/F 6a	domestic	MBA II	Kaschau, 1999, p.50, fig.29
OS01	Schalen/Schüsseln S 17a-c	domestic	MBA II	Kaschau, 1999, p.41, fig.19
OS03b	Schalen/Schüsseln S 16a-e	domestic	MBA II	Kaschau, 1999, p.41, fig.18
OS08	Schalen/Schüsseln S 18	domestic	MBA II	Kaschau, 1999, p.46, fig.23

Table 11. MBA II ceramic parallels between Tell Ahmar and Lidar Höyük.

Tell el-Qitar

Location and excavations: Tell el-Qitar (its Arabic name means “the train”), is located on the right bank of the Euphrates, approximately 60 km south of Carchemish. After a first sounding undertaken by R. Dornemann in 1976, the site was fully excavated by T. McClellan with the University of Melbourne and University of Chicago from 1982 to 1987.

MBA archaeological evidence and stratigraphy: Near the West Gate and just behind the defensive wall of the tell, a large building with decorations of orthostats on its walls has been excavated. For this reason, the archaeologist called this building the Orthostat Building (or Building 14). The Orthostat Building is located in Areas Y-J, locus 37. Because of the particular building technique of the complex, the archaeologists argued that it was an official residence. Five stratigraphic phases (1-5) have been individuated at El-Qitar and have been dated MBA IIB (McClellan, 1984/85).

MBA absolute dating: The site shows signs of occupation throughout the Bronze Age period. Three carbon dates have been processed. Only one sample, however, has given MBA dates (Tab. 12). This sample came from the floor of Building 10 (McClellan, 1984/85), which was a two-room structure. Rooms 4 and 5 both had benches on their walls (Culican & McClellan, 1983-84), while Room 4 also had a podium and a platform. The number of beads found in these rooms, together with the architectonical installations, suggests that Building 10 was a temple or a cultic structure (McClellan, 1984/85). A comparative analysis of the archaeological material found inside the building (i.e. the pottery and the beads) found closer similarities with the Alalakh strata VI-V and the Hurrian level at Nuzi (i.e. 15th century BC). The cylinder seal found in Room 4 has been studied by Antonio Sagona and dated to the 15th century (McClellan, 1984/85). According to these elements, the archaeologists agreed to date Building 10 to the beginning of the LBA. However, the ¹⁴C analysis of the sample collected in the northeast corner of Room 4 was dated differently (i.e. 1862-1614 cal BC).

Sample	cal BC	Period
GrN-11879	1862-1614	MBA II

Table 12. MBA II absolute chronology at Tell el-Qitar.

McClellan argued that the disagreement between absolute and relative dates might be due to the area from where the sample was collected, namely, a small area between the bench and the north wall. Curiously, the bench in Room 4 did not extend along the entire length of the wall. Although the excavators cannot explain why the bench did not reach the end of the wall, McClellan observed that some filling material was accumulated in that particular corner of the room. Despite being in an LBA building, the sample collected from the material in the room was thought to belong to a “reused architectural fragment” (McClellan, 1984/85, p. 61). Thus, although the Tell el-Qitar absolute date shows good cross-correlations between Tell Ahmar (see Fig. 16), the ceramic material found in Building 10 cannot be used to discuss MBA comparative ceramics. The only ceramic material suitable for the present study comes from the Orthostat Building, for which, however, no absolute dates are available.

MBA ceramic comparative analysis: According to their stratigraphic position, the ceramic assemblage from the Orthostat Building has been divided into four groups. From early to late, these have been defined as Groups A-D (McClellan, 1986). Groups A-D are associated with archaeological phases 1-5. Fourteen diagnostics have been counted in Group A, 121 in Group B, 210 in Group C and 34 in Group D. Body sherds were also considered in these groups, especially combed, burnished and grey ware fragments. The ceramic material from Group A was subsequently discarded because there were too few diagnostics. Groups B-D have been dated to the MBA IIB. In these groups, the most predominant open shapes are in-turned rim bowls (Ahmar OS03b), while medium and large storage jars with combed decorations and grooved rims (Ahmar CS04) are common among closed shapes. One large jar shape presents a combed decoration of a scorpion (Culican & McClellan, 1983-84, p. 45, fig. 5/a), while medium dimension jars with rounded out-turned rims are also commonly found (Ahmar CS09a). In addition, Grey Burnished

Ware is characterised by a fragment of a small dimension bottle (Ahmar CS01) (Tab. 13).

Ahmar vessel type	El-Qitar name	Context	Period	Reference
CS04a	N/A	Official residence	MBA IIB	Culican & McClellan, 1983-84, p.47, fig.5/a-b
CS04b	N/A	Official residence	MBA IIB	Culican & McClellan, 1983-84, p.50, fig.6/d
CS08a	N/A	Official residence	MBA IIB	McClellan, 1983/84, p.50, fig.6/5-6
CS09a	DS26	Official residence	MBA IIB	McClellan, 1986, p.96, fig.8/11-15
CS10	DS24	Official residence	MBA IIB	McClellan, 1986, p.98, fig.9/1-9
OS03b	A10/11	Official residence	MBA IIB	McClellan, 1983/84, p.47, fig.5/1-14; McClellan, 1986, p.95, fig.7

Table 13. MBA II ceramic parallels between Tell Ahmar and Tell el-Qitar.

Tell Mardikh (Ebla)

Location and excavations: Tell Mardikh is located in the northwestern Syrian plain, about 55 km southwest of Aleppo (35°47'53.47"N 36°47'55.58"E). The site has been excavated by an Italian team from the University of Rome and directed by Paolo Matthiae from 1964 to 2010 continuously. There are two main volumes dedicated to the MBA ceramic material, one referring to the pottery from the Northern Palace (Pinnock, 2005), and the other one to the ceramics from the Royal Graves (Nigro, 2009).

MBA archaeological evidence and stratigraphy: a complete MBA chronological sequence has been excavated at the site, in several areas, and they are associated with a variety of contexts: palatine, religious, funeral, and domestic (Pinnock, 2001) (see also Chapter 1) (Tab. 14). MBA IA evidence at the site included the Archaic Palace in Area P and *Favissae* 5242,¹¹ which has been dated at the beginning of the MBA IA (Matthiae, 1997a). The Intermediate Palace, the Tomb of the Princess, and *Favissae* 5327 and 5238 dated to the MBA IB (Matthiae, 1997b). The foundation levels of the Northern and Western palaces, the Tomb of the Lord of

¹¹ The Latin term *favissa* indicates underground reservoirs or cellars near the temples, for water or for sacred utensils no longer in use.

the Goats, and *Favissae* 5238 dated to the MBA IIA (Pinnock, 2001). Evidence of the MBA IIB is associated with the destruction levels of both Northern and Western palaces, and with the Tomb of the Cisterns (Matthiae, 1997b). The first phase (Mardikh III A) dated to the MBA I refers to the reconstruction of the city after its destruction at the end of the third millennium BC. The second phase (Mardikh III B) corresponds to the fully rebuilding period at the site. The stratigraphy of the MBA levels has been summarised as follows (see also Chapter 1):

Ebla	Period
Level III A1	MBA IA
Level III A2	MBA IB
Level III B1	MBA IIA
Level III B2	MBA IIB

Table 14. MBA relative chronology and stratigraphy at Ebla.

MBA absolute dating: Three calibrated dates from Ebla have been published (Tab. 15). These samples have been collected from Area B east, an area associated with a building with a domestic function.

Sample	cal BC ¹²	Period
LTL 390A	1700-1520	MBA IIA-LBA I
LTL 389A	1690-1440	MBA IIB-LBA I
LTL 391A	1610-1390	MBA IIB-LBA II

Table 15. MBA II-LBA I absolute chronology at Ebla.

No ceramic material coming from this area has been published, so no correlations between radiocarbon dates and ceramic production are yet possible (Peyronel, 2008). Peyronel, however, argued that the most common vessel shapes that come from this Area can be described as follows:

Small globular jar with thin flaring rim, the large and deep bowl with gentle carination and flat base, the crater with horizontally expanded rim and combed decoration. Very peculiar of MB IIB is also the so-called Syrian White Slip Ware, a fine metallic production related to few basic shapes (the above mentioned globular jar, the hemispherical bowl with out-grooved rim,

¹² For the compatibility of these dates with the calibrated dates coming from the other sites see the below section “Comparison of calibrated dates”.

the small jug with pronounced shoulder and cylindrical neck) (Peyronel, 2008, p. 182).

MBA ceramic comparative analysis: Although the ceramic material from Area B is not available, more material from Ebla has been published, as, for example, those excavated at the Northern Palace and dated MBA II (Pinnock, 2005). In addition, Lorenzo Nigro has recently summarised the MBA diagnostic vessel shapes found at Ebla, especially based on the analysis of the material from Royal Graves (Nigro, 2002; Nigro, 2009). Open form shapes at Tell Mardikh included in-turned rim bowls (Ahmar OS03b), while a very common closed form are large jars with grooved rims (Ahmar CS04 and OS09) and medium dimension jars with medium/height necks (Ahmar CS08 and CS09). Moreover, since most of the excavated contexts at Ebla are associated with an elite (i.e. royal tombs and palaces), painted ware is also commonly found at the site (both Simple Painted Ware and Syro-Cilician Painted Ware) (Nigro, 1999; Nigro, 2003) (Tab. 16).

Ahmar vessel type	Mardikh name	Context	Period	Reference
CS01a		<i>Favissa</i> 5238	MBA IB	Marchetti & Nigro, 1997, p.11, fig.6/21
CS01b		<i>Favissa</i> 5238	MBA IIA	Nigro, 1999, pl. LII/60
CS02		palatine	MBA II	Matthiae, 1980a, p.147, fig.40
CS04a	Tipo 1346 Tipo 3111 Tipo 3131	palatine	MBA I-II	Pinnock, 2005, Tav. XXXII; -Tav.XCVII; -Tav.CI
CS04b		palatine	MBA I-II	Matthiae, 1980a, p.143, fig.36 and p. 146, fig. 38; - p.149, fig.42
CS05		palatine	MBA II	Matthiae, 1980a, pp. 147-48, figs.40, 41
CS06	Tipo 1332-33, 1453	palatine	MBA II	Pinnock, 2005, Tav. XXVI-VIII, LII
CS07a	Tipo 1510, 1520	burial, palatine	MBA II	Matthiae, 1984, p.25; Pinnock, 2005, Tav. LIV, LV; Nigro, 2009, Tav.XI/2, Tav.XIX
CS07b		burial	MBA II	Matthiae, 1989b, figs. 1-7; Nigro, 2009, Tav.XI/3, Tav.XVIII/1
CS08a	Tipo 1411-1416	burial, palatine	MBA I-II	Marchetti & Nigro, 1997, p.11, fig.6/40; Pinnock, 2005, Tav. XXXIII-VI; - Tav. XXXV/11; Nigro 2009, Tav II, IV-VIII
CS09a	Tipo 1431-36	palatine	MBA II	Pinnock, 2005, Tav. XLII-XLV; Nigro 2009, Tav IX, 1-3;
CS09b		palatine	MBA I	Matthiae, 1980a, p.142, fig.35

Ahmar vessel type	Mardikh name	Context	Period	Reference
CS09c	Tipo 1441, 1443	palatine	MBA II	Pinnock, 2005, Tav. XLVI, XLVII
CS10		burial, palatine	MBA I-II	Nigro, 2002, p. 300, fig. 3/16-17; - p.317, fig.20/13; Matthiae, 1980a, p.149, fig.42
OS01	Tipo 1234-35, 1311-12, 2331-32	burial, palatine	MBA I-II	Marchetti & Nigro, 1997, p. 11, fig.6/48-49; Matthiae, 1980a, pp. 148-49, figs.40-41; Pinnock, 2005, Tav. XIV, XX-XXI, LXXX-XI
OS02	Tipo 1313-14	palatine	MBA II	Pinnock, 2005, Tav. XXII
OS03a	Tipo 1141-1170, 2231-32	palatine	MBA I-II	Matthiae, 1980a, p.146, fig. 39 and p. 148, fig.41; Nigro, 2002, p. 325, fig. 31/10-12; Pinnock, 2005, Tav. VII-VIII, LXXIV-XV.
OS03b	Tipo 1111-1133, 2215, 2223	palatine	MBA I-II	Nigro, 2002, p.307, fig.7/23-24; - p.317, fig.20/5, 7; Pinnock, 2005, Tav. I-VII, LXVIII, LXX
OS08b		palatine	MBA II	Matthiae, 1980a, p.148, fig.41
OS09	Tipo 1341-1343	palatine	MBA I-II	Matthiae, 1980a, p.143, fig.36; - p.149, fig.42; Nigro, 2002, p. 317, fig.20/14; Pinnock, 2005, Tav. XXVIII-XXX

Table 16. MBA ceramic parallels between Tell Ahmar and Ebla.

Tell Mishrifeh (Qatna)

Location and excavations: Tell Mishrifeh is located in the Mid-Orontes Valley, 18 km north of the modern city of Homs (34°50'6.07"N 36°51'55.16"E). The first excavations at the site were undertaken by Robert Du Mesnil du Buisson, of the French Society of Archaeological Excavations from 1924-1929. In 1999, excavations were re-opened by a Syrian-Italian-German Project respectively directed by M. Al-Maqdissi, D. Morandi-Bonacossi, and P. Pfälzner. Excavations were carried out until 2010 but were then suspended because of the political instability in Syria.

MBA archaeological evidence and stratigraphy: The ceramic analysis from Tell Mishrifeh has only been fully published by the Italian team (Iamoni, 2012). The discussion here focuses on the material analysed in this publication. MBA levels have been excavated in three main areas: the ceramic workshop (Area J), the Eastern Palace (Area T) and the *favissa* 7262 (Area H south) (Morandi Bonacossi & Iamoni, 2010/2011). These areas have been associated with the following phases of the MBA:

Mishrifeh	Period
J 16-14; T 16-15	MBA IIA
J 13-11; T Eastern Palace	MBA IIB
J 10; T 12	MBA III

Table 17. MBA II relative chronology and stratigraphy at Tell Mishrifeh.

MBA absolute dating: There are two calibrated dates from Tell Mishrifeh, dated 2118-1690 cal BC and 1730-1456 cal BC. Both samples come from Operation J, the first one from Phase 17 and the second from Phase 11 (Tab. 18). The calibrated date from Phase 11 is particularly interesting since it is in accordance with the archaeological finds (Iamoni, 2012).

Sample	cal BC	Period
N/A	2118-1690	MBA I-II
N/A	1730-1456	MBA II - LBA I (or Iamoni's MBA IIB-MBA III, see Chapter 1)

Table 18. MBA absolute chronology at Tell Mishrifeh.

The most popular ceramics that come from Area J, Phase 11, include the following: high carinated bowls with a flaring rim (Mishrifeh B3B); cups with an externally swollen rim (Mishrifeh C5C); plates with an internally swollen rounded or thickened rim (Mishrifeh P4); globular jars with an out-turned oblique squared rim (Mishrifeh GJ3); necked jars with a double rim (Mishrifeh NJ10); short necked jars with an out-turned rounded rim (Mishrifeh SNJ5); short necked cooking pots with an out-turned square rim (Mishrifeh CK3B); and storage jars with an out-turned oblique square rim (Mishrifeh STJ7). Simple bases are the predominant bases during this period, as well as combed decorations characterised by both horizontal and wavy lines (Mishrifeh CI). However, shapes C5C and CK3B do not find close parallels with the shapes at Tell Ahmar. Cross-relations between Mishrifeh and Ahmar vessel shapes have been summarized in the following table (Tab. 19).

Ahmar vessel type	Mishrifeh name	Context	Period	Reference
CS03	GJ3 STJ7	industrial	Late MBA	Iamoni, 2012, pl.16/7-12; -, pl.17/1-4; pl.26/2-3; - pl.29/1
CS08a	NJ10 SNJ5	industrial	MBA IIB-III Late MBA	Iamoni, 2012, pl.21/7-14; - pl.23/1-8
OS01, OS02	B3B	industrial	MBA IIB-III	Iamoni, 2012, pl.1/1-12
OS03b	P4	industrial,	Late MBA	Iamoni, 2012, pl.14/1-9

Table 19. MBA ceramic parallels between Tell Ahmar and Tell Mishrifeh (Area J).

MBA ceramic comparative analysis: MBA and LBA ceramics have been classified by Iamoni according to fabric and form. From a formal point of view, he distinguished the following among open shapes: bowls (simple and carinated); plates; cups (shallow, deep, globular, biconical); round carinated bowls; and beakers. Within closed shapes, he also identified: storage jars; jars (short necked and necked); bottles; jugs, pithoi, craters; and cooking pots (simple and short necked). In the data analysis, Iamoni used a quantitative method (i.e. descriptive statistic) in combination with multivariate analyses (i.e. correspondence analysis). Through this methodology, he was able to represent, for both the MBA II and LBA I periods, statistical correspondences between vessel-forms and their rim diameter, as well as for vessel-forms and their fabric. He also focused on surface decorations (Iamoni, 2012). In addition to the material from Area J, Phase 11, further ceramic similarities have been observed with assemblages from other contexts at Mishrifeh, although no absolute dates are provided (Tab. 20).

Ahmar vessel type	Mishrifeh name	Context	Period	Reference
CS01a	C3C	industrial	MBA II	Iamoni, 2012, pl.9/5
CS09a	NJ5	palatine	LBA	Iamoni, 2012, pl.50/9-15
CS09b	NJ8	palatine	late MBA; LBA I	Iamoni, 2012, pl.21/4-5; - pl.52/8-12
CS04c	K1	palatine	MBA II	Iamoni, 2012, pl.27/1
CS10			LBA	Iamoni, 2012, pl.71
OS03a	B1-2	industrial , palatine	late MBA	Iamoni, 2012, pl.5/1-4; - pl.32-34
OS08c	C3C	palatine	MBA II-III	Iamoni, 2012, pl.9/10
OS09	K3	palatine	late MBA	Iamoni, 2012, pl.27/6

Table 20. MBA ceramic parallels between Tell Ahmar and Tell Mishrifeh.

Comparison of calibrated dates: final considerations

Calibrated BC dates have been calculated using OxCal 4.2 software. Results of calibrated dates have been summarised in the following table (Tab. 21).

Site	Sample			¹⁴ C age yr BP	95.4 % (2σ) cal age ranges %
	Type	Provenience	Code		
Ahmar	seeds	floor of Room 3.1	KIA-28274	3390±35	cal BC 1862-1612
Ahmar	charcoal	floor of Room 1.2	KIA-36444	3360±40	cal BC 1746-1531
Ahmar	charcoal	floor of Room 14.3	KIA-36445	3410±20	cal BC 1754-1642
Lidar H. ¹³	charcoal	E45a/D45d/50 R.i.	Bln-5269	3482±26	cal BC 1886-1700
Lidar H.	charcoal	E45b/50 R.k.	Bln-5130	3480±33	cal BC 1890-1695
Lidar H.	charcoal	O50/19 R.c.	Bln-5398	3343±35	cal BC 1736-1529
Lidar H.	charcoal	M49-50720 R.i.	Bln-5401	3311±37	cal BC 1683-1505
Lidar H.	charcoal	R45/54 R.98 S.ü.Fb.	Bln-5133	3251±25	cal BC 1611-1454
El-Qitar ¹⁴	N/A	floor of Building 10	GrN-11879	3395±35	cal BC 1862-1614
Mishrifeh ¹⁵	N/A	Operation J-Phase J17	N/A	3540±70	cal BC 2118-1690
Mishrifeh	N/A	Operation J-Phase J11	N/A	3303±50	cal BC 1730-1456
Ashara ¹⁶	charcoal	floor of House of Puzurum	N/A	N/A	1900-1700?
Mardikh ¹⁷	seeds	T.8662 – floor house in Area B east	LTL 390A	N/A	1700-1520?
Mardikh	seeds	L.8752 – floor house in Area B east	LTL 389A	N/A	1690-1440?
Mardikh	seeds	L.8454 – floor house in Area B east	LTL 391A	N/A	1610-1390?

Table 21. Calibrated dates of Northern Mesopotamian and Syrian MBA sites (N/A stands for not available).

Comparisons of calibrated dates analysed with OxCal 4.2. are shown in Figure 16.

¹³ Görzsdorf, et al., 2002.

¹⁴ McClellan, 1983/84.

¹⁵ Iamoni, 2012.

¹⁶ Buccellati & Kelly-Buccellati, 1983. Information on ¹⁴C age yr BP are lacking, so calibrated dates are unclear.

¹⁷ The analysis from Tell Mardikh was undertaken using accelerator mass spectrometry (AMS) (Peyronel, 2008b). As for Tell Ashara, no ¹⁴C age yr BP are available.

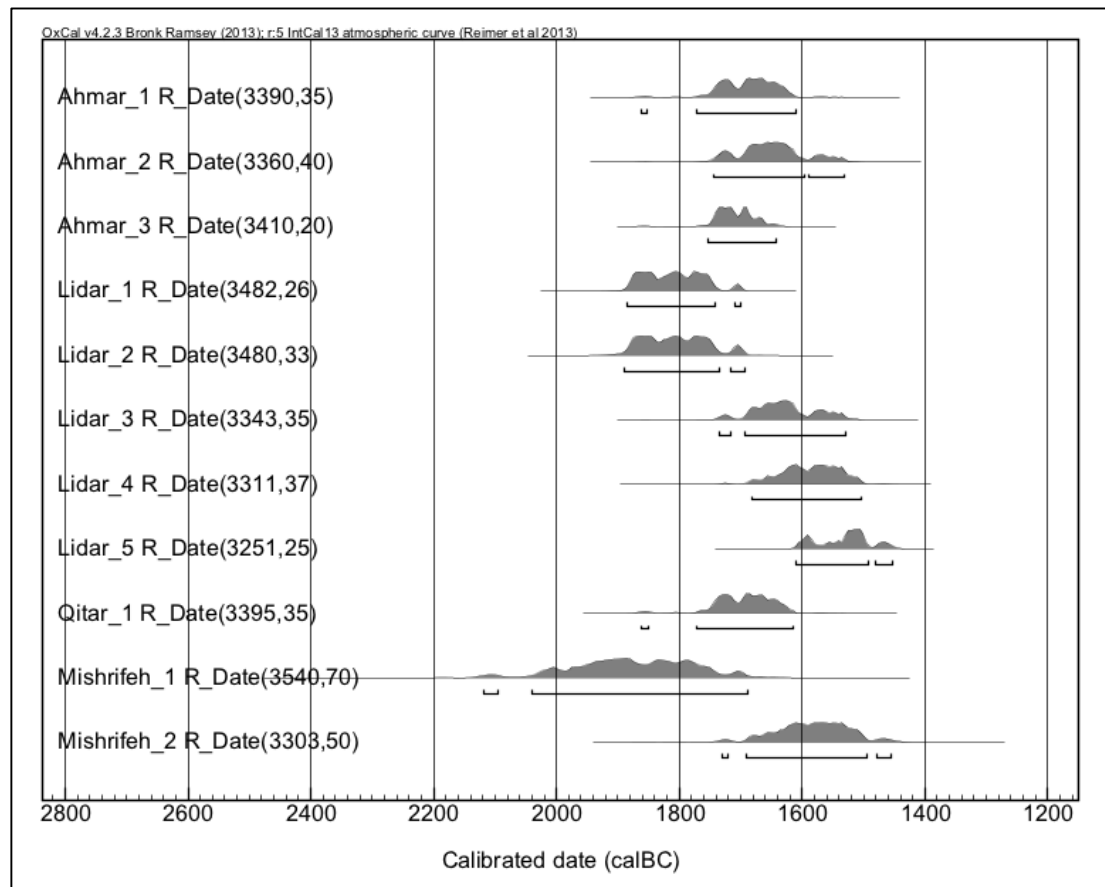


Figure 16. Comparison of the calibration results from Northern Mesopotamian and Syrian sites (dates calibrated with OxCal 4.2.2).

Dates from both Tell Mardikh and Tell Ashara have not yet been properly published (information on ^{14}C age yr BP is missing, see Table 21), so it was not possible to calculate their calibrated dates in OxCal and to cross-relate these to those available at Ahmar. That is why these two sites do not appear in Figure 16.

For the other sites, the comparison of calibrated dates of Figure 16 shows a good cross-correlation between Tell Ahmar and Tell el-Qitar. However, since it has been seen that the ceramic material discovered in the building at el-Qitar may not be associated with the calibrated dates, then the ceramic comparative analysis of these two sites loses its chronological efficacy. Regrettably, the ceramic material from Lidar Höyük has not been associated with the calibrated dates since ^{14}C analysis has been attempted several years later the study of the ceramic material and the two works are still disconnected. Therefore, the only calibrated dates and ceramic

associations clearly investigated and appropriate for this study are those from Tell Mishrifeh. Nevertheless, the radiocarbon dates from Mishrifeh refer to a slighter later and slighter earlier periods than for the dates analysed at Tell Ahmar (see Fig. 16). Moreover, one should keep in mind that Mishrifeh is not located in the general vicinity of Tell Ahmar and that, contrary than at Ahmar, a large part of the Mishrifeh ceramic assemblage is coming from monumental context.

This analysis has shown how information on absolute dating for this period is very scarce, and when it is available, it is not always associated with ceramic shapes. Chronological comparisons, however, can be expanded by investigating contemporaneity of Northern Mesopotamian and Syrian sites also according to ceramic parallels. These parallels are explored in the following paragraph.

Ceramic relative chronology

Although the majority of the MBA sites taken into consideration in this study does not offer ^{14}C dates, Northern Mesopotamian and Syrian ceramic assemblages have been compared to establish evidence for contemporaneity between Tell Ahmar and the other sites. Within this discussion, information from the sites listed in Table 8 has been summarised in both discursive and tabular forms.

The final aim of this comparative analysis is to offer suitable information for refining vessel function. For this reason, similarities of vessel shapes from Northern Mesopotamian and Syrian sites are further discussed in Chapter 10. The most significant ceramic functional comparisons have been illustrated in Appendix C.

Zeytinli Bahçe Höyük

Location and excavations: Zeytinli Bahçe Höyük is located on the floodplain east of the Euphrates, in the Şanlıurfa province (36°59'43.51"N 37°58'40.19"E). This site, the largest in the Carchemish Dam area, has been investigated under the joint direction of the Urfa Archaeological Museum and the Italian Archaeological Expedition of “La Sapienza” University of Rome, directed by M. Frangipane.

Excavations have taken place from 1999 to 2003. In addition, a survey of the area has been undertaken by G. Di Nocera (Frangipane & Bucak, 2001).

MBA archaeological evidence and stratigraphy: MBA archaeological excavations at the site have been focused at the top and on the southeaster slope of the central mound (trenches D6, C5-6) (Balossi, et al., 2007). The MB occupation is documented by an impressive fortified building (Building VII). Five charcoal samples have been collected from the floor of the rectangular room A80, representing the main entrance of the building, however radiocarbon dates are not published yet. The building, associated with an administrative function, was abandoned probably because of a fire. Level VII has been dated to the MBA II.

MBA ceramic comparative analysis: The pottery assemblage from the Building VII is formed by small jars with high, flaring necks (Balossi, et al., 2007, fig. 10/c). These shapes are very similar to Ahmar OS08. In particular, about these shapes Di Nocera argued that:

These kinds of vessels have evident parallels in the MB levels of Lidar Höyük and such shapes are attributed in particular to the most recent phases of the period. At Tilbeshar, these shapes are illustrated amongst those of the Middle Bronze II. Further comparisons are also evident with the Middle Bronze Age levels of Horum and Şaraga Höyük. The materials found in associated with the monumental building at Şaraga have been generically ascribed by the excavator to the Middle Bronze Age, but some published examples, apart from evidencing strong similarities with those found *in situ* in the fortified structure of Zeytinli Bahçe, seem to be related to phases 4-5 of Lidar and may belong to Middle Bronze II (Balossi, et al., 2007, p. 367).

Other typical shapes found at Zeytinli Bahçe can be associated with Ahmar CS08 and Ahmar CS11 (Tab. 22). Given the importance of these shapes from a functional point of view and their close similarities with those found at Tell Ahmar, further techno-morphological features are fully discussed in Chapter 9.

Ahmar vessel type	Zeytinli Bahçe name	Context	Period	Reference
CS08a		administrative	MBA II	Balossi, et al., 2007, p.371, fig.10/a-b
CS11		administrative	MBA II	Balossi, et al., 2007, p.373, fig.12
OS08a		administrative	MBA II	Balossi, et al., 2007, p.371, fig.10/c
OS08b		administrative	MBA II	Balossi, et al., 2007, p.371, fig.10/d

Table 22. MBA ceramic parallels between Tell Ahmar and Zeytinli Bahçe.

Tell Aushariye

Location and excavations: Tell Aushariye is situated 15 km south of the modern Syro-Turkish border on the western side of the modern Tishrin Lake where the lake joins the Sajur River (36°39'36.59"N 38°4'33.19"E). Archaeological excavation at the site started in 2000 under the direction of Jesper Eidem from the University of Copenhagen. The last season took place in 2010.

MBA archaeological evidence and stratigraphy: The MBA material has been found in three places at Tell Aushariye: in Area G (K11 and K12), Area C and K14. Area G, located on the southwestern corner of the *tell*, has been the area which has given major MBA archaeological material. David Jakobsen has investigated ceramic material coming from this area in his master thesis (Jakobsen, 2011). Two levels of MBA have been excavated at the site: Level VIIIB and Level VIIA. This last level included two phases (phase 3-4), which have been dated to the MB IIB. Level VIIA comprises a large building (or several smaller buildings) which has been damaged by a fire (Tab. 23). Because of the presence of several large jars, Jakobsen argued that this area was used for storage (Jakobsen, 2011).

Tell Aushariye	Period
Level VIII	MBA I
Level VII A (Phase 3-4)	MBA IIB

Table 23. MBA relative chronology and stratigraphy at Tell Aushariye.

MBA ceramic comparative analysis: MBA pottery coming from Area G has been studied by Jakobsen and divided according to fabric and morphology (open and closed shapes and necked and neckless forms). One of the most common open shapes comprises shallow plates (O1) (Ahmar OS03), while amongst closed shapes the most representative comprises small beakers with restricted ovoid or rounded

profiles and vertical or angled necks with simple rounded rims (C1) (Ahmar OS08), jars with necks that flare outwards and rims (C4) (Ahmar CS09), and large storage vessels with high necks that are angled slightly outwards (C9) (Ahmar CS04). One of the O9 shape presents a potter's mark very similar to those find on a similar vessel shape at Tell Ahmar (see Chapter 5) (Tab. 24). The most common MBA decorations for the Tell Aushariye sherds are incised lines, burnished surfaces, and applied bands. Moreover, a few samples have shown parallels to Khabur ware (Jakobsen, 2011).

Ahmar vessel type	Aushariye name	Context	Period	Reference
CS01	C3	domestic	MBA IIB	Jakobsen, 2011, App.1, p.16/88-89
CS02	C19	domestic	MBA IIB	Jakobsen, 2011, App.1, p.29/146-47
CS03	C12: 2-3	domestic	MBA IIB	Jakobsen, 2011, App.1, p.25/134-136
CS04a	C33: 1	domestic	MBA IIB	Jakobsen, 2011, App.1, p.35/173
CS04c	C9	domestic	MBA IIB	Jakobsen, 2011, App.1, p.21/120-121; p.22/122-125; p.23/126
CS05	OS17	domestic	MBA IIB	Jakobsen, 2011, App.1, p.11/60-62
CS06	C35: 1-3	domestic	MBA IIB	Jakobsen, 2011, App.1, p.37/179-81
CS08	C6	domestic	MBA IIB	Jakobsen, 2011, App.1, p.19/103-113
CS09	CS4: 2, C5	domestic	MBA IIB	Jakobsen, 2011, App.1, p.16/88-89
CS11	CS15	domestic	MBA IIB	Jakobsen, 2011, App.1, p.27/142
OS01	OS14-16	domestic	MBA IIB	Jakobsen, 2011, App.1, p.11/57-58
OS03a	O1: 1A-C	domestic	MBA IIB	Jakobsen, 2011, App.1, p. 3/1-11
OS03b	O1: 2A-B, 3A-C	domestic	MBA IIB	Jakobsen, 2011, App.1, p.5 /16-26; p.7/26-34
OS05	O5	domestic	MBA IIB	Jakobsen, 2011, App.1, p.7/39-42
OS08a	C1	domestic	MBA IIB	Jakobsen, 2011, App.1, p.13/80-82
OS08b-c	C1	domestic	MBA IIB	Jakobsen, 2011, App.1, p.13/73-79

Table 24. MBA ceramic parallels between Tell Ahmar and Tell Aushariye.

Tell Shiyukh Tahtani

Location and excavations: Tell Shiyukh Tahtani is situated along the eastern bank of the Euphrates River, approximately 12 km south of Carchemish on the Turkish border (36°45'15.35"N 38°5'2.64"E). Archaeological excavations at the site began in 1993 under the direction of Gioacchino Falsone from the Italian University of Palermo. Excavations have been undertaken until 2010.

MBA archaeological evidence and stratigraphy: Second millennium BC occupation (MBA and LBA) at the site has been detected in Area CD, on the east

side (Falsone & Sconzo, 2012). MBA II levels (Phase 6-7) revealed a building complex, largely destroyed by a violent fire, consisting of a series of small rooms and courtyards arranged around a main hall (Falsone & Sconzo, 2012). The precise function of this building is currently under investigation. Sconzo, however, according to the archaeological material found in this area, suggested that it could be associated with multi-functional activities such as domestic (e.g. storage and preparation of food) and industrial (e.g. pottery kiln) (Sconzo, 2007). In addition, funerary activities have been also recorded. About a dozen graves, both pithoi and pit-burials were sealed below the beaten earth floor of the central burnt room. The MBA sequence has been established consisting of four main phases (Phases 6-9) (Tab. 25).

Tell Shiyukh Tahtani	Period
CD 9-8	MBA I
CD 7-6	MBA II

Table 25. MBA relative chronology and stratigraphy at Tell Shiyukh Tahtani.

MBA ceramic comparative analysis: the ceramic shapes found at Tell Shiyukh Tahtani are very similar to those found at Tell Ahmar, supporting a contemporaneous occupation of these two sites. The large quantity of rich furnishing ceramic material found *in situ* in the burned complex and sealed by the heavy destruction layer included various pouring and serving vessels (Ahmar OS03 and OS08), storage jars and grinding tools (Falsone & Sconzo, 2012). A large jar with a hole in the bottom and a combed decoration was used as a jar burial (Ahmar CS13) (Sconzo, 2007) (Tab. 26). Some of the large vessels are characterised by a potter's mark on the shoulder (Falsone & Sconzo, 2012). In addition, Grey Burnished Ware flasks (Ahmar CS01) and fragments of painted trefoil-mouthed eye-vase Syro-Cilician Ware (Ahmar CS07b) have also been recovered at the site.

Ahmar vessel type	Shiyukh Tahtani name	Context	Period	Reference
CS04a		street	MBA I	Sconzo, 2007, p.291, fig.20/7, 10; p.296, fig. 23/23-25
CS07b		funeral	MBA II	Sconzo, 2007, p.297, fig.25/1
CS08a		street	MBA II	Sconzo, 2007, p.296, fig.23/1-7
CS10		funeral	MBA I	Sconzo, 2007, p.291, fig.20/3-5
CS13		street	MBA II	Sconzo, 2007, p.296, fig.23/14-17
OS03b		domestic, funeral	MBA II	Sconzo, 2007, p.295, fig.22/1-2; - p.297, fig.25/4
OS08		domestic, funeral	MBA II	Sconzo, 2007, p.295, fig.22/6; - p.297, fig.25/2-3
OS09		domestic	MBA II	Sconzo, 2007, p.295, fig.22/7

Table 26. MBA ceramic parallels between Tell Ahmar and Tell Shiyukh Tahtani.

Tell Hadidi

Location and excavations: Tell Hadidi is located near the now-submerged village at Hadidi, situated along the west bank of the Euphrates River, approximately 110 km from Aleppo (36°16'12.73"N 38°7'23.66"E). The site has been the target of several excavations by the Dutch team under the leadership of H. Franken from the University of Leiden from 1973 to 1974, and later by a collaborative project between the Milwaukee Public Museum, Michigan University and the University of Wisconsin-Milwaukee from 1974-1978 and directed by Rudolph Dornemann. No final report about Tell Hadidi has been published, but several preliminary reports on Bronze Age levels as well as a PhD dissertation about MBA ceramics written by Elisabeth Cooper (Cooper, 1997).

MBA archaeological evidence and stratigraphy: During the MBA occupation at the site was limited to the upper part of the tell. Excavations in several soundings on the high tell have exposed a well-fortified Middle Bronze Age settlement, with many phases of occupation and re-buildings (Dornemann, 1985). The MBA sequences have been recorded in two areas: B and F. Dornemann has investigated Area B (Dornemann, 1979), while Cooper Area F (Cooper, 1997). Area B is located on the northern edge of the tell. A kiln has been discovered and under the floor of the domestic structures, several infant burials were found (Dornemann, 1979). Five major levels have been identified in this area: from A to E. Level D is the one that has offered more archaeological material. Dornemann dated this level to the MBA

IIB, contemporary with the Zimri-Lim period of Mari. Area F is located along the southeastern slope of the tell at Hadidi, approximately 350 m south of Area B (Cooper, 1997). Cooper divides the sherds from Area F into three sub-periods: early (EBA), middle (MBA IIA) and late (LBA). The middle phase is the main phase, which consists of the majority of the material (Cooper 1997) (Tab. 27).

	Tell Hadidi	Period
Area B	Level D	MBA IIB
Area F	“Middle”	MBA IIA

Table 27. MBA relative chronology and stratigraphy at Tell Hadidi.

MBA ceramic comparative analysis: The typology for the ceramic material of Area B was based on vessel shapes. A more detailed study of ware has not been provided for the MBA pottery. However, petrographic analysis has been undertaken on some MBA I samples. From this study, six fabric types in total have been identified, of which three have local origins, while the remains present material coming from somewhere outside the region (Mason & Cooper, 1999). Donnerman argued that open shapes of Area B consist of bowls, with a variety of out-turned or profiled rims (Ahmar OS08).

A common feature is a carination beneath the rim which is most pronounced and sharpest in the latest examples. The rims themselves are more compact and rounded early, with a pronounced ledge in the later forms. As is the case with the large jar rims, the upper surface of such bowls is often ribbed in early examples (Dornemann, 1979, p. 138).

Large craters characterised by curvy combed decorations are very common among the assemblage. This pattern seems to become more angular during the later period LBA I. Distinctive shapes among the assemblage are also the globular jars with high, straight, nearly vertical rims (Ahmar CS08 and CS09). Tall oval almost neckless jars with rounded or flattened bases occur often with a hole pierced through the centre (Dornemann, 1992). Very little painted pottery (i.e. Khabur Ware or Syro-Cilician Ware) has been recovered at Tell Hadidi. Cooper focuses her studies on the MBA ceramics of Area F. The loci of this area were superimposed strata of a rubbish tip, so all the ceramics analysed by the scholar is considered as derived from a secondary

context (wasters). The rims were divided into open and closed shapes. Fifty-three closed shapes have been identified (C1-C53), while thirteen open shapes (O1-13). One of the most representative closed shapes are jars with a restricted neck and an out-turned flanged rim (C6, Ahmar CS08); jars with a simple, folded-over, flatten rim (C12, some similarities with Ahmar CS13) which are probably mass-produced shapes given the uniformity of their appearance; and large vessels with a short neck and a ribbed rim that projects outward (C17, Ahmar CS04a). The most common open shapes in Area F are small cups with a vertical or nearly vertical wall and a slightly thickened rim (O6, Ahmar OS miscellanea - Plate 49/3-5). According to the ceramic shapes published, it is interesting to note that in both assemblages (Area B and Area F) there is a scarcity of open shapes over closed shapes. For example, MBA hallmark Ahmar OS03 is almost absent, and CS04c samples are very scarce (Tab. 28). Potter's marks were not recorded either. In general, however, the ceramic material from Ahmar presents more similarities with Area B material rather than with the material from Area F.

Ahmar vessel type	Hadidi name	Context	Period	Reference
CS01b	X 16-48	Area B	MBA IIC	Dornemann, 1992, p.89, fig.3/17
CS02		Area B	MBA IIC	Dornemann, 1979, p.134, fig.22/24; p.135, fig.23/46
	C35	Area F	MBA IIA	Cooper, 1997, p.133, fig.18/1
CS03	XV-78-150	Area B	MBA IIB	Dornemann, 1979, p.133, fig.21/32-37
CS04a	XV-105-177 XV-105-177	Area B	MBA IIB MBA IIC	Dornemann, 1979, p.134, fig.22/5; Dornemann, 1992, p.93, fig.5
	C13, C17, C18	Area F	MBA IIA	Cooper, 1997, p.124, fig.9/f-g; p.126 cont, fig.11-15
CS04b		Area B	MBA IIB MBA IIC	Dornemann, 1992, p.95, fig.6/2
CS05		Area B	MBA IIC	Dornemann, 1979, p.135, fig.23/44
CS06		Area B	MBA IIB	Dornemann, 1984, fig.15/16-20
CS08a	XV	Area B	MBA IIB MBA IIC	Dornemann, 1979, p.134, fig.22/7-11, 15; p.135, fig.23/41-42; Dornemann, 1992, p.89, fig.3/23
	C6	Area F	MBA IIA	Cooper, 1997, p.121, fig.6/i-n
CS08b	C7	Area F	MBA IIA	Cooper, 1997, p.122, fig.7/a-b

Ahmar vessel type	Hadidi name	Context	Period	Reference
CS09a		Area B Area H	MBA IIB MBA IIC LBA I	Dornemann, 2007, p.51, pl.V/46-50
CS10		Area B	MBA IIB	Dornemann, 1979, p.135, fig.23/2; Dornemann, 1992, p.89, fig.3/1-5
CS11	III	Area H	LBA I	Dornemann, 1977, p. 136, fig.24/11-12
CS13	C12	Area B Area F	MBA IIB MBA IIC MBA IIA	Dornemann, 1992, p.105, fig.17/4-14 Cooper, 1997, p.123, fig.8/d-h
OS01	O2	Area B Area F	MBA IIB MBA IIC late MBA IIA	Dornemann, 1979, p.134, fig.22/16, 18, 22 Cooper, 1997, p.136, fig.21/f-h
OS02	O13	Area B Area F	MBA IIB MBA IIA	Dornemann, 1979, p.134, fig.22/17 Cooper, 1997, p.138, fig.23/a
OS03a		Area B Area H	MBA IIC LBA I	Dornemann, 1977, p. 135, fig.23/9, 11
OS03b	I III	Area B Area H	MBA IIC LBA I	Dornemann, 1977, p. 136, fig.24/1 Dornemann, 1984, fig.3/5
OS04	C8	Area H Area F	LBA I early MBA IIA	Dornemann, 1977, p. 123, fig.12/22-27 Cooper, 1997, p.122, fig.7/c-d
OS05		Area H	LBA I	Dornemann, 1977, p. 123, fig.12/42
OS08c		Area B	MBA IIB	Dornemann, 1992, p.101, fig.15/9
OS09		Area B	MBA IIB	Dornemann, 2007, p.50, pl.IV/35, 38
Vessel with a perforated base (CS10)	(flat base)	Area B	MBA IIB	Dornemann, 1992, p. 91, fig. 4/1

Table 28. MBA and LBAI ceramic parallels between Tell Ahmar and Tell Hadidi.

Khirbit ed-Diniye (Haradum)

Location and excavations: Khirbit ed-Diniye is located c. 70 km downstream from Mari on the left bank of the Euphrates in Iraq (34°26'9.46"N 41°36'20.62"E). The work was a salvage operation in response to the Qadisiyya Dam (Haditha) construction. The site was excavated for six seasons in the 1980s by a team from the *Délégation Archéologique Française en Iraq* led by Christine Kepinski-Lecomte (Kepinski, 1992; Kepinski, 2005).

MBA archaeological evidence and stratigraphy: MBA evidence consists of units or blocks of residential use (i.e. Buildings 1-4, 7-15, 17-29, 32-35), Central Square 30, and a temple (Kepinski, 1992). The site was occupied for only a short

period, a little bit more than a century, from the 18th to the 17th century (Kepinski, 2005). Old Babylonian occupation was divided by the excavators into four levels, which from the oldest to the latest have been defined as D-A. These levels have been dated according to the cuneiform tablets discovered at Khirbet ed-Diniyeh (Tab. 29). The naming of the Babylonian kings in these letters (i.e. Samsu-iluna, Ani-esuh, Amiditana and Ammisaduqa) has made it possible to date the Haradum occupations to 1775-1628 BC, a period that is comparable to the MBA II period. In particular, Level 3D (c. 1775-1760 BC); Level 3C (c. 1725-1690 BC); Level 3B (c. 1690-1650 BC); and Level 3A (c. 1668-1628 BC) (Kepinski, 1992).

Khirbit ed-Diniye	Period
Level 3A-B	MBA IIB
Level 3C-D	MBA IIA-B

Table 29. MBA relative chronology and stratigraphy at Khirbit ed-Diniye.

MBA ceramic comparative analysis: In general, the composition of the ceramic material assemblage from Haradum, presents a combination of elements from both Southern and Northern Mesopotamia, this last in particular with the Upper Euphrates Valley, as well as hybrid shapes (Tab. 30). For example Ahmar type CS11 (medium dimension flask) has been identified at Haradum, and it was manufactured with a similar technique used at Tell Ahmar (see Chapter 5) (Kepinski, 2005, p. 125). In addition, large storage jars (Ahmar CS04c) characterised by a potter's mark (both combed and painted), as well as medium dimension jars (Ahmar CS08) are also common shapes discovered at Haradum.

Ahmar vessel type	Khirbit ed-Diniye name	Context	Period	Reference
CS02	Type 12.2	domestic	MBA IIB	Kepinski, 1992, fig.94/10, 12
CS03	Type 2.2	domestic	MBA IIB	Kepinski, 1992, fig.62/6-8
CS04c	Type 4.2	domestic	MBA IIB	Kepinski, 1992, fig. 68/4-9
CS05	Type 6.3	domestic	MBA IIB	Kepinski, 1992, fig. 75/3-5
CS07b	Type 13.7	domestic	MBA IIB	Kepinski, 1992, fig. 100/3
CS08a	Type 2.3	domestic	MBA IIB	Kepinski, 1992, fig. 63/5-7
CS10	Type 1.2	domestic	MBA IIA	Kepinski, 1992, figs.58-59
CS11	Type 7.1	domestic	MBA IIB	Kepinski, 1992, fig. 76/1-6
OS03a	Type 19.1	domestic	MBA IIB	Kepinski, 1992, fig.114/1-10

Ahmar vessel type	Khirbit ed-Diniye name	Context	Period	Reference
OS03b	Type 19.4; Type 21.1	domestic	MBA IIB	Kepinski, 1992, fig.115/3-4; fig.121
OS03c	Type 19.9	domestic	MBA IIB	Kepinski, 1992, fig.116/10-11
OS05	Type 19.12	domestic	MBA II	Kepinski, 1992, fig.117/5-6
OS08b	Type 15.3	domestic	MBA IIB	Kepinski, 1992, fig.102/11
OS07	Type 17.3	domestic	MBA IIB	Kepinski, 1992, fig.104/3-4
OS09	Type 5.5	domestic		Kepinski, 1992, fig.73/2

Table 30. MBA II ceramic parallels between Tell Ahmar and Khirbit ed-Diniye.

Chagar Bazar

Location and excavations: Chagar Bazar is located in Syria, about 35 km north of Al-Hasakah (36.523°N 40.535°E). The first archaeological excavation at the site took place from 1934 to 1936 by M. Mallowan. Work was resumed at the site in 1999 by an expedition from the British School of Archaeology in Iraq in cooperation with the University of Liège and the Syrian Directorate General of Antiquities and Museums. Excavations have been suspended since 2011.

MBA archaeological evidence and stratigraphy: MBA levels have been excavated in two areas of the site: Area A, where mainly domestic buildings have been brought to light, and Area G, which has been associated with an administrative complex (Tab. 31). In addition, several MBA jar burials have also been found at the site.

Chagar Bazar		
Area A	Area G	Period
Phase I	Phase I	MBA II
Phase II	Phase II (2, 1)?	MBA I-II?
Phase III	Phase III-IV?	MBA I?

Table 31. MBA relative chronology and stratigraphy at Chagar Bazar.

MBA ceramic comparative analysis: Ceramic sherds were classified into two categories, namely, open and closed shapes. Subsequently, sherds were further analysed according to their dimension (small, medium and large). Finally, a morphological typology based on rim features was undertaken. This typology classified 30 main functional types. Morphological typology included vessel shapes such as bowls, barrels, basins, cups, beakers, jars, cooking pots, bottles, stands and

grain measures. Common ware is the most representative ceramic types, while fine and Grey Burnished Ware are generally scarce, although painted decorations are more common (11.2%). These sherds belong to the Khabur Ware, which is a well-known ceramic class of this particular region (Tab. 32). The ceramic material from Chagar Bazar will also be taken into consideration in Chapters 9-10.

Ahmar vessel type	Chagar Bazar name	Context	Period	Reference
CS01	Bottle	administrative	MBA I	McMahon, 2009, pl.64/8
CS03	Deep cylindrical bowl	administrative	MBA II?	McMahon, 2009, pl.16/4
CS04a	Deep cylindrical bowl	administrative	MBA	McMahon, 2009, pl.17/8-9; - pl.59/13-16
CS05	Narrow-neck jar (neck ridge)	domestic, administrative	MBA	McMahon, 2009, pl.53/1-5, 14
CS09a	Narrow-neck jar	domestic, administrative	MBA	McMahon, 2009, pl.52/15-19
CS09c	Narrow-neck jar	domestic	MBA II?	McMahon, 2009, pl.52/10
CS10	Wide-mouth jar	domestic	MBA	McMahon, 2009, pl.54
CS13	Cooking pots	administrative	MBA	McMahon, 2009, pl.62/1-2
CS14	Cooking pots	administrative	MBA	McMahon, 2009, pl.64/4
OS01	Deep bowl – triangular ledge rim	domestic, administrative	MBA	McMahon, 2009, pl.13/1-10
OS03a	Shallow bowl – plain rim	domestic	MBA I-II?	McMahon, 2009, pl.11/1
OS03b	Shallow bowl-incurving rim	domestic, administrative	MBA	McMahon, 2009, pl.11/5-15
OS05	Strainer	administrative	MBA	McMahon, 2009, pl.65/10-11
OS07	Basin	administrative	MBA	McMahon, 2009, pl.41/6-7, 10
OS09	Deep cylindrical bowl	domestic, administrative	MBA	McMahon, 2009, pl.17/4-5; - pl.15

Table 32. MBA ceramic parallels between Tell Ahmar and Chagar Bazar.

Tell Leilan

Location and excavations: Tell Leilan lies in the Khabur River basin in Al-Hasakah Governorate, in Syria (36°57'26"N 41°30'19"E). Archaeological excavations were carried out there from 1979 to 2010 under the direction of H. Weiss, from Yale University.

MBA archaeological evidence and stratigraphy: MBA archaeological evidence has been excavated on the acropolis in an area defined as “Acropolis Northeast” where an Old Babylonian monumental temple was uncovered (Weiss,

1990); on the Eastern Lower Town where the Shamshi-Adad Palace was revealed (see Chapter 1) (Akkermans & Weiss, 1991); and on the Lower Town where the Qarni-Lim's Palace was excavated. Qarni-Lim was not a king of Tell Leilan, but a ruler of a neighbouring city. Archaeologists have interpreted this building as being the embassy of Qarni-Lim at Tell Leilan (Pulhan, 2000). Since only the ceramic material from Qarni-Lim's Palace has been published, the comparative analysis focuses on the evidence from this building. The ceramic material investigated comes from the 12 excavated rooms of the palace, as well as from three jar burials. A particularly important aspect of this work is the discussion instigated by Pulhan regarding the production of beer at the palace (see Chapter 9). The ceramic material investigated belongs to Level III (which is the only level excavated at the palace), which corresponds to the transition period between MBA IIA and IIB.

MBA ceramic comparative analysis: Pulhan combined a statistical and functional analysis of 1621 ceramic sherds in order to understand both the chronological occupation and function of the palace. She identified the following vessel shape types: bowl, cup, jar, pot, plate and sieve. The most common shapes at Tell Leilan are bowls (31%), while plates represent only 9%. Each shape has been further sub-divided according to rim and vessel wall peculiarities (Tab. 33). Furthermore, a standard measuring vessel corresponding to c. 2.4 l that was identified in the assemblages (Jar type 2) has been linked to the distribution of beer issued by Qarni-Lim's Palace (see Chapter 9). Khabur Ware is also common at the site.

Ahmar vessel type	Leilan name	Context	Period	Reference
CS08	Jar type 2	palatine	MBA IIA-IIB	Pulham, 2000, fig.16, 17
CS09c	Jar type 1	palatine	MBA IIA-IIB	Pulham, 2000, fig.14/3
CS10	Pot type 6	palatine	MBA IIA-IIB	Pulham, 2000, fig.42
CS13	Pot type 1	palatine	MBA IIA-IIB	Pulham, 2000, fig.35
OS01	Plate type 1	palatine	MBA IIA-IIB	Pulham, 2000, fig.20
OS03a	Bowl type 1	palatine	MBA IIA-IIB	Pulham, 2000, fig.25, 26/5
OS03b	Plate type 2	palatine	MBA IIA-IIB	Pulham, 2000, fig.21-23
OS05	Sieve	palatine	MBA IIA-IIB	Pulham, 2000, fig.44/2
OS07	Bowl type 5	palatine	MBA IIA-IIB	Pulham, 2000, fig.33/1
Perforated base	Base type 4	palatine	MBA IIA-IIB	Pulham, 2000, fig.48/2

Table 33. MBA II ceramic parallels between Tell Ahmar and Tell Leilan.

Ceramic relative chronology: additional evidence

In this concluding part of Chapter 3, a summary of some additional MBA sites used to discuss the distribution of vessel forms is given (Tabs. 34 - 46). These sites are taken into consideration in this research even if they provided only partial information, which is either on the MBA chronological period or on vessel function. As for the sites discussed above, their association with MBA levels has been based on vessel shape similarities.

A conclusive table at the end of this chapter (see Tab. 47) indicates the correspondences of MBA relative and absolute chronologies from all the sites included in this study.

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

SITE PROFILE				
Site name		Şavi Höyük		
Location		South of Birecik, along the east bank of the Euphrates River (36°56'28.09"N 38°0'36.77"E)		
Excavation		1999 - 2001, R. Dittmann, Westfälische Wilhelms, University Münster		
MBA evidence		Şavi Höyük I		
MBA context		Domestic, defensive		
MBA level and relative chronology		Stratigraphy	Period	
		Phase XIII-XVI	MBA I	
		Phase XII-IX	MBA II	
¹⁴ C		N/A		
Publication		Dittmann, et al., 2002		
CERAMIC COMPARISONS				
The pottery shapes found at the site reflect some of the most common features of the MBA: incised wavy line decorations and storage jars with everted rims and a grooved decoration on the top (Ahmar CS04 and OS09). In addition, Amuq-Cilician Painted Ware is represented by two sherds in Phase XIII.				
Ahmar vessel type	Şavi Höyük name	Context	Period	Reference
CS04a	N/A	domestic	MBA II	Dittmann, et al., 2002, p.226, fig.8a/7
CS04b	N/A	domestic	MBA II	Dittmann, et al., 2002, p.226, fig.8a/6, 8
CS05	N/A	domestic	MBA II	Dittmann, et al., 2002, p.226, fig.11a/1
OS01	N/A	domestic	MBA II	Dittmann, 2007, p.168, fig.3/6, 8-9
OS03c	N/A	domestic	MBA I	Dittmann, 2007, p.168, fig.3/8-9
OS04	N/A	domestic	MBA I	Dittmann, et al., 2002, p.224, fig.3
OS08b	N/A	domestic	MBA II	Dittmann, 2007, p.168, fig.3/17-18

Table 34. Şavi Höyük: MBA relative chronology, stratigraphy and ceramic parallels.

SITE PROFILE				
Site name	Şaraga Höyük			
Location	West bank of the Turkish Euphrates (36°55'9.10"N 38°0'3.37"E)			
Excavation	1998 - 2003, K. Sertok and F. Squadrone, Ankara University and University of Rome “La Sapienza”			
MBA evidence	South Area, North Area			
MBA context	Administrative			
MBA level and relative chronology	Stratigraphy	Period		
	Phase III	MBA II		
¹⁴ C	N/A			
Publication	Sertok, et al., 2007			
CERAMIC COMPARISONS				
Archaeological material found in this building only come from the last phase, dated to the MBA II. From this level, a pilgrim flask (possibly Ahmar CS11) in a grave under the building floor and a Paleo-Babylonian cylinder seal impression have been recovered (Squadrone, pers. comm., April 2013). Large storage jars (Ahmar CS04), characterised by an out-flaring rim and a grooved decoration on the top rim were found (Ezer, 2009). These jars show a combed decoration (horizontal or wavy) on the shoulders. One of these jars is also characterised by a potter’s mark. In addition, another type of decoration that seems to be quite common among the ceramic samples is a wavy lined bordered by two parallel grooved lines (Sertok & Kulakoğlu, 2001). Furthermore, a wheel-made small dimension flask (Ahmar CS11) has been found in a stone cist grave. As for the sample from Tell Ahmar, this shape is characterised by a spherical body made from two separate semi-spherical parts and has a handle with an eight-shaped section on the shoulder. Finally, two bottles were discovered in two different burial graves (Ahmar CS01). They are made of grey-black fabric and with burnished surfaces that can be classified as Grey-Burnished Ware.				
Ahmar vessel type	Şaraga Höyük name	Context	Period	Reference
CS01a	N/A	administrative	MBA II	Sertok & Kulakoğlu, 2002, p.366, fig.12
CS04c	N/A	administrative	MBA II	Sertok & Kulakoğlu, 2002, p.366, fig.6/1-4
CS08	N/A	administrative	MBA II	Sertok & Kulakoğlu, 2002, p.366, fig.6/7-9
CS11	N/A	administrative	MBA II	Sertok & Kulakoğlu, 2002, p.366, fig.12
OS08a	N/A	administrative	MBA II	Sertok & Kulakoğlu, 2002, p.366, fig.6/10-12

Table 35. Şaraga Höyük: MBA II relative chronology, stratigraphy and ceramic parallels.

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

SITE PROFILE				
Site name	Tell Qara Quzaq			
Location	Left bank of the Euphrates River, about 30 km south of the Syro-Turkish border (36°37'57.83"N 38°12'53.49"E)			
Excavation	1989-2000, E. Olávarri Goicoechea and G. Del Olmo Lete, Archaeological Mission of the Institute of Ancient Near East			
MBA evidence	Acropolis			
MBA context	Storage, religious			
MBA level and relative chronology	Stratigraphy	Period		
	Nivel II- 3	MBA IIA		
	Nivel II- 2-1	MBA IIB		
¹⁴ C	N/A			
Publication	Del Olmo Lete, 1994; Del Olmo Lete, et al., 2001			
CERAMIC COMPARISONS				
The ceramics that come from Level II are largely Common Ware. Fine ware and Cooking Ware are totally absent (Del Olmo Lete, 1994). The most diffuse shapes are large storage jars (Ahmar CS04); medium/large jars with no neck (Ahmar CS10), characterised by potter’s marks on the shoulders; large dimension deep bowls (Ahmar OS09); medium dimension jars with a high neck (Ahmar CS09), and large vessels with a perforated base (Del Olmo Lete, 1994, p.87, fig.9).				
Ahmar vessel type	Qara Quzaq name	Context	Period	Reference
CS04a	Jarra 24 Jarra 25	silos	MBA IIB	Olávarri & Olmo Lete, 1994, p.69, fig.1/8 Olávarri & Olmo Lete, 1994, p.71, fig.2/1
CS10	Jarra 1d Jarra3, 6, 5 Jarra 17a, 21b	silos	MBA IIB	Olávarri & Olmo Lete, 1994, p.69, fig.1/5 Olávarri & Olmo Lete, 1994, p.73, fig.3/1-3 Olávarri & Olmo Lete, 1994, p.75, fig.4/1-2 Del Olmo Lete, et al., 2001, p.201, fig.3/5-9
OS01	Jarra	silos	MBA IIA	Olávarri & Olmo Lete, 1994, p.79, fig.6/1-2
OS05	Cuenco 1a-1b	silos	MBA IIB	Del Olmo Lete, et al., 2001, p.206, fig.8/15-16
CS09	Colador	silos	MBA IIB	Olávarri & Olmo Lete, 1994, p.79, fig.6/3
CS12	Jarra 1b	silos	MBA IIB	Olávarri & Olmo Lete, 1994, p.85, fig.9/6
OS08c	Olla 1	silos	MBA IIB	Olávarri & Olmo Lete, 1994, p.89, fig.11/1

Table 36. Tell Qara Quzaq: MBA II relative chronology, stratigraphy and ceramic parallels.

SITE PROFILE				
Site name	Tell Mumbaqa (ancient <i>Yakaltum/Ekalte</i>)			
Location	Left bank of the Euphrates River approximately 100 km north of Meskene/Emar (36°14'37.66"N 38° 9'17.81"E)			
Excavation	1969 - 1993, E. Heinrich (1969- 1972), W. Orthmann (1973-1974), and D. Machule (1978-1993), Deutsche Orient-Gesellschaft and Deutsche Forschungsgemeinschaft (DFG)			
MBA evidence	Kuppe Nord; Steinbau 1 (Antentempel); Steinbau 3; Haus AD			
MBA context	Religious, public, domestic			
MBA level and relative chronology	<i>Stratigraphy (SB1)</i>	<i>Period</i> ¹⁸		
	Level H5	MBA I		
	Level H4.1	MBA II		
¹⁴ C	N/A			
Publication	Czichon & Werner, 2008			
CERAMIC COMPARISONS				
Rainer M. Czichon and Peter Werner studied the ceramics from the Bronze Age areas at Tell Mumbaqa (Czichon & Werner, 2008). The material presented in their book belongs to periods dating from the late EBA to the early LBA. The ceramic material has been analysed from both technological and morphological points of view. Seven major vessel shapes were identified: Platten, Schalen, niedrige Becher and Näpfe, kleine Töpfe, Töpfe/Flaschen, Vorratsgefäße, and Ständer (Czichon & Werner, 2008).				
Ahmar vessel type	Mumbaqa name	Context	Period	Reference
CS04a	Töpfe/Flaschen	domestic	MBA II	Czichon & Werner, 2008, pl.61/5869, pl.62/5904
CS04b	Vorratsgefäße	domestic	MBA II	Czichon & Werner, 2008, pl.75/6173-6182
CS08a	Töpfe/Flaschen	domestic	MBA II	Czichon & Werner, 2008, pl.69/6083; pl.70/6095-6109, 6112-14
CS09a	Töpfe/Flaschen	domestic	MBA I-II	Czichon & Werner, 2008, pl.66/6010, 6018, 6020
CS09c	Töpfe/Flaschen	domestic	MBA I-II	Czichon & Werner, 2008, pl.66/6007
CS11	Pilgerflasche?	domestic	MBA II	Czichon & Werner, 2008, pl.65/6000
CS10	Töpfe/Flaschen	domestic	MBA I-II	Czichon & Werner, 2008, pl.68/6051
OS01	Siebschalen	domestic	MBA I	Czichon & Werner, 2008, pl.58/5757-5767
OS02	Schalen	domestic	MBA I-II	Czichon & Werner, 2008, pl.56/5707
OS03b	Schalen	domestic	MBA II	Czichon & Werner, 2008, pl.56/5711-13, 5715-21

¹⁸ Copper, comparing the ceramic material from Tell Mumbaqa with Tell Hadidi Area F and other Middle Euphrates Valley sites, suggested a different chronological sequence for the Steinbau 1: MBA I is represented by levels H5-H6, while H4.1-H5 belong either to the second half of the MBA or to the LBA. Levels H6-H7 should be dated to the end of the EBA (Cooper, 1997). Steinbau 3 is located north of Steinbau 1. It has been also associated with a cultic function give the numerous podia, benches and niches which characterised the building (Machule, et al., 1993). It has been dated also to the MBA. Finally, another area of MBA occupation is the Haus AD located to the east of the Steinbau 3. Because of the objects found inside this house (e.g. storage jars, bronze funnels, stone weights, etc.), the archaeologists suggested that this building was used for public works (Machule, et al., 1993).

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

Ahmar vessel type	Mumbaqa name	Context	Period	Reference
OS05	Siebschalen	domestic	MBA I-II	Czichon & Werner, 2008, pl.58/5770
OS08c	kleine Töpfe	domestic	MBA I-II	Czichon & Werner, 2008, pl.60
OS09	Vorratsgefäße	domestic	MBA II	Czichon & Werner, 2008, pl.74/6158-6162

Table 37. Tell Mumbaqa: MBA relative chronology, stratigraphy and ceramic parallels.

SITE PROFILE				
Site name	Tell Halawa A			
Location	Eastern bank of the Euphrates River (36° 7'7.85"N38° 5'33.29"E)			
Excavation	1977 - 1986, W. Orthmann, University of Saarland			
MBA evidence	Planquadrat Q and Q/L			
MBA context	Domestic			
MBA level and relative chronology	Stratigraphy	Period		
	Levels b-c	MBA I		
¹⁴ C	N/A			
Publication	Orthmann, 1981; Orthmann, 1989			
CERAMIC COMPARISONS				
Ceramic material coming from this level has been published by Ralph Hempelmann (Hempelmann, 2005). His ceramic typology is based on morphological and functional classes (e.g. bowls, bottles, colanders, jars, etc.)				
Ahmar vessel type	Halawa A name	Context	Period	Reference
CS04a	Töpfe (T58-61)	domestic	MBA I	Orthmann, 1981, pl.45/20; pl.46/1 Hempelmann, 2005, pl.90
CS07b	Krüge (K4-5)	domestic	MBA I	Orthmann, 1981, pl.49/12 Hempelmann, 2005, pl.96/592-93
CS08a	Töpfe (T64)	domestic	MBA I	Orthmann, 1981, pl.44/9-10, 15-16; pl.47/3-14 Hempelmann, 2005, pl.93
CS09c	N/A	domestic	MBA I	Orthmann, 1981, pl.44/19, 21
CS10	Töpfe (T63)	domestic	MBA I	Orthmann, 1981, pl.46/9-12; 15, 18 Hempelmann, 2005, pl.91/579-80; pl.92/581-82
CS12	N/A	domestic	MBA I	Orthmann, 1981, pl.45/23
OS03a	Schalen (Sa15)	domestic	MBA I	Hempelmann, 2005, pl.75/470
OS03b	Schalen (Sa14)	domestic	MBA I	Hempelmann, 2005, pl.75/468-69
OS05	Siebe (Si4)	domestic	MBA I	Orthmann, 1981, pl.43/24, 34; Hempelmann, 2005, pl.97/595-97
OS08c	Töpfe (T46-47; T63-T64)	domestic	MBA I	Orthmann, 1981, pl.45/1-7 Hempelmann, 2005, pl.83/480-84; 487; pl.84/497-514; pl.85-86
OS09	Schüsseln (S27-30)	domestic	MBA I	Orthmann, 1981, pl.44/5; pl.45/19; pl.47/24-25 Hempelmann, 2005, pl.76/471-72; pl.77-82
Vessel with a perforated base (OS09)	(flat base)	domestic	MBA I	Orthmann, 1981, pl. 47/25

Table 38. Tell Halawa A: MBA I relative chronology, stratigraphy and ceramic parallels.

SITE PROFILE				
Site name	Tell Ashara (ancient <i>Terqa</i>)			
Location	60 km north of Mari on the west bank of the Euphrates River (34°55'10.90"N 40°33'57.46"E)			
Excavation	1976-1987 G. Buccellati and M. Kelly-Buccellati, University of California, and O. Rouault, Lyon-2 University. 1987-2010 excavation has developed into a French-Syrian project co-directed by Olivier Rouault and Yasser al-Showan.			
MBA evidence	Area C: Temple of Ninkarrak (c. 1700-1600 BC) and a domestic residential area, including what has been called the House of Puzurum (c. 1650-1750 BC). Area E: large structure (palace?). Area F: large administrative complex			
MBA context	Religious, domestic, palatine, public-administrative			
MBA level and relative chronology	Stratigraphy	Period		
	N/A	MBA IIA		
	N/A	MBA IIB		
¹⁴ C	N/A			
Publication	Buccellati & Kelly-Buccellati, 1983; Kelly-Buccellati & Shelby, 2007; Kelly-Buccellati & Shelby, 1977; Rouault & Mora, 2001; Rouault, 1984; Chavalas, 1988; Sołtysiak & Tomczyk, 2008.			
CERAMIC COMPARISONS				
“The majority of shapes represented jars, with goblets being the second most common shape. In the courtyard, where there were fewer ceramics in general, only 2 goblets were found. By contrast, in the central room, which was presumably still occupied at the time of the fire, the largest number, 17 goblets, were excavated [...]. Typical goblet shapes have tall necks, bulbous bodies and a bottom or small flat base [Ahmar CS02 and OS08]. The category of bowls included shallow bowls, small coarse plates and platters, plain bowls, and thickened flat rims [Ahmar OS03]. Round and ovoid jars dominate the large jar shape types [...]. Two large vessels ("bath tubs") with somewhat rounded bottoms have ridges on the upper portions” [Ahmar OS07] (Kelly-Buccellati and Shelby, 2007, pp. 122-23). A spheroid in a shaped flask has also been found (Ahmar CS11), as well as several infant jar burials. Ceramics from the second-millennium BC were also discussed in Daniela Buia's doctoral dissertation (Buia, 1993). This provides a summary of the excavations of Area F until 1987, including a catalogue of pottery from that area. A characteristic of many of the common ware sherds found at the sites is that they show traces of burning on the exterior, and often have a bitumen coating inside. Bitumen was also applied as a decoration. As for Tell Bi’a, Ahmar CS08 has a slimmer shape if compared with the Upper Euphrates sites.				
Ahmar vessel type	Ashara name	Context	Period	Reference
CS01b	Bottle - TQ7	public-administrative	MBA IIA	Kelly-Buccellati & Shelby, 2007, pl.V/42
CS02	Goblet - TQ7	religious	MBA IIB	Kelly-Buccellati & Shelby, 2007, pl.XI/82
CS04b	Bowl - TQ3	domestic	MBA IIB	Kelly-Buccellati & Shelby, 2007, pl.VII/59
CS05	Goblet - TPR4	domestic	MBA IIB	Kelly-Buccellati & Shelby, 1977, fig.18/4
CS07b	Pitcher - TQ6	public-administrative	MBA IIA	Kelly-Buccellati & Shelby, 2007, pl.V/41

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

Ahmar vessel type	Ashara name	Context	Period	Reference
CS08	Jar - TQ6	public-administrative	MBA IIA	Kelly-Buccellati & Shelby, 2007, pl.IV/38
CS09	Jar - TQ7	public-administrative	MBA IIA	Kelly-Buccellati & Shelby, 2007, pl.VI/51
CS11	Bifid Jar - TQ8	public-administrative	MBA IIA	Kelly-Buccellati & Shelby, 2007, pl.V/40
OS03a	Bowl - TQ3	domestic	MBA IIB	Kelly-Buccellati & Shelby, 2007, pl.VII/55
OS03b	Platter - TQ9 Bowl - TQ8	public-administrative	MBA IIA	Kelly-Buccellati & Shelby, 2007, pl.VI/43, 45
OS07	Basin - TQ4	domestic	MBA IIB	Kelly-Buccellati & Shelby, 2007, pl.X
OS08b	Goblet - TPR4	domestic	MBA IIA	Kelly-Buccellati & Shelby, 1977, fig.21/2

Table 39. Tell Ashara: MBA II relative chronology, stratigraphy and ceramic parallels.

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

SITE PROFILE				
Site name	Tell Hariri (ancient <i>Mari</i>)			
Location	Western bank of the Euphrates River, near the Iraqi border (34°33'1.96"N 40°53'19.19"E)			
Excavation	1933 - 2010, A. Parrot (1933 - 1979); J.-C. Margueron (1979 - 2004); P. Butterlin (2004 - 2010) University of Paris Panthéon-Sorbonne.			
MBA evidence	Palace of Zimri-Lim; Ishtar, Ishtarar and Ninni-zaza Temples			
MBA context	Palatine; religious			
MBA level and relative chronology	MBA IIA			
¹⁴ C	N/A			
Publication	<i>Mari</i> , <i>Annales des Recherches Interdisciplinaires</i> (MARI); Margueron, 1982 ; Parrot, 1956; Parrot, 1959a; Parrot, 1959b			
CERAMIC COMPARISONS				
The only pottery information accessible has been found in Parrot’s monographs on the palaces and on the temples (Parrot, 1956; Parrot, 1959a; Parrot, 1959b). Medium dimension Khabur Ware jars have been discovered at the palace (Parrot, 1959a, p. 133-134).				
Ahmar vessel type	Hariri name	Context	Period	Reference
CS02	Jarre-potiche	religious	MBA IIA	Parrot, 1956, p. 225, fig.108/903
CS07a	Jarre à anse	palatine	MBA IIA	Parrot, 1959a, p.115, fig.83/859
CS07b	Jarre à bec trilobé	palatine	MBA IIA	Parrot, 1959a, p.115, fig.83/898
CS08a	Jarre-potiche ; Grandes jarres	religious, palatine	MBA IIA	Parrot, 1956, p. 225, fig.108/911; 1959a, p.123, fig.87/895
CS09a	Jarre-potiche	religious	MBA IIA	Parrot, 1956, p. 225, fig.108/906
CS10	Grandes jarres	palatine	MBA IIA	Parrot, 1959a, p.123, fig.87/893
CS11	Jarre à anse bifide	palatine	MBA IIA	Parrot, 1959a, p.117, fig.84/857
OS03b	Jatte	palatine	MBA IIA	Parrot, 1959a, p.124, fig.89
OS04	Assiette	religious	MBA IIA	Parrot, 1956, p. 230, fig.110/923, 930

Table 40. Tell Hariri: MBA II relative chronology, stratigraphy and ceramic parallels.

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

SITE PROFILE				
Site name		Tell Baghouz (ancient <i>Corsôtê</i>)		
Location		On the edge of the terrace overlooking the east bank of the Euphrates near the Syro-Iraqi border (34°28'28.60"N 40°58'30.75"E)		
Excavation		1934-1936, Du Mesnil du Buisson		
MBA evidence		185 Bronze Age tombs		
MBA context		Funeral		
MBA level and relative chronology		Although du Mesnil du Buisson had established a 15th-century BC date for the cemetery, based mainly on ceramic parallels to other sites in the Orontes Valley, several scholars have questioned this date on the basis of the cemetery's excellent parallels with material from MBA contexts, both in Syria and Palestine (Copper, 1997). Tubb, for example, noticed that the Baghouz material derived from a cemetery and, as such, proceeded from no clearly defined stratigraphic context. He compared the ceramic material coming from those tombs to the ceramic material found at Terqa, and then dated the Baghouz material to the first quarter of the second millennium BC (MBA IIA) (Tubb, 1980).		
¹⁴ C		N/A		
Publication		Du Mesnil Du Buisson, 1948		
CERAMIC COMPARISONS				
Medium dimension jars (Ahmar CS08 and CS09) are the most common shapes found in the necropolis at Baghouz, while Ahmar CS10 have also been found. Both shapes, Form A and Form B are often characterised by a bitumen decoration on the lower part of the vessel. The small and medium dimension flasks (Ahmar CS11) recorded at the site present strong parallels with the sample from Ahmar.				
Ahmar vessel type	Baghouz name	Context	Period	Reference
CS02	Form F	funeral	MBA II	Du Mesnil Du Buisson, 1948, pl.75
CS08a	Form A	funeral	MBA II	Du Mesnil Du Buisson, 1948, pl.68-72
CS10	Form B	funeral	MBA II	Du Mesnil Du Buisson, 1948, pl.73/22
CS11	Form M	funeral	MBA II	Du Mesnil Du Buisson, 1948, pl.78
OS03b	Form T	funeral	MBA II	Du Mesnil Du Buisson, 1948, pl.79

Table 41. Tell Baghouz: MBA II relative chronology, stratigraphy and ceramic parallels.

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

SITE PROFILE				
Site name		Ansari (Aleppo)		
Location		South-west side of Aleppo (36°11'39.91"N 37° 7'57.63"E)		
Excavation		1973-1980, Suleiman, A., Aleppo National Museum		
MBA evidence		Ossuary		
MBA context		Funeral		
MBA level and relative chronology		MBA II		
¹⁴ C		N/A		
Publication		Suleiman, 1984		
CERAMIC COMPARISONS				
The most representative shapes found at Ansari are vases, bottles and bowls.				
Ahmar vessel type	Ansari name	Context	Period	Reference
CS01a	bottle	funeral	MBA II	Suleiman, 1984, pl.VI/62-63
CS04a	jar	funeral	MBA II	Suleiman, 1984, pl. VIII/73
CS08a	vase	funeral	MBA II	Suleiman, 1984, pl. VII/69
CS08b	vase	funeral	MBA II	Suleiman, 1984, pl. VII/70-71
CS13	jar	funeral	MBA II	Suleiman, 1984, pl. VIII/74
OS01	bowl	funeral	MBA II	Suleiman, 1984, pl. VII/67
OS03b	bowl	funeral	MBA II	Suleiman, 1984, pl. VII/68
OS08c	vase	funeral	MBA II	Suleiman, 1984, pl. VI/61
OS09	jar	funeral	MBA II	Suleiman, 1984, pl. VIII/72, 75

Table 42. Ansari (Aleppo): MBA II relative chronology, stratigraphy and ceramic parallels.

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

SITE PROFILE				
Site name	Tilbeshar			
Location	On the Turkish Sajur, 50 km west of Carchemish (36°52'21.31"N 37°33'33.68"E)			
Excavation	1994 - 2006, C. Kepinski (CNRS) and B. Balcioğlu (Gaziantep Museum)			
MBA evidence	Areas D and J (Lower town); Area M (Citadel)			
MBA context	Domestic, funeral			
MBA level and relative chronology	Stratigraphy	Period		
	TILB IVA	MBA I		
	TILB IVB	MBA II		
¹⁴ C	N/A			
Publication	Kepinski, 2007a; Kepinski & Önal, 2008; Kepinski, 2010			
CERAMIC COMPARISONS				
The ceramic assemblage includes sherds with incised, combed decorations of waving lines and dots. Two very common shapes are a large dimension storage jar (Ahmar CS04) and a medium dimension flask (Ahmar CS11). In one of the excavated graves, five complete pots (burial goods) were found (Kepinski, 2007a). These shapes can be compared to Ahmar OS08c.				
Ahmar vessel type	Tilbeshar name	Context	Period	Reference
CS01	N/A	funeral	MBA I	Kepinski, 2007a, p.336, fig.6/7
CS04	N/A	domestic	MBA II?	Kepinski & Ergeç, 1999, p. 250, fig.4/3; Kepinski, 2010, fig.10
CS10	N/A	domestic	MBA I	Kepinski, 2007a, p.336, fig.6/1
CS11	N/A	domestic	MBA II?	Kepinski & Ergeç, 1999, p. 250, fig.4/1; Kepinski, 2010, fig.11
OS08b	N/A	domestic	MBA II?	Kepinski & Ergeç, 1999, fig.4/2
OS08c	N/A	funeral	MBA I	Kepinski, 2007a, p.336, fig.6/5

Table 43. Tilbeshar: MBA relative chronology, stratigraphy and ceramic parallels.

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

SITE PROFILE				
Site name	Qala’at Halwanji			
Location	On the Syrian Sajur, 15k m away from the Euphrates (36°38’39.87"N 37°54’18.99"E)			
Excavation	2008 - 2010, J. Eidem, survey of the area site soundings			
MBA evidence	Governor’s Palace			
MBA context	Domestic, palatine			
MBA level and relative chronology	MBA			
¹⁴ C	N/A			
Publication	Eidem, 2009; Eidem, 2010; Weidemann, 2011			
CERAMIC COMPARISONS				
Several pottery sherds have been found inside the Governor’s Palace, as well as vessels discovered <i>in situ</i> on the floor. The recorded vessel shapes included small cups (Ahmar OS08) and simple trefoil jugs (Ahmar CS07a and CS07b) (Eidem, 2010). In addition, together with this pottery two clay jar corks with a seal impression and a small limestone lid once used to close the vessels were also found (Eidem, 2010). Unfortunately, drawings of the ceramic material excavated at the site have not yet been published. However, a selection of shapes taken from the survey and analysed by Weidemann (Weidemann, 2011) has been used to make comparisons.				
Ahmar vessel type	Qala’at Halwanji name	Context	Period	Reference
CS03	K4: A	survey	MBA I	Weidemann, 2011, App.2, p.9/46
CS04c	K2: A, B	survey	MBA I-II	Eidem, 2009, p.6, fig.6; Weidemann, 2011, App.2, p.5/26-32
CS06	K7: A	survey	MBA I	Weidemann, 2011, App.2, p.11/61-63
CS07a	N/A	survey	MBA II	Eidem, 2010, p.24, fig.5
CS07b	N/A	survey	MBA II	Eidem, 2009, p.8, fig.9
CS08	K8: A	survey	MBA II	Weidemann, 2011, App.2, p.11/66-70
CS09a	K8: B, D, F	survey	MBA I-II	Weidemann, 2011, App.2, p.13/76-78
OS01	S1: C, D, E, F	survey	MBA I-II	Eidem, 2008, fig.6/6-7; Weidemann, 2011, App.2, p.3/12-17
OS03a	B1; A, B	survey	MBA I-II	Weidemann, 2011, App.2, p.3/2-4
OS03b	S1: A, B, C	survey	MBA I-II	Weidemann, 2011, App.2, p.3/5-10
OS04	S1: H	survey	MBA I	Weidemann, 2011, App.2, p.5/21-23
OS08	K4: B	survey	MBA II	Eidem, 2009, p.8, fig.9; Weidemann, 2011, App.2, p.9/47-48

Table 44. Qala'at Halwanji: MBA relative chronology, stratigraphy and ceramic parallels.

SITE PROFILE				
Site name		Tell Bi'a (ancient <i>Tuttul</i>)		
Location		On the edge of the flood-plain near the confluence of the rivers Balikh and Euphrates (35°57'29"N 39°2'49"E)		
Excavation		1980-1995, E. Strommenger, Deutschen Orient Gesellschaft		
MBA evidence		Palace A (Area E); long-roomed temple (Area C)		
MBA context		Palatine, domestic, administrative, funeral		
MBA level and relative chronology		<i>Stratigraphy</i>	<i>Period</i>	
		Palace A	MBA I	
		Palace A post-phase	MBA IIA	
¹⁴ C		N/A		
Publication		Einwag, 1998		
CERAMIC COMPARISONS				
Only the ceramic materials from Palace A and from the mass grave have been published (Einwag, 1998). Einwag defined seven different assemblages according to the chronological period. Assemblages 2-6 refer to the MBA IB, while Assemblage 7 refers to MBA IIA. Open shapes (Ahmar OS03) and medium dimension jars (Ahmar CS08) are very common forms in the assemblages. However, Ahmar CS08 is taller and slightly slimmer than in the samples from the Upper Euphrates sites (see Appendix C - Plate 52/9). Moreover, a fragment of Khabur Ware and some medium dimension flasks (Ahmar CS11) have been found in the mass grave.				
Ahmar vessel type	Bi'a name	Context	Period	Reference
CS02	N/A	palatine	MBA IIA	Einwag, 1998, p.96, fig.56/3-4
CS08a	N/A	palatine	MBA IIA	Einwag, 1998, p.96, fig.56/8-9
CS09c	N/A	palatine	MBA IIA	Einwag, 1998, p.97, fig.57
CS10	N/A	palatine	MBA IB-IIA	Einwag, 1998, p.83, fig.45/4
CS11	N/A	palatine	MBA IIA	Einwag, 1998, p.99, fig.59/4
OS01	Typ 39-43	palatine	MBA IB-IIA	Einwag, 1998, p.87, fig.48/40-41; p.88, fig.49/39-43
OS03a	Typ 8-12	palatine	MBA IB-IIA	Einwag, 1998, p.88, fig.49/8-12
OS03b	Typ 31; Typ 37; Typ 46-47	palatine	MBA IB-IIA	Einwag, 1998, p.84, fig.46/31; p.88, fig.49/37, 46-47
OS08b	N/A	palatine	MBA IB-IIA	Einwag, 1998, p.85, fig.47/4
OS08c	N/A	palatine	MBA IIA	Einwag, 1998, p.101 fig.61

Table 45. Tell Bi'a: MBA relative chronology, stratigraphy and ceramic parallels.

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MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

SITE PROFILE				
Site name	Tell Hammam et-Turkman (ancient <i>Zalpa</i>)			
Location	Left bank of the Balikh River, 80 km north of Raqqa (36°28'55.60"N 39°3'25.74"E)			
Excavation	1981-82, 1984, 1986, 1988, 1992, 1995, 1998, and 2001, D.J.W. Meijer, University of Leiden and Amsterdam			
MBA evidence	Western Operation			
MBA context	Domestic (Squares J, K, L), administrative (Squares K, L), funeral (Squares K, N)			
MBA level and relative chronology	<i>Stratigraphy</i>	<i>Period</i>		
	Phase VII:1	MBA I?		
	Phase VII:3	MBA II?		
¹⁴ C	N/A			
Publication	Van Loon, 1988			
CERAMIC COMPARISONS				
The most representative shapes found at the site include bowls, goblets, pots and jars. Curvers argued “Bowls occur in a wide variety throughout the Hammam VII strata. The carination of bowls ranges from curved through quite sharp to angular. Bowls with rounded profiles and plain rims occur in the earlier strata of Human VII, and might be called characteristics from Hammam VIIA. In the later strata, the carinated bowls tend to a somewhat more flaring profile with intricate, overhanging, bevelled rims” (Curvers, 1988, p. 415).				
Ahmar vessel type	Hammam et-T. name	Context	Period	Reference
CS01a	N/A	domestic	MBA I	Curvers, 1988, pl.138/161
CS02	N/A	domestic	N/A	Curvers, 1988, pl.138/159
CS03	N/A	domestic	MBA II	Curvers, 1988, pl.135
CS04a	N/A	domestic	MBA II	Curvers, 1988, pl.136/138-143
CS08a	N/A	domestic	MBA I-II	Curvers, 1988, pl.140/185-191
CS09c	N/A	domestic	MBA I-II	Curvers, 1988, pl.140/179-180, 182
CS10	N/A	domestic	MBA I-II	Curvers, 1988, pl.130; pl.137
OS01a	N/A	domestic	MBA II	Curvers, 1988, pl.124/22
OS01b	N/A	domestic	MBA I-II	Curvers, 1988, pl.125/21-36; pl.126; pl.127/47-50
OS03a	N/A	domestic	MBA I-II	Curvers, 1988, pl.123/1-3
OS03b	N/A	domestic	MBA II	Curvers, 1988, pl.123/11; pl.124/15, 25-26
OS05	N/A	domestic	MBA II	Curvers, 1988, pl.142/208
OS08b	N/A	domestic	MBA II	Curvers, 1988, pl.127/58-59
OS08c	N/A	domestic	MBA II	Curvers, 1988, pl.127/56-57; pl.128/60, 63
OS09	N/A	domestic	MBA II	Curvers, 1988, pl.129/83; pl.138/154

Table 46. Tell Hammam et-Turkman: MBA relative chronology, stratigraphy and ceramic parallels.

Ceramic relative chronology: final considerations

This analysis has indicated that for the chronological period under consideration in this work, ceramic relative chronology is the most common dating system. Upon it are based the ceramic comparisons for the majority of the Northern Mesopotamian and Syrian sites.

In this comparative study, the best morphological parallels come from the sites located near Tell Ahmar, namely, those sites that come from the middle Euphrates Valley, Carchemish, Birecik and the Tishrin dams, in particular. However, this cannot be assumed to be a general pattern as strong similarities in particular vessel shapes (i.e. CS04) have also been observed on sites located far away from Tell Ahmar (e.g. Haradum). The composition of the ceramic repertoire from burial contexts also finds similarities in many MBA sites, such as Aushariye,¹⁹ Tilbeshar (Kepinski et al., 2007b), Hammam et Turkman (Van Loon, 1988), Ebla (Mogliazza & Polcaro, 2010), Bi'a (Einwag, 1998), Chagar Bazar (McMahon, 2009) and Mari (Jean-Marie, 1999). Similarities between Ahmar and Northern Mesopotamian and Syrian vessel shapes suggest a regional standardization in the ceramic production. Given the socioeconomic implications of such similarities, these elements are further discussed in the Conclusion.

Summary

The Middle Bronze Age evidence at Tell Ahmar comes from two different excavated areas, both located on the acropolis of the tell. Area M is formed by three blocks (Blocks 1-3) set in a line and by two more buildings (M8 and M9) located in the eastern and western parts of the blocks. In addition, a private house, called the Burnt House, has been excavated in Area S14.

No textual information about the site at Tell Ahmar is available. It is argued that the excavated areas of the site were occupied at the end of the MBA II, after the

¹⁹ <http://www.aushariye.hum.ku.dk/2005/english/area_g.htm>.

decline of the city of Mari (c. 1761 BC), and contemporaneous with the subsequent Kingdom of Khana (in the second quarter of the second millennium BC).

Radiocarbon dates derived from the analysis of a piece of charcoal and seeds from Areas M and S14 fall within the time range between 1862 and 1531 cal BC. These data have been compared to the absolute dates available from other Northern Mesopotamian and Syrian sites. Within the scarce data available, this investigation has brought to light dissociations between ceramic assemblage and calibrated dates. Only in one case (i.e. Tell Mishrifeh) was the evidence connected.

The following table provides a summarisation of the MBA chronologies of the sites included in this study (Tab. 47).

SITE	LOCAL STRATIGRAPHY	MBA RELATIVE CHRONOLOGY (BC)	MBA ABSOLUTE CHRONOLOGY (CAL)
Tell Ahmar	Stratum 9 (Area M)	MBA IIB	1862-1612 1746-1531
	Stratum 11 (Area S14)	MBA IIB	1754-1642
Lidar Höyük	Phase 1-2	MBA I	1886-1700
	Phase 3-4	MBA II	1890-1695
	Phase 5	LBA I	1736-1529 1683-1505 1611-1454
Horum Höyük	Level III Phase 5	MBA I	N/A
	Level III Phase 6	Transition MBA I-II	
	Level III Phase 7	MBA II	
Zeytinli Bahçe Höyük	Level VII	MBA II	N/A
Mezraa Höyük	Level IV	MBA I	N/A
	Level V	MBA II	
Şavi Höyük	Phase XIII-XVI	MBA I	N/A
	Phase XII-IX	MBA II	
Şaraga Höyük	Phase III	MBA II	N/A
Tell Shiyukh Tahtani	CD 9-8	MBA I	N/A
	CD 7-6	MBA II	
Tell Aushariye	Level VIII	MBA I	N/A
	Level VII (Phase 3-4)	MBA IIB	
Tell Qara Quzaq	Nivel II- 3	MBA IIA	N/A
	Nivel II- 2-1	MBA IIB	
Tell el-Qitar	Phases 1-5	MBA IIB	1862-1614
Tell Hadidi	Level D (Area B)	MBA IIB	N/A
	“Middle” (Area F)	MBA IIA	
Tell Mumbaqa	Level H5	MBA I	N/A
	Level H4.1	MBA II	
Tell Halawa A	Levels b-c	MBA I	N/A

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SITE	LOCAL STRATIGRAPHY	MBA RELATIVE CHRONOLOGY (BC)	MBA ABSOLUTE CHRONOLOGY (CAL)
Tell Ashara	N/A N/A	MBA IIA MBA IIB	N/A
Tell Hariri	N/A	MBA IIA	N/A
Baghouz	N/A	MBA II	N/A
Khirbit ed- Diniye (Haradum)	Level 3A-B Level 3C-D	MBA IIB MBA IIA-B	N/A
Tilbeshar	TILB IVA TILB IVB	MBA I MBA II	N/A
Qala'at Halwanji	N/A	MBA I-II	N/A
Tell Bi'a	Palace A Palace A post-phase	MBA I MBA IIA	N/A
Tell Hammam et-Turkman	Phase VII:1 Phase VII:3	MBA I? MBA II?	N/A
Tell Mardikh	III A1 III A2 III B1 III B2	MBA IA MBA IB MBA IIA MBA IIB	N/A
Ansari (Aleppo)	N/A	MBA II	N/A
Tell Mishrifeh	J 18 J 17 J 16-14; T 16-15 J 13-11; T Eastern Palace J 10; T 12	MBA IA MBA IB MBA IIA MBA IIB MBA III	2118-1690 1730-1456
Chagar Bazar	Phase I Phase II Phase III	MBA II? MBA I-II? MBA I?	N/A
Tell Leilan	Level III	MBA IIA-IIB	N/A

Table 47. Correspondences of MBA relative and absolute chronologies.

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

4. Research methodology and site formation processes

This chapter provides an explanation of the methodology used at Tell Ahmar, from excavation through to ceramic processing and analysis. Moreover, since it is crucial that all who are concerned with the interpretation of the archaeological record proceed first with evaluations of depositional and post-depositional processes prior to approaching the study of patterning from a behavioural perspective (Hofman, 1992), this chapter offers also a discussion of the site formation process, focusing in particular on its significance for ceramic functional study.

Excavation methodology

Excavations at Tell Ahmar are taking place on the acropolis. The upper city has been divided into several *Areas* (Fig. 17), a letter being assigned to each (e.g. Area M, Area S etc.) (Bunnens, 1990).

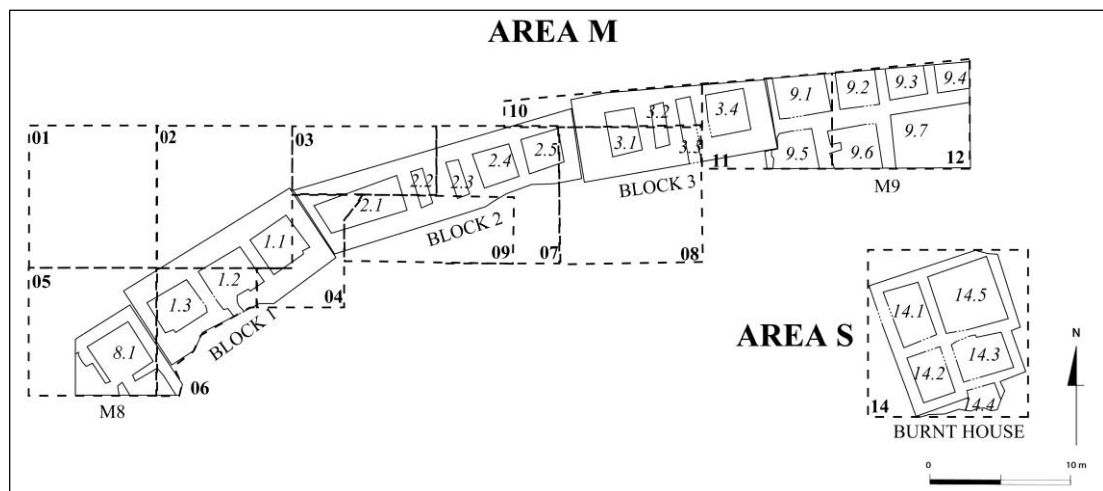


Figure 17. Schematic map of Area M and Area S with the location of both excavated squares (in bold) and rooms or locus (in italic) (map: Guy Bunnens).

These areas have been further sub-divided into *Squares*, which are assigned a number (e.g. M5).²⁰ The dimension of each square is typically 10 x 10 m. However,

²⁰ The Tell Ahmar excavation methodology is very similar to the methodology adopted at Tell Mozan and Terqa (see Buccellati & Kelly-Buccellati, 1988).

square size is not invariable and is largely influenced by features of the site. In the case of Tell Ahmar, square dimension is affected by the presence of modern houses. Each square is supervised by an expert who records the excavations and coordinates the work of manual labourers. The number of workers assigned to each square depends on the dimension of the square itself, but is typically around six. An excavation unit is defined as a *Locus* (abbreviated to Lc), although loci do not necessarily correspond to squares. The excavation documentation completed daily by the expert consists of two parts: the sketch of the locus (Fig. 18), and the feature recording sheet (Fig. 19).

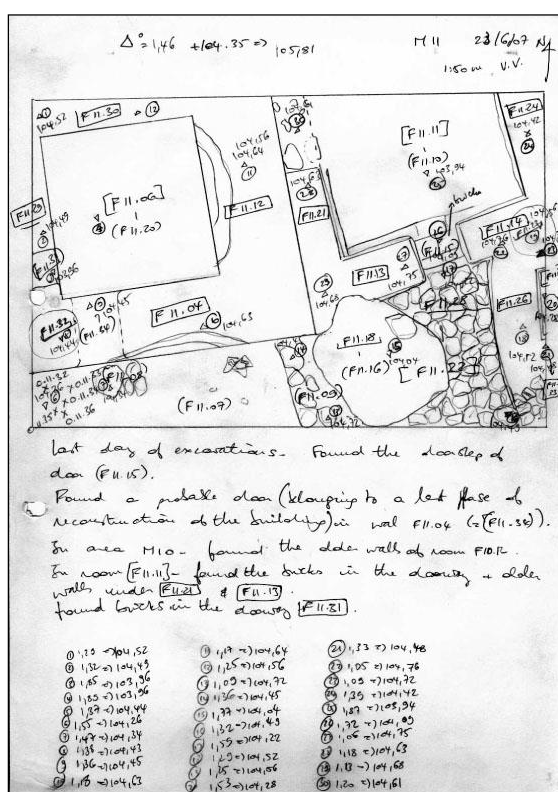


Figure 18. Example of a sketch of a locus with daily elevations and notes (Tell Ahmar 2007Area M Locus 11 completed by Virginia Verardi).

Ceramic Vessel Production, Use and Distribution in Northern Mesopotamia and Syria during the
MBA II. A Functional Analysis of Vessels from Tell Ahmar, North Syria.

AREA 11					TELL AHMAR - 2007				
Locus 11					AREA 11				
FEATURES					POTTERY				
In	Nb	Date	El.	Location & Description	In	Nb	Date	F.	El.
V	F11.01	10.6.07	T. 104.67 B. 104.79	topsoil	V	1	11.6.07	04	104.73
V	F11.02	"	B.	pit	V	2	"	03	104.70
V	F11.03	"	T. 104.73 B.	pit fill (small metal 1905 - Antioch 1905?)	V	3	"	05	104.76
V	F11.04	"	T. 104.70 B.	brick layer 6 bricks with (= wall)	V	4	11.6.07	03	104.79
V	F11.05	"	T. 104.74 B.	layer of yellow bricks =	V	5	12.6.07	10	104.71
V	F11.06	10.6.07	T. 104.70 B.	room	V	6	"	10	104.75
V	F11.07	11.6.07	T. 104.73 B. 104.85	fill (brick lat)	V	7	"	15	104.78
V	F11.08	11.6.07	T. 104.79 B. 104.88	stone structure 30g wall Fe07	V	8	"	20	104.81
V	F11.09	"	T. 104.81 B. 104.95	" (along E wall)	V	9	11.6.07	10	104.82
V	F11.10	11.6.07	T. 104.83 B.	fill of room F11.11	V	10	"	19	104.85
V	F11.11	"	T. 104.83 B.	Room	V	11	"	20	104.88
V	F11.12	"	T. 104.85 B.	wall bricks 36x36 550x400 0	V	12	12.6.07	10	104.91
V	F11.13	"	T. 104.88 B.	wall bricks 36x36 0	V	13	"	19	104.94
V	F11.14	"	T. 104.93 B.	wall bricks 36x36 0	V	14	"	20	104.97
V	F11.15	"	T. 104.90 B.	door	V	15	"	10	104.99
V	F11.16	"	T. 104.91 B. 104.97	fill of room F11.13 & F11.14	V	16	"	15	104.92
V	F11.17	"	T. 104.95 B.	modern pit	V	17	24.6.07	10	104.93
V	F11.18	"	T. 104.95 B. 104.97	pit 30g wall F11.13 & F11.14 (= fill F11.16)	V	18	24.6.07	20	104.94
V	F11.19	13.6.07	T. 104.95 B.	fill under pit F11.18	V	19	"	20	104.99
V	F11.20	"	T. 104.91 B.	fill of room F11.06	V	20	"	16	104.92
V	F11.21	"	T. 104.93 B.	wall parallel to F11.12 0	V	21	"	10	104.94
V	F11.22	"	T. 104.96 B.	space (room?) between walls F11.13 & F11.14	V	22	"	31	104.91
V	F11.23	"	T. 104.93 B.	small pit in wall F11.14	V	23	"	10	104.94
V	F11.24	"	T. 104.90 B.	wall perpendicular to F11.14 0	V	24	"	10	104.93
V	F11.25	"	T. 104.96 B.	grave? in section of fill = stone + wood	V	25	"	04	104.99
V	F11.26	"	T. 104.91 B.	wall perpendicular to F11.14 in the south	V	26	"	10	104.93

Figure 19. Examples of a feature recording sheet (to the left) and a pottery recording sheet (to the right).

The sketch of the locus is made using a scale of 1:50 and includes architectural features and daily excavation progress. When architectural features are exposed, they are documented and drawn using a scale of 1:25. At the end of the excavation season, comprehensive architectural plans of the loci are produced. The archaeological report includes comments regarding the description of the stratigraphic units identified and archaeological material recording sheets. A basic stratigraphic unit is defined as a *Feature* (abbreviated to F), and is typically an oven, a floor, a pit, or a fill. It is the responsibility of the locus supervisor to identify features and to document them as the excavation proceeds. Features belonging to the same period of occupation form a *Stratum*. Strata can be made up of several *Phases*, with each phase representing an alteration within the same stratum. Strata are defined in order of excavation (from top to bottom) by Arabic numbers, while phases are defined by letters.

The second part of the documentation consists of the compilation of printed recording sheets, which must be filled in with information on both features and

archaeological material, the latter being collected by *Lots*. A lot is defined as an individual bag of fragmentary material, and can consist of pottery (P), objects (Ob), bones (Bn), basalt (Bs) and samples (Sm).²¹ The lot's approximate location within the locus, the elevation, and a short description are noted on the recording sheet. The numbering of the features and the archaeological material are continuous and particular to each locus: subsequent excavation records will start from where the numbering process stopped at the end of the previous season.

The duties of the supervisor of each locus are to complete both parts of the documentation, and to make sure that each bag of material collected has been labelled. The supervisor must write on the tag the name of the site (Tell Ahmar: TAH) with the current year; the letter of the area and the number of the excavated square; his/her initials; the date; the feature and type of the lot (P, Ob, Bn, Sm and Bs) with its progressive number. For example, a tag may read: TAH09 M5 SP 20.06.09 F53 PL162. The director of the excavation takes photographs in each locus at the end of the day. Particularly relevant for the purpose of this research are the photographs taken of vessels *in situ*.

Finally, all ceramic material is collected in plastic bags and labelled, then taken to the courtyard of the excavation house where it is washed and dried on carpets (Fig. 20).



Figure 20. Ceramic sherds drying on carpets (Tell Ahmar 2009) (Photo: Silvia Perini).

²¹ Samples are mainly collected for ¹⁴C analysis (e.g. charcoal and seeds).

Ceramic analysis methodology and classification

The methodology used for the vessel typology at Tell Ahmar is based on the concept of “maximum reconstruction” of complete vessels (Schaub, 1996). When complete vessels were not found, or their reconstruction was not possible, analysis has focused on rim sherds (see more below in this chapter about the archaeological implications of vessel shape reconstruction). Bases were analysed separately because normally they do not give information about the vessel form. Fragmentary sherds at Tell Ahmar were sorted into body and diagnostic sherds. Body sherds do not show any special diagnostic features, and include all the sherds that belong to the body of a vessel, and that have no particular decoration or surface treatment. Only body sherds that may belong to a known single fragmentary vessel, or which could be attributed to a specific ware type, were retained. Body sherds that did not indicate any particular diagnostic characteristics were excluded from the analysis. By contrast, diagnostic sherds inform us about the original vessel shape, dimension and decoration, and, in the case of Tell Ahmar, include rims, body decorations, bases, appendages, and pot stands. With these selections in mind, the total number of diagnostic sherds considered numbers 3707.²² All these fragments have been processed and described from both structural and technological points of view. However, considering the relatively large number of ceramic samples, the time-consuming processes that a ceramic analysis involves, and the limited presence of skilled workers, a full analysis of the whole ceramic assemblage would have been impossible within the time available for this research.²³ Thus, this diagnostic sherd collection was sub-sampled and a full analysis of the fabric tempers conducted on a 25% sample of the total ceramic corpus (see Chapter 5). In this sub-sample, sherds showing particular or unique technological characteristics were included, in order to give so far as possible a complete representation of the whole assemblage.

As rim sherds are the most useful source of information for the reconstruction of original vessel size and shape, vessel shape analysis is based primarily on relevant

²² Please note that this number refers only to diagnostic sherds. Body sherds have not been counted so the total number of material recovered within the excavated structures is unknown.

²³ It is important to note that, because the ceramic material cannot be exported from Syria, the only time available to study the material was during the excavation of the site.

rim analysis. The approach adopted in this typology can be defined as a “type-series” way of presenting variations in pottery forms, in which rims with similar morphological characteristics are grouped together into morphological types. The type-definition was based on the most complete vessel available, and then by matching less complete examples with them, or by using them to fill gaps (Orton, et al., 1993).

According to the rim wall orientation and to the opening of the vessel’s orifice, two vessel shapes have been identified: unrestricted (associated with open shapes), and restricted (associated with closed shapes). Shapes with a vertical wall orientation are commonly open shapes (Fig. 21).

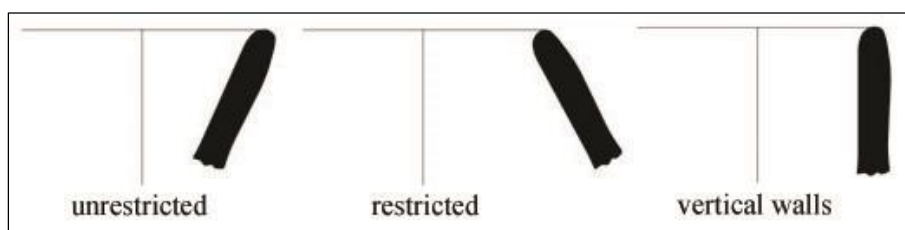


Figure 21. Vessel wall orientation classification (illustration: Silvia Perini).

When dealing with complete shapes, vessel examination is based on the proportion of height to maximum diameter (either the body or the opening). Closed shapes (CS) are characterised by a height that is larger than the maximum diameter; open shapes (OS) by a height that is less than the maximum diameter (Rice, 1987). When it was not possible to determine the vessel’s wall orientation, a rim sherd was classified as “not determinable”. With this general classification in mind, the first rim example identified in the Tell Ahmar assemblage was called Type 01 (either CS or OS).²⁴ Subsequently, if a new rim example showed similar morphological features to Type 01, it was added to it. Otherwise, a new type was created, called Type 02. This resulted in 24 main vessel shapes, 14 CS, and nine OS (see Chapter 6). For both closed and open shapes, a miscellaneous category was added to include rims that could not be grouped in any ceramic type. When a rim sherd within the same rim

²⁴ The vessel type section does not appear in the original recording sheet hardcopy. This is because at the time of the recording the rim functional typology was not complete. However, it has been inserted on to the Access recording sheet to facilitate analysis.

type showed slight variations that were not necessarily related to the vessel shape, but to its profile or diameter, then a sub-type category was created. The sub-type was defined by a single letter (e.g. CS01a, CS01b etc.). The determination of these sub-types, however, is highly subjective and is largely dependent on information derived from an examination of complete vessels. From a functional point of view, these minor variations may have affected the vessel's use in some specific cases. Differences in vessel function and use are discussed within the vessel shape typology. This vessel shapes typology was supplemented according to the technological analysis of diagnostic sherds (see Chapter 5). Vessel forms belonging to a particular type of ware, or that were characterised by a specific surface treatment or decoration, were noted.

Besides being especially suitable for understanding the connections between vessel shape and function, the advantage of this methodology is its immediate intuition and its simple and rapid approach. Selected diagnostic sherds were processed (i.e. conserved, labelled, catalogued, classified and then described according to several attributes). All the information was noted in a hardcopy recording sheet designed by the author (Fig. 22).²⁵ The choice of which attributes to analyse and report on the recording sheet depended primarily on specific research questions. In this study, particular emphasis was given to ceramic morphological and technological characteristics. A ceramic techno-morphological examination represents a major step towards vessel function investigation.

Subsequently, the hardcopy recording sheets were converted and imported into electronic files using Microsoft Access data sheets. This database is an essential source of information and the data discussion has been based upon it.

²⁵ Hardcopies, rather than electronic recording sheets, were preferred at this stage of the analysis because of the limited electricity resources available at the site.

P. 1

TAH 04 AREA m LOCUS 4

F.	PL	MR	Pre-served part	Shard typology	Shape class		Ware quality	Colour			Inclusions	Firing technique	Firing temperature	Surface Treatment		Surface Decor.		Ø (cm)			Volume	Note
					CS	OS		I	C	E				I	E	I	E	>	base	rim		
11	07	1	RM	C108?			CW	Yell red	=	Yell brown	01	H	M	JM	JM	-	RD					
11	05	1	RM	C104?			CW	green yell	=	=	04	H	M	"	"	-	CB					
4	02	2	RM	D101?			CW	Yell red	=	=	22	H	"	"	"	-	-					
4	02	1	RM	C108			"	Yell	=	=	01	"	"	"	"	-	sl CR					
11	6	2	RM	?			CW	Yell brown	Yell red	Yell brown	05	"	"	"	"	-	sl RD					
4	01	1	RM	C104?			CW	Yell red	red brown	Yell red	18	"	"	"	"	-	-					
13	08	1	RM	D5?			CW	Yell brown	Yell red	Yell brown	01	"	"	"	"	-	-					
4	01	2	RM	C13?			CW	Yell brown	Yell red	Yell red	08	"	"	"	"	-	-					
4	2	3	RM	C104			CW	Yell	=	=	02	"	"	"	"	-	-					
11	6	1	RM	C1?			"	green yell	=	=	10	"	"	"	"	-	-					
13	10		RM	C1?			"	red brown	=	=	02	OX	"	"	"	-	-					5/4 JH red
13	14		RM	brown			"	green yell	Yell brown	Yell brown	04	H	"	"	"	-	-					

Figure 22. Example of a hardcopy diagnostic sherd recording sheet completed by the author.

Thirty-one field names have been considered in this database. These can be grouped into the five following broader groups: contextual analysis; morphological analysis and vessel measurements; technological analysis; techno-morphological typology; and residue analysis. In addition, the last part of the recording sheet (note) was completed with general comments (e.g. specific information about particular morphological or technological characteristics). A sketch of each sherd was drawn in the proper space on the hardcopy processing sheets (Tab. 48).

SHERD ANALYSIS	FIELD NAME and NUMBER	
Contextual analysis	Year	1
	Area	2
	Locus	3
	Feature	4
	Pottery Lot	5
	Diagnostic Sherd Number	6
	Room	7
	Room Area	8
	Context of Recovery	9
	Type of Context	10
Morphological analysis and vessel measurements	Diagnostic Sherd Type	11
	Base Description	12
	Handle Description	13
	Rim diameter (cm)	14
	Diameter max (cm)	15
	Base diameter (cm)	16
	Thickness (cm)	17
	Height (cm)	18
	Volume (l)	19
Technological analysis	Manufacture technique	20
	Ware Quality	21
	Colour (Inside-Core-Outside)	22
	Fire Atmosphere	23
	Fire Temperature	24
	Fabric Type Number	25
	Surface Treatment (Inside-Outside)	26
	Surface Decoration (Inside-Outside)	27
Techno-morphological typology	Vessel Shape Class	28
	Vessel Type Number	29
Residue Analysis	YES/NO	30
Note		31

Table 48. Features recorded in the diagnostic sherds database.

Finally, fully processed ceramic sherds were marked according to the site name, year of excavation, area, locus, feature, pottery lot, and progressive number of sherd in the pottery lot, for example, TAH09 M5.25 PL36.1.

Software used for the ceramic data analysis

Handmade ceramic drawings were imported electronically using Adobe Photoshop CS2, whilst Adobe Illustrator CS2 was used to trace over the drawing. Guy Bunnens provided the archaeological features database for both the excavated areas at Tell Ahmar. These were produced using File Maker Pro 8.5 Advanced, whilst Adobe Photoshop and Adobe Illustrator were also used for creating maps.

The information derived from the ceramic data analysis was recorded electronically using Microsoft Office Access 2007 Database. Charts and graphs were created with Microsoft Office Excel 1997-2007 Worksheet.

Vessel base and rim diameters were calculated using a rim chart, whilst wall thickness was measured with a calliper.

The Pot Utility 1.05 Program, which was employed by the Arcane Project,²⁶ was used for determining vessel capacity. The volume was shown either in litres or in kilograms. Although generally satisfactory, this program is disadvantageous in that it is useful only for symmetrical vessels, as it does not take into account the level a vessel may have been filled up to in the past.

The DinoLite digital microscopic and its software DinoCapture version 3.3.0.0, supplied by the archaeological department of the University of Edinburgh, was used to photograph ceramic inclusions. The resolution used was 1280 x 1024, and with a 50 x magnification.

OxCal 4.2 Manual has been used for the absolute dating analysis. In particular, this dataset was used for the calculation of the probable age ranges for dated samples through radiocarbon calibration (Bronk Ramsey, 2009).²⁷

²⁶ <<http://www.arcane.uni-tuebingen.de/index.html>>.

²⁷ This program is available online on <<http://c14.arch.ox.ac.uk/embed.php?File=oxcal.html>>.

Conservation of the ceramic samples

Once described, processed, drawn, and photographed, sherds were stored in separate labelled bags in cardboard or plastic boxes. Each box was marked with the year of excavation, the area, the locus and the features. Ceramic material discovered during the excavation, but relating to strata other than the MBA (e.g. Iron Age or Early Bronze Age) was set aside in separate labelled boxes.

Complete shapes were displayed on shelves in two different rooms of the excavation house at Tell Ahmar (Fig. 23). In addition, some complete vessels are now conserved at the National Museum of Aleppo.



Figure 23. MBA complete and semi-complete vessels as displayed in the store room (Tell Ahmar 2010) (photo: Silvia Perini).

Site formation process

The ceramic assemblage under investigation in this study represents the systemic inventory of artefacts in use in the rooms at the time of the site abandonment. Given that it is argued that a fire caused the abandonment of the activity areas, the ceramics taken into consideration include still usable material that was part of the on-going

system of manufacture, use, distribution, exchange, reuse and discard at the site (see Introduction).

Assuming limited post-depositional activities, the analysis of the systemic artefacts of Tell Ahmar is expected to produce crucial information about the functional activities taking place in the rooms (see Chapter 8). However, in order to accept this supposition, it is necessary to discuss the formation process at the site, and to analyse how this has affected the composition of the ceramic assemblage and the function of the rooms.

Schiffer identified several processes responsible for the composition of household assemblages. He grouped them together according to three stages: habitation, abandonment and post-abandonment (LaMotta & Schiffer, 1999). During each stage, phenomena of either accretion (+) or depletion (-) can occur (Fig. 24).

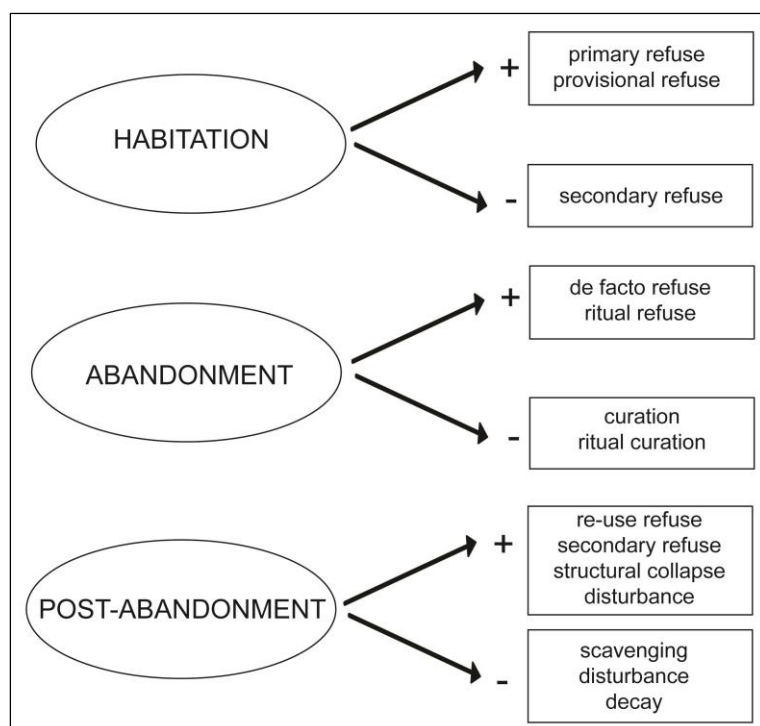


Figure 24. Formation process of house floor assemblages (adapted from LaMotta & Schiffer, 1999, p. 20, table 2.1).

Accretion introduces new artefacts to the assemblage that come from other contexts, while depletion reduces the inventory by moving items away from the behavioural

system. With this theoretical outline in place, how much of that evidence can be discussed with regard to Tell Ahmar?

Habitation and fire

Two areas have been excavated at the site. In Area M, a public building was discovered, and a private house in Area S14 (see Chapter 3). Buildings in both excavated areas were destroyed during a violent conflagration. The direct effect of the fire is visible on both structures and artefacts: namely, a consistent layer of ash on the rooms' floors, extensive fire-related discolouration of the mud-brick walls, charred seeds and black-burned and vitrified pottery (Figs. 25a and 25b).



Figure 25a and 25b. Black burned vessel (25a) and vitrified sherds (25b) showing traces of the fire (Tell Ahmar 2007) (photo: Silvia Perini).

The fire seems to have involved not only the floors, but also the walls, the upper floors and the roofs of the buildings, as indicated by collapsed material. Archaeological evidence shows that the burning was consistent across all the rooms, with the exception of some rooms in Block 2. Rooms 2.1, 2.2 and 2.3 show no trace of fire. On the other hand, Rooms 2.4 and 2.5 in the same block have an accumulation of ashy soil that seems to have resulted from a normal occupation rather than from a sudden blaze, although such a blaze cannot be ruled out. All of the other rooms in Blocks 1 and 3 and in Buildings M8 and M9 also show traces of a heavy fire. The same can be said of the house in S14.

No archaeological evidence supports the idea that provisional discard (i.e. material stored in a different context to which it was last employed) occurred at the

site. No restricted areas where broken objects were stored to be reused have been found. Thus, it is reasonable to assume that all ceramics were in concurrent use.

Episodes of vessel reuse have been observed in two different contexts: in the burial context, large dimension storage jars were reused to contain the body of the deceased (see Chapter 8), while in the room assemblages, some samples of ceramic sherds, characterised by rounded edges, were found. In both cases, the vessel final use differs radically to its actual use. The ceramic associated with burial contexts is considered as belonging to primary refuse because it was intentionally deposited at its location of recovery, even if it had previously served a different purpose. Reshaped sherds were kept separate from the other ceramic fragments, and classified as objects. These fragmentary sherds, sometimes pierced, were probably reused as a tool or a gaming piece (Fig. 26).

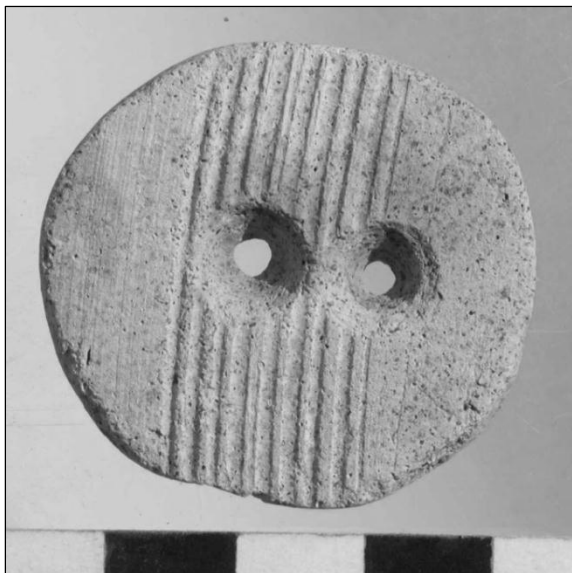


Figure 26. Reshaped sherd with a combed decoration (photo: Guy Bunnens).

It is difficult to assert whether the fire was deliberate, either through a hostile occupation or ritual act, or accidental. It was, after all, homogeneously widespread throughout the site and therefore both hypotheses can be considered.

Abandonment and *de facto* refuse

Schiffer uses the term “*de facto* refuse deposition” to indicate the deposition of still usable artefacts that were discarded during unanticipated abandonments.

The way in which a site is abandoned - the variables operative at the time the occupants leave the site, or die without replacement - has demonstrable effects on the kinds and quantities of non-discarded elements found in archaeological context. Elements which reach archaeological context without the performance of discard activities will be termed *de facto* refuse (Schiffer, 1972, p. 160).

We can argue that the ceramic assemblage analysed in this work corresponds to the *de facto* refuse at the site. Analysis of the types of arrangement of *de facto* refuse within the rooms (see Chapter 8) helps to distinguish between permanent and temporary processes of abandonment (i.e. whether or not a return is anticipated). In normal circumstances, when a society decides to leave a settlement, the selection of materials to transport is made according to their degree of portability (e.g. weight, dimension), utility (i.e. broken or unbroken objects) and economic value (e.g. high replacement cost) (LaMotta & Schiffer, 1999). In a catastrophic event such as a rapid fire, however, these priorities are dramatically reduced.

A structure whose floor assemblage includes many portable, valuable, and/or usable objects, for instance, is typically inferred to have undergone a rapid, unplanned abandonment. In contrast, an assemblage that appears to be highly depleted by curation - i.e. with only large and/or broken objects - is usually ascribed to a slow, planned abandonment (LaMotta & Schiffer, 1999, pp. 22-23).

Ethnographic studies from the US Southwest have indicated that some societies burned their houses and their possessions upon abandonment because of the death of an adult occupant (LaMotta & Schiffer, 1999). Schiffer defined this particular process as *ritual refuse*. However, Near Eastern archaeologists have rarely focused on investigations of ritual refuse (see, for example, Cessford & Near, 2005). The paucity of such studies in the Near East may be associated with the difficulty in distinguishing between *de facto* and ritual refuse deposition in an archaeological context, and a lack of ethnoarchaeological comparisons of burial habits. Although

identifying differences within the accretion processes of ceramic deposition at Tell Ahmar is still problematic, the typological analysis of the refuse left behind should bring to light the process that the archaeological refuse went through and the mode of site abandonment. This typological analysis considers artefact attributes such as (a) size, (b) degree of restorability, (c) quantity, (d) inventory variability and distribution.

a) Size

Artefact size (including both complete vessels and sherds) is one attribute that can be used to understand site formation process.

Size effects come about because formation processes can (1) reduce the size of artifacts and (2) sort or winnow artifact by size (Schiffer, 1987, p. 267)

The ceramic refuse assemblage included large vessels found *in situ*²⁸ (Fig. 27).



Figure 27. Large basin (OS07) found *in situ* in Room 8.1 (Tell Ahmar 2006) (photo: Silvia Perini).

However, these shapes cannot be used unconditionally to assume the unpredictability of the event, given that the probability of an item being abandoned within an activity area increases proportionately with the difficulty of its transportation. Nevertheless, a

²⁸ In this research, the term *in situ* refers to the artefact's last place of cultural deposition.

number of complete small and medium vessels have been also found on the room floors (Fig. 28).



Figure 28. Small dimension complete bowls found on the floor of Room 14.1 in Area S14 (Tell Ahmar 2007) (photo: Silvia Perini).

The presence of these shapes, which could easily have been carried away during the abandonment process, would suggest that the population did not have time to take these materials away with them during the abandonment although they did manage to save some other important materials (probably not ceramics?). The dimension of the sherds at Tell Ahmar is generally medium-large, with the exception of the sherds found in Block 2, which are small. Schiffer argued that when dealing with *de facto* assemblages, the large dimension of vessel sherds may be seen as the result of the gradual collapse of the room's walls and roof, while breakage of a vessel during its use is often more violent, thus producing more fragmentation (Schiffer, 1989).

b) Degree of restorability

The information taken from complete and restorable vessels is not only essential in order to understand vessel's techno-morphological features, but also in a broader sense, it can be used to infer mode of abandonment. The Tell Ahmar refuse assemblage includes still usable and non-fragmentary vessels that were found in burial, floor and room fill contexts (Fig. 29).



Figure 29. Fragmentary and small complete vessels found on the floor of Room 14.2 in Area S14 (Tell Ahmar 2006) (photo: Guy Bunnens).

At Tell Ahmar, more than 40 complete vessel shapes have been found, while several vessel profiles and vessel parts were reconstructed from fragmentary sherds (Figs. 30a and 30b).

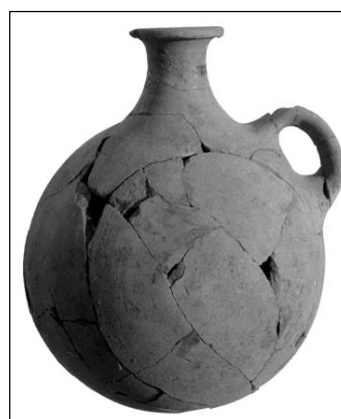
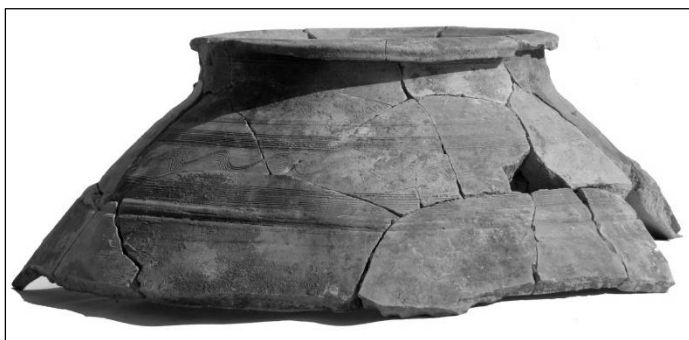


Figure 30a and 30b. Samples of two reconstructed vessel shapes at Tell Ahmar (CS04a and CS11) (photo: Silvia Perini).

Reconstructing vessels is a very time-consuming process, and two factors can influence the time it takes: the ability of the restorer, and the degree of difficulty in identifying sherds as belonging to the same vessel. Although sherds that came from the same shape were grouped together (but were not always glued), the lack of professional staff able to deal with vessel reconstructions during fieldwork (solely the author) reduced the total number of vessels that could be refitted (c. 20). Moreover, considerable difficulty arose in identifying sherds that came from the same vessel; this was due to the homogeneity in ceramic production (i.e., similar

ware, colour, technological composition, surface decorations) which did not facilitate the recognition of sherds as belonging to a specific vessel. When reconstructing vessel shapes, sherds from the room's floor were analysed together with sherds from the room fill. Nevertheless, it has been observed (see post-abandonment processes) that sherds which belong to the same vessel and which were glued together usually come from the same archaeological feature.

If ritual deposition is ruled out, then the many restorable vessels (*de facto* refuse) also suggests that the site abandonment was rapid and unplanned, and so the population did not have enough time to carry away their household material.

c) Quantity

Determining the quantity of a ceramic inventory is a debatable and complex issue (see in particular Orton, 1993b; Orton, 2000). To quantify means to express the measure of something. In terms of ceramics, however, what archaeologists commonly find are fragmented parts of vessels, and not complete pots. The amount of ceramic material found is often associated with a portion of the excavated site that cannot be representative of the entire settlement. In addition, given that the amount of ceramics analysed in this work is restricted to the depositional refuse of the site at the time of its abandonment, it is clear that the assemblage has been narrowed down when compared to the amount of refuse deposited over several decades at the settlement (Schiffer, 1987). This means that the accumulations from which this material comes cannot be compared with the normal accumulation of debris that normally takes place over a long period at a site. However, during the abandonment stage, it is unlikely that any depletion processes (i.e. curation) took place. If cleaning-up activities or major movements of material within the areas were not undertaken prior the fire in a systemic context, we should then expect to deal with large room assemblages. From the 25 rooms excavated at the site, c. 3700 diagnostic sherds have been collected.

d) Artefact inventory variability and distribution

Ethnoarchaeological studies have inferred modes of site abandonment according to the composition and distribution of the ceramic assemblage. For example, in a study of households at Grasshopper Pueblo (Arizona), J.J. Reid and S.M. Whittlesey argued that early abandoned rooms are archaeologically recognised by the presence of a large number of sherds in the room fills, while late abandoned rooms usually have only a few sherds in their fills and may contain whole or restorable vessels (Reid & Whittlesey, 1982).

The amount of ceramic material recovered at Tell Ahmar was not consistent in every room. The assemblage found in Rooms 1.1, 2.2, 2.3, 2.5, 3.2, 9.3 and 9.5 is scarce when compared to the other rooms (Fig. 31).

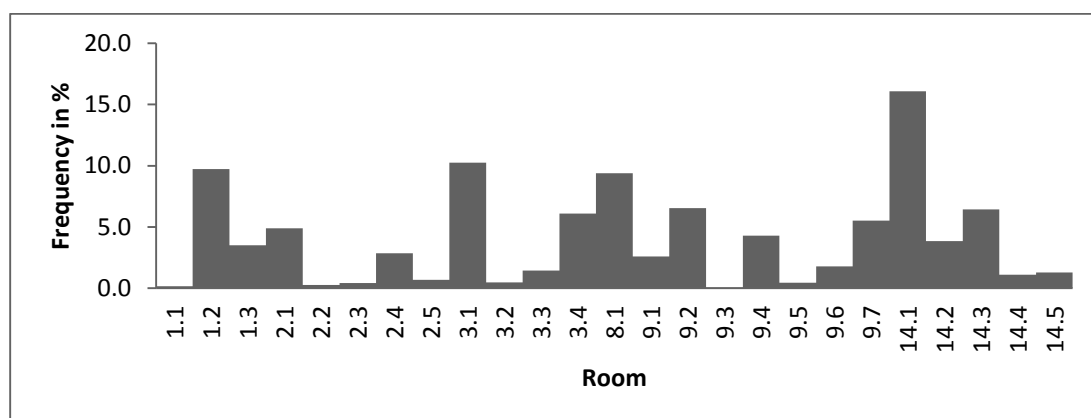


Figure 31. Distribution of ceramic sherds across the excavated rooms.

This analysis indicates that in Block 2 and in the majority of the rooms in Building M9, ceramic material was not customarily part of the systemic inventory. Although this may be true for Block 2, and both room small size and access from the roof seem to support this hypothesis, the situation is different in Building M9, where there is no reason to believe that ceramic vessels were excluded in the room inventories. An analysis of variability and distribution has also been undertaken for both ceramic fragments (Fig. 32) and complete shapes (Fig. 33).²⁹ Although a full examination of the ceramic arrangement in each room is discussed in Chapter 8, here a broader view of its distribution across the site is considered.

²⁹ Complete vessels coming from burial contexts have been excluded from this analysis.

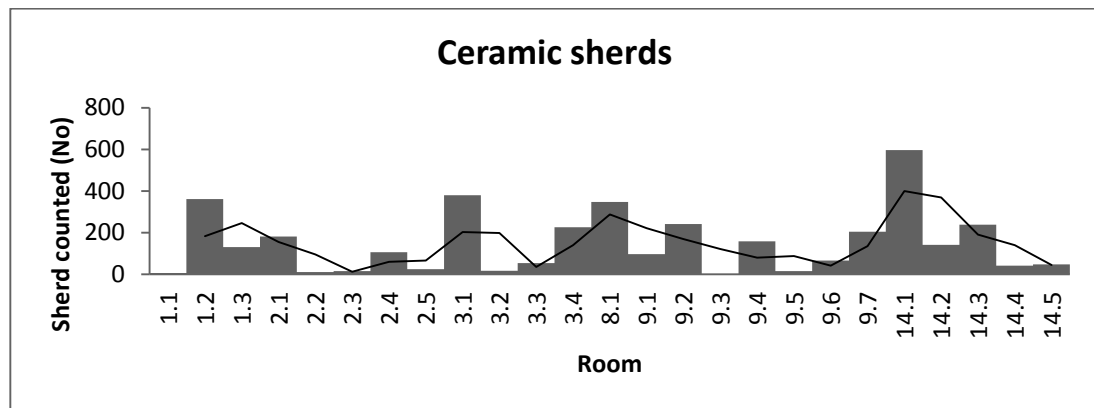


Figure 32. Distribution of ceramic sherds across the excavated rooms.

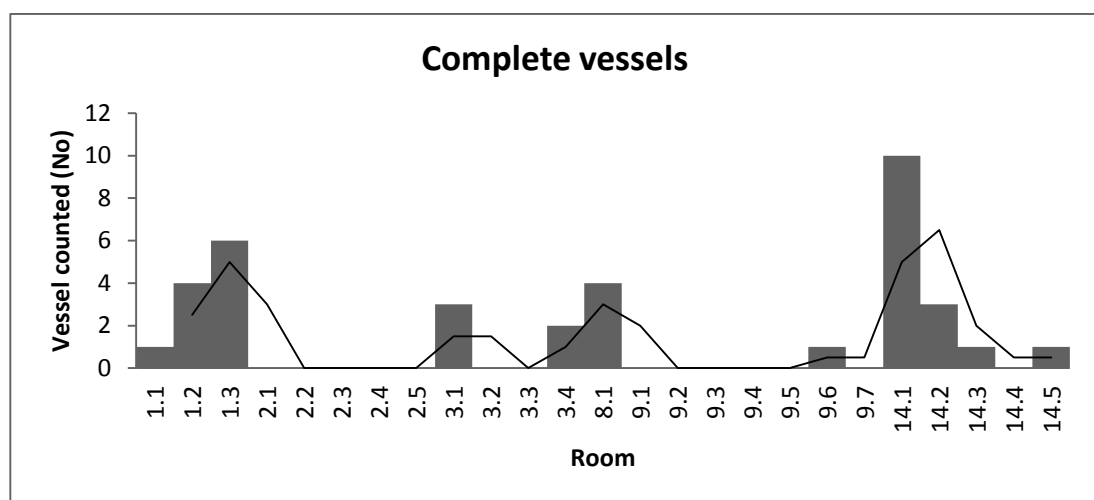


Figure 33. Distribution of complete vessel shapes across the excavated rooms.

In Block 2 no complete vessels were found, while in Building M9 (Court 9.6) only one complete sample was recovered (see above). The so little pottery found in some areas of the complex is in itself a fact open for interpretation. This circumstance would suggest that either Blocks 1-3, Building M8 and the House in S14 were less affected by natural and behavioural abandonment, or post-abandonment disturbances than the other areas, or that some different activities were undertaken in Block 2 and the Building in M9 that did not necessarily involve ceramic vessels. This last hypothesis will be discussed in Chapter 8.

Post-abandonment and formation of the archaeological record

During the period between the abandonment of a settlement and its archaeological excavation, many factors may contribute to the alteration of the *de facto* refuse, and these can either accredit or deplete the *de facto* refuse (Schiffer, 1987). Post-abandonment accretion processes includes re-use refuse, secondary refuse, structural collapse and disturbance, while depletion processes include scavenging, disturbance and decay (see Fig. 24) (LaMotta & Schiffer, 1999). Which of these processes, therefore, took place at Tell Ahmar after its abandonment?

There is no indication that any of the rooms remained in use after the blaze. No attempt appears to have been made to clean or reorganise the destroyed structures. Thus, it is unlikely that a re-use of the refuse took place. Although abandoned structures are frequently used as a rubbish dump, no archaeological evidence indicates that the remaining inhabitants threw rubbish into the rooms. Stratigraphic evidence suggests that reoccupations only occurred on top of the accumulated debris, but these did not affect the composition of the room assemblage, since no intrusive material (i.e. material coming from earlier or later periods) has been observed in the ceramic inventory. There is no evidence to assume that secondary refuse was deposited after the rooms were abandoned. It would appear that the roofs and the walls of the excavated rooms collapsed onto the floors during the fire, sealing in the ceramic material until archaeological excavation took place.

The house in Area S14 was levelled and another house built on top in a later period. An assessment of the reoccupation of the buildings in Area M is made difficult by the fact that the French team had already excavated parts of Block 2, Block 3 and Building M9, and documentation is not available. Block 1 and Building M8 do not seem to have been reoccupied.

Post-abandonment wall collapse may be also observed by the position of the complete vessels recovered. Small and medium dimension shapes were often found turned upside-down on the room floor, suggesting that they were located on the room walls (i.e. on shelves or other supports) and collapsed on the floor during the fire. Post-abandonment structural collapses have affected the composition of the floor

assemblage of the house in Area S14. The artefacts found on the floor of the room may have belonged to the upper floor that collapsed onto the floor when the roof burned, or after the fire had died out. Disturbances caused by later occupations are minimal in Area M and restricted to one or two pits in Area S14.

Although depletion processes may have occurred in Block 2, it has been observed a remarkable coherence in the distribution of fragmentary sherds once part of the same vessel shape. These fragments belong to the same archaeological features (e.g. *tannur*, floor). This occurrence suggests that we are dealing with *de facto* refuse and not secondary refuse and supports the view that post-abandonment processes did not significantly affect, move or transform the composition of the systemic assemblage at the site. As it has been discussed above, although some of the pottery at Tell Ahmar may not have been strictly found *in situ*, it is unlikely that the vessel shapes had been moved far from their location of final use, as the close distribution of fragments of restorable vessels did confirm.

Finally, it is important to keep in mind that when dealing with post-abandonment processes in the Near East the particular archaeological site structure itself (i.e. tell) and its material composition (i.e. several destruction strata of mud bricks) can offer significant help in interpreting what went on in these activity areas.

These strata are usually derived from remains left after military conflicts, accidents, or natural disasters. They often consist of site-wide destructions where settlements are burned or otherwise destroyed and covered rapidly before the site is reoccupied. The structures preserved among the destruction debris often contain largely intact systemic inventories of artefact preserved in or near their use locations. When the locations of these assemblages of artifact are carefully mapped within domestic contexts, and when patterns introduced by natural and cultural formation processes are accounted for, these assemblages become invaluable for understanding household activities (Hardin, 2011, p. 17).

Summary

A fire was the element which determined the destruction of the buildings in Area M and Area S14, putting an end to their occupation. Thus, the composition of the ceramic assemblage considered in this research is the product of the abandonment

process of these areas. Given this particular circumstance, the analysis of the ceramic material offers a realistic view of *de facto* refuse produced during the MBA at the site. Although *de facto* refuse is the closest evidence we have to a record of human activity, this does not imply that it is a complete record, but it does imply that the remains have a direct spatial association with the activities taking place and includes refuse that would otherwise have been removed to primary or secondary contexts (Schiffer, 1985).

The explanation of the adopted research methodology, together with a discussion of the significance of the site formation process, is crucial to allow interpretations of the site socioeconomic system that are investigated later in this work (see Conclusions).

PART 2 – CERAMIC MULTI-DIMENSIONAL ANALYSIS FROM TELL AHMAR

The potter is a user of natural material and has to know which materials to select and how to use them. Each pottery vessel reflects decisions made about materials and techniques as well as cultural choices, and thus represents a combination of many variables which may be useful in archaeological interpretation (Rye, 1976, p. 106).

5. Ceramic technological analysis and typology

This chapter deals with the technological typology of the ceramic material at Tell Ahmar. Technological analysis of the ceramic material focuses on vessel surface treatment and decoration, ceramic ware and inclusions, firing temperature, and firing atmosphere. A typology of the ceramic fabric is offered in Appendix B.

Vessel manufacture

Most of the ceramic sherds found at Tell Ahmar are wheel-made. Many fragments show the distinctive throwing rings, the undulating striations running around the inner part of the vessel. In some cases, grooved and ridged spirals have been found in the interior of the base (Fig. 34).



Figure 34. Small bowl with a ridged spiral on the inside of the base (photo: Silvia Perini).

This particular characteristic is a direct result of the opening technique associated with the clay lump centred on the wheel (Rice, 1987). Handmade shapes were also identified, such as rectangular shapes (e.g. trays) and some types of cooking pots. In addition, some vessels have been manufactured using a combination of wheel-made and handmade techniques. Handmade shapes such as handles, spouts, cordoned decoration, and the ring, which characterised the ring bases, were added to the vessel after the wheel-throwing processes. Oversized storage vessels, too heavy to be made on a wheel, were manufactured in separate parts and then joined together by hand. In some cases, as evidenced by rope markings on the lower part of some vessels, rope

has been used to prevent vessel walls from collapsing under the weight of the wet clay (see Fig. 45).

One vessel type in particular has shown a distinctive manufacturing methodology. It is a shape which has been classified at Tell Ahmar as CS11, and it is also known as *Pilgrim flask* (or Pilgrim bottle) (Fig. 35) (see also Chapter 10).

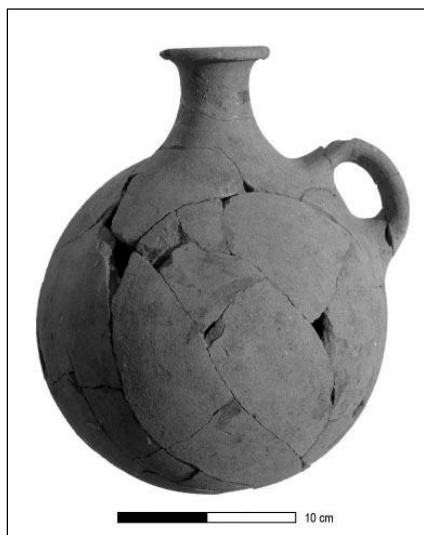


Figure 35. Pilgrim flask found at Tell Ahmar (photo: Silvia Perini).

This name, however, is a very general term, which is used throughout several periods and cultures, from the Bronze Age in the Near East to ancient China as well as to medieval Europe. A Pilgrim flask refers to a barrel-shaped or cylindrical container, usually with a flattened shape and two suspension lugs to which a chain was attached so that it could be hung from a belt and carried by pilgrims to contain their supply of water, beer, or wine. They were produced in a wide range of materials, including earthenware, porcelain, silver, and glass, and in more perishable materials such as leather. Although peculiarities in material, surface decorations, dimensions, shape and number of handles attached have been observed, which have marked different chronological periods (MBA samples, for examples, are generally characterised by one handle on the body, while LBA samples by two), a common characteristic of this ceramic shape is its particular manufacturing technique. The globular body is formed by two hemispherical parts joined together. At one part of the join, a hole was made where the short cylindrical neck was attached.

Subsequently, a small horizontal handle on the shoulder was attached. The outside surface does not show any sign of the conjunction of the two parts, but a decoration consisting of a circular depression characterises these shapes (Einwag, 2007; Duistermaat, 2008).

In addition, it is interesting to notice that 16 complete vessels out of 52 show a rim deformation. This is particularly common among the small goblets. These vessels have been damaged when the clay was still wet, during the drying and before the firing process.

Fabric typology, ware classification and assemblage technological composition

Technological analyses of ware and inclusion have been undertaken on the selected diagnostic sherds from Tell Ahmar. However, before proceeding with this analysis, a clarification of some technical terms referring to pottery and vessel use is required.

- Clay or paste: natural soil material that is plastic when wet used for making pottery (tempers or inclusions excluded);
- Tempers (or inclusions): material found within the clay that improve strength and firing qualities, and may either occur naturally or be added later by the potter;
- Fabric: body of processed clay and temper additives in ceramics. Fabric texture is primarily determined by the inclusion's size, frequency and type;
- Ware: class of pottery sharing a similar technology, clay and surface treatment/decoration. In some cases, a type of ware which shares such similar features is defined by a name, which may refer to the name of the place or region of finding (e.g. Khabur Ware), or to a particular technological feature of the pottery itself (e.g. Grey-Burnished Ware or Cooking Ware);
- Ware colour: ware colour of fired pottery refers to the inner and external parts of the sherd, as well as its core. Colours depend on the size, frequency and type of inclusions present in the raw clay, as well as the firing time, temperature and atmosphere conditions (Rice, 1987). Ceramic colours have been identified using the Munsell colour system (Rice, 1987). This identification is based on the colour of fired pottery without any consideration of colour alterations caused by the

post-depositional system (i.e. black carbon colour which characterised some vessel bases used for cooking; yellow-whitish deposition salts colour on the internal walls of storage jars; and ceramic colour inconsistencies which reflect the conflagration which happened at Tell Ahmar during the Middle Bronze Age) nor colours resulting from particular surface treatment or decoration (i.e. bitumen, painted). The majority of the ceramic material investigated in this research is characterised by a colour ranging from pale yellow (Munsell Chart 5Y 8 3-8) and light brown (Munsell Charts 10YR 7 3-8) to reddish-brown (Munsell Chart 5YR 5 3-8). According to these correlations, a general definition of the colours, rather than the Munsell Chart codes has been preferred in the tables of the drawings in Appendices A and C, to offer the reader an immediate idea of the sherds' technological characteristics.

Ware classification

Ware classification at Tell Ahmar is based on the analysis of two technological properties: inclusions and firing (both temperature and atmosphere). Five classes of ceramic ware were identified, namely common, cooking, fine, Grey-Burnished, and Khabur wares (Tab. 49).

Ware	Number	%
Common	3392	91.6
Cooking	186	5.0
Fine	96	2.6
Grey-Burnished	22	0.6
Khabur	8	0.2
TOT	3704	100.0

Table 49. Composition of the ceramic ware identified for the ceramic assemblage at Tell Ahmar.

Common ware is the most frequent ware (91.6%) found at Tell Ahmar. It is a relatively refined ware, and it is associated with mineral inclusion of small and medium dimensions. Large dimension vegetal inclusions (e.g. straw) are scarce. Common ware is generally characterised by a pale yellow or a yellowish-red colour,

indicating medium temperature firing in a homogeneous atmosphere (at approximately 750-950 °C) (Rye, 1981).

Cooking ware is typically reddish-brown or dark brown in colour and is characterised by a coarse texture with mineral inclusions (i.e. grit and gravel) usually ranging from medium to large in dimension. Owing to this distinctive fabric and colour, cooking ware sherds are easily differentiated from the rest of the assemblage (5%). Its fragility, however, has meant that no complete cooking shapes have been recovered from Tell Ahmar. Cooking ware is generally fired at a low temperature (< 750 °C) and is often associated with a reduced atmosphere. In addition, many cooking sherds show traces of burning on the external surface.

Fine ware inclusions are either very scarce (2.6%) or small in dimension. Fine ware at Tell Ahmar is characterised by thin walls and light brown or yellowish-red colours, with the external surface often exhibiting a burnished treatment. Evidently, fine ware vessels were fired in a homogenous atmosphere with medium to high temperatures (at approximately 900 °C).

Some specimens of two distinct wares called Grey-Burnished Ware (or Grey Ware) and Khabur Ware have been also recovered. Grey-Burnished Ware is a general term that refers to ceramic shapes characterised by a grey slip, which is burnished. This particular surface treatment was probably used as imitation of metallic prototypes. At Tell Ahmar, Grey-Burnished Ware fabric is characterised by a scarce presence of small dimensions mineral inclusions, which have been fired at a medium-high temperature in a homogenous atmosphere. McClellan described this type of ware as follows:

The vessels are roughly finished but fired at a relatively high reducing temperature with the surfaces very dense. The fabric is consistent dark charcoal grey, baking to deeper grey or black. Most samples are hand-burnished in bold horizontal strokes, with some criss-cross burnishing on the inside base (Culican & McClellan, 1983-84, p. 55).

Lorenzo Nigro argued that Grey Burnished Ware had its origin in Inner Syria and then spread to the Euphrates Valley and beyond (Dornemann, 1981; Matthers, 1981; Culican & McClellan, 1983-84; Faivre, 1992). Nigro also asserted that Grey

Burnished Ware usually consists of small bottles, sharply carinated bowls and in-turned rim bowls (Nigro, 1998). This general classification corresponds to the Grey-Burnished Ware shapes identified at Tell Ahmar.

Khabur Ware is also a general term coined originally by Max Mallowan for a specific painted production that characterised the sites located in the Khabur Region and in upper Mesopotamia from approximately the late Isin-Larsa Period (c. 1900 BC) until the early period of Kassite rule (c. 1400 BC) in southern Mesopotamia (Mallowan, 1936; Mallowan, 1937). Khabur ware can be divided into four main shape categories: 1) jars; 2) beakers, cups or goblets; 3) bowls and 4) “grain measures” (Palmisano, 2012). Regarding their chronology, Oguchi has recently proposed a division into four phases: Phase 1 (c. 1900-1812 BC); Phase 2 (c. 1812-1750/30 BC); Phase 3 (c. 1750/30-1550 BC); and Phase 4 (c. 1550-1400 BC) (Oguchi, 2006). Eight Khabur Ware samples were identified at Tell Ahmar. Four refer to rim sherds while the other four to body sherds. They are all characterised by a red-banded painted decoration. Khabur Ware specimens have been found also in the Euphrates River sites and in Inner Syria. The distribution of Khabur Ware shapes is further discussed in the Conclusions.

Tempers typology (Appendix B)

The ware classification discussed above, considers ceramic material from a general point of view. Within each ware class, further peculiarities can be observed. These differentiations depend on the amount, frequency and dimensions of the tempers in the clay that can be vegetal (e.g. plant fiber, straw) or mineral (e.g. sand, grit, crushed rock).

A small area at the surface edge of the sherd under examination was broken, using a pincer, to record features of a previously unexposed area. This part of the fragment was used in the fabric examination. At Tell Ahmar, the inclusions were analysed with the naked eye or with the aid of a magnifying glass. Moreover, digital microscopes have only recently been used to photograph inclusion types. Owing to this more accurate analysis, some alterations have been made to the previous temper

typology. For example, some similarities among Tempers 01, 04 and 06 have been observed as well as among Tempers 13, 16 and 20 (Fig. 36).

Ceramic inclusion measurements, as defined using a digital microscope, have been grouped into three sizes: small (<0.2 mm), medium (0.2 - 0.4 mm), and large (> 0.4 mm) (Fig. 37). When present, vegetal inclusions are generally large in dimension.

The frequency of the inclusions has been determined within a general range defined as low, medium, and high (Fig. 38). Such determination is dependent on a rough count of the tempers as visible through a macroscopic view.

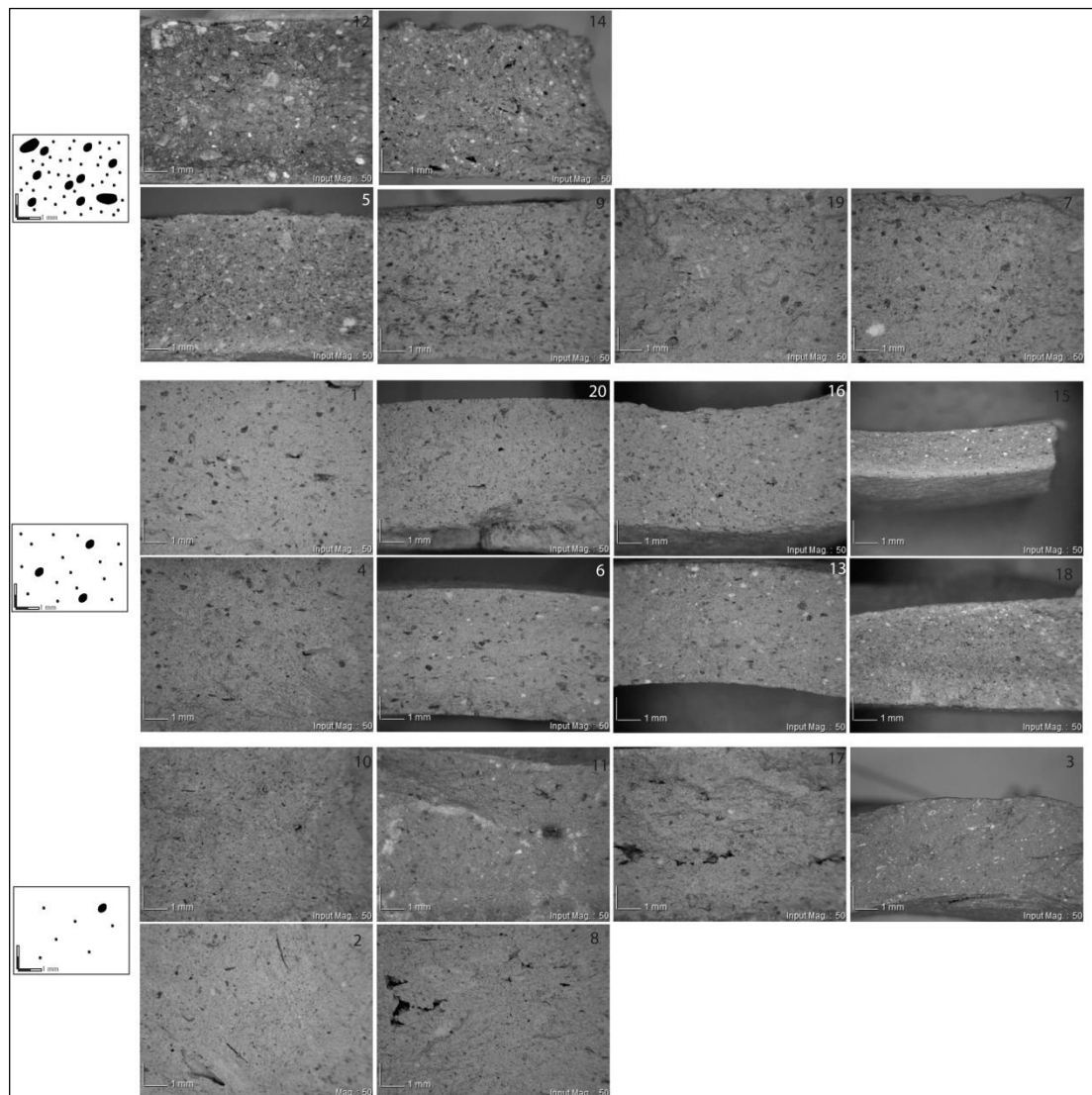


Figure 36. Overview of the images of temper types identified and presented according to the dimensions and frequency of inclusions: from coarse (top) to fine ware (bottom) (photo: Silvia Perini).

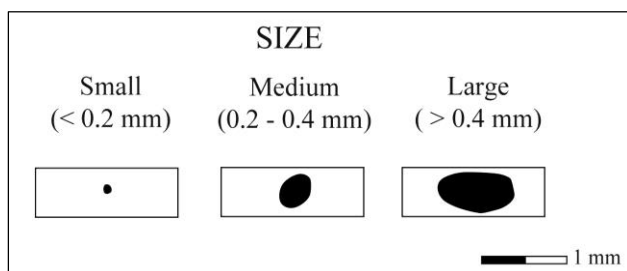


Figure 37. Temper size as defined at Tell Ahmar (illustration: Silvia Perini).

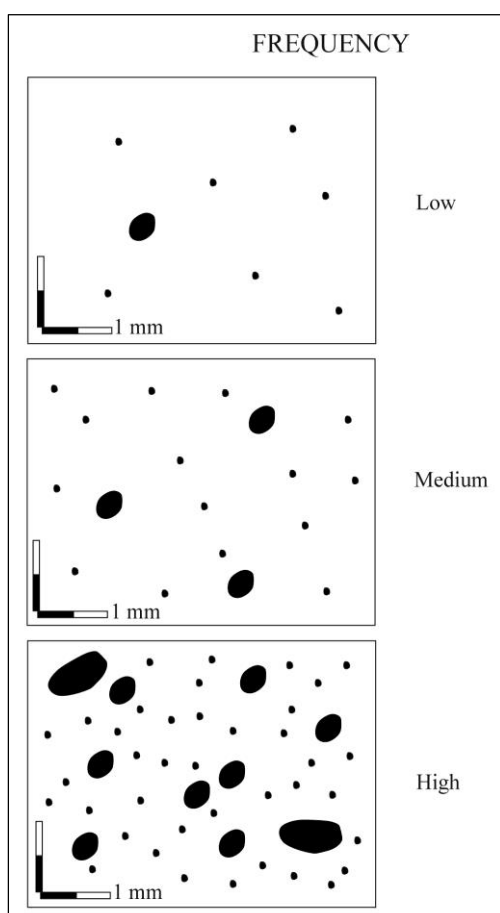


Figure 38. Temper frequency as defined at Tell Ahmar (illustration: Silvia Perini).

As petrographic analysis was not undertaken, investigations into the types of mineral inclusions present in the clay were limited to an analysis of colour.³⁰

³⁰ For the associations between colour and inclusion see Peacock, D.P.S. 1977 *Pottery and Early Commerce: Characterization and Trade in Roman and Later Ceramics*, London Academic Press, pp. 30-32.

Hypothesised associations between a colour and a type of mineral inclusion have been summarised in Table 50. It is pertinent to note, however, that these associations are somewhat subjective as the absence of any petrographic studies means that inclusion types cannot be chemically assigned.

Colour	Size	Mineral
White	from small to large dimension	limestone, calcite
Black	from medium to large dimension	basalt, mica and pumice
Grey	from medium to very large dimension	grit, gravel
Brown	from small to medium dimension	sand
Red	from small to medium dimension	iron components
Crystalline/glittery	from small to medium dimension	quartz

Table 50. Hypothesised correspondences between inclusion's colour and type of mineral.

In an ethnoarchaeological and petrographic study, Andrew Jamieson has investigated provenance and the type of clays possibly available in the Tell Ahmar region in the past and his experiments indicated that most of the clays collected nearby the site were suitable for pottery production (Jamieson, 2002). Jamieson argued that:

The close proximity of Tell Ahmar to the Euphrates River, a potential source of clay, suggested that this resource may have been utilised in antiquity [...] Preliminary PIXE (Proton Induced X-ray Emission) analysis has indicated that they consist of hydrated aluminium silicate mixed with small proportions of iron compounds, calcium carbonates, quartz sand, organic matter and alkalises (Jamieson, 2002, p. 59).

According to inclusion colour, frequency and dimensions, twenty different fabric types have been identified, among which fifteen types are classified as common ware, three types as fine ware, two types as cooking ware and one type as Grey-Burnished Ware (Tab. 51 - see also Appendix B). Although presence of Khabur Ware specimens has been suggested, a specific ware associated with these samples has not been identified. More analysis is required towards a clarification of the Khabur Ware fabrics of the Tell Ahmar samples (see Conclusions).

Fabric Type N.	Ware	%
01	Common	22.1
02	Common	3.2
03	Fine	2.0
04	Common	9.7
05	Common	7.6
06	Common	5.5
07	Common	3.7
08	Common	8.0
09	Common	9.0
10	Common	2.3
11	Grey-Burnished	1.6
12	Cooking	7.1
13	Common	3.1
14	Cooking	0.8
15	Fine	1.9
16	Common	3.8
17	Common	2.0
18	Common	1.4
19	Common	1.9
20	Fine	2.8

Table 51. Percentage of the identified temper types at Tell Ahmar.

The most prevalent temper among common ware is Temper 01 (22.1%) (Fig. 39). Temper 04 and Temper 09 are also relatively common (9.7% and 9% respectively). Temper 12 is the most diffuse cooking ware (7.1%), whilst Temper 20 is the most abundant fine ware (2.8%).

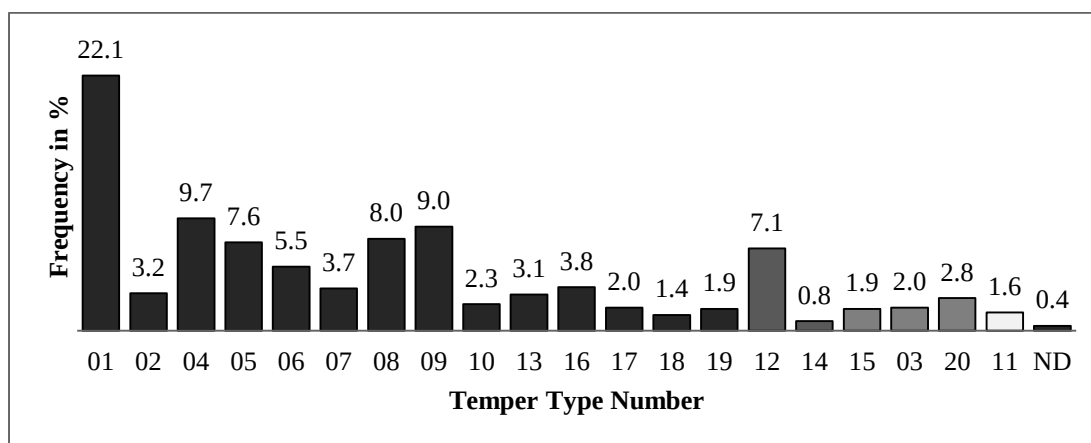


Figure 39. Chart showing the temper type frequency according to the type of ware (dark grey = common ware; grey = cooking ware; light grey = fine ware; and white = Grey Ware).

Surface treatment

Once the vessel shape has been completed and before firing is commenced, the internal and external surfaces of the ceramic vessel are further finished. Among the assemblage at Tell Ahmar the treatments associated with the inside surface of the vessel are smooth, red slip, self-slip, bitumen, and fingerprinting. These last two treatments refer only to the internal vessel surface (Tab. 52).

Surface Treatment	TOT inside	%	TOT outside	%
Smooth	3651	98.6	3682	99.4
Red Slip	32	0.9	11	0.3
Self-Slip	11	0.3	7	0.2
Bitumen	2	0.1	0	0.0
Fingerprint	3	0.1	0	0.0
ND	5	0.1	4	0.1
TOT	3704	100.0	3704	100.0

Table 52. Total number and frequency of the surface treatments identified on the diagnostic sherds at Tell Ahmar.

Most of the sherd surfaces (both inside and outside) at Tell Ahmar have only been smoothed. This technique involves rubbing the surface with a tool or a cloth before the clay is completely dry. When hands or fingers are used to smooth the internal part of the vessel, the potter's fingerprints remain impressed on the wet surface (Fig. 40). This technique has been identified on several sherds at Tell Ahmar.



Figure 40. Fragment showing fingerprint impressions on the internal surface (photo: Silvia Perini).

In the slip treatment, a thin layer of clay is left on the surface of a pottery vessel in order to improve the pot's smoothness and decrease its porosity (Fig. 41). The slip may have the same colour as the underlying fabric (self-slip), or it may have a different colour. At Tell Ahmar, a relatively common slip is associated with a red colour (red-slip). This treatment is especially associated with the internal surface of the vessel.

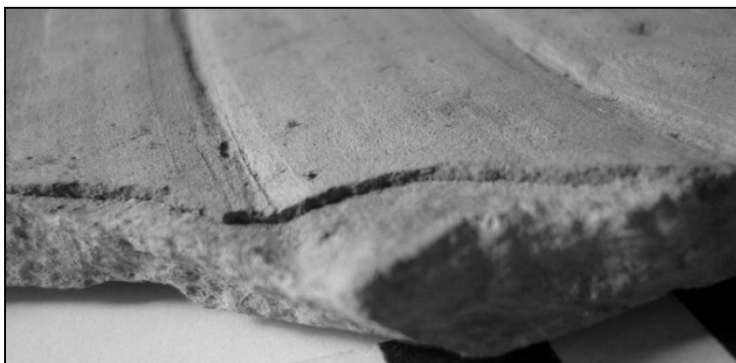


Figure 41. Sherd showing the slip layer on its inner part (photo: Silvia Perini).

Finally, in a few cases, the inner surfaces of the vessels at Tell Ahmar have been covered by a thick layer of bitumen. Contrary to smooth and slip, this surface treatment was applied after firing to increase the vessel permeability (Fig. 42).



Figure 42. Small goblet showing a thick layer of black bitumen on its inner surface (photo: Silvia Perini).

Surface decoration (Appendix A, Plates 1-4)

The majority of the ceramic at Tell Ahmar is undecorated (60% out of the entire assemblage). When decorated, the decorations identified at Tell Ahmar are classified as combed, cordoned, ridged, grooved, fingernail, corrugated, burnished, and painted. In some case, two or more techniques were used in conjunction. In this case, the decoration was defined as mix decorations (Tab. 53).

External Surface Decoration	TOT	%
Combed	900	60.7
Cordoned	46	3.1
Ridged	289	19.5
Grooved	33	2.2
Fingernail	3	0.2
Corrugated	68	4.6
Burnished	26	1.8
Painted	16	1.1
Incised	37	2.5
Mix	63	4.2
ND	2	0.1
TOT	1483	100.0

Table 53. Total number and frequency of the surface decorations identified on the diagnostic sherds at Tell Ahmar.

As for the surface treatment, surface decorations mainly refer to the external surface of the pot (Fig. 43).

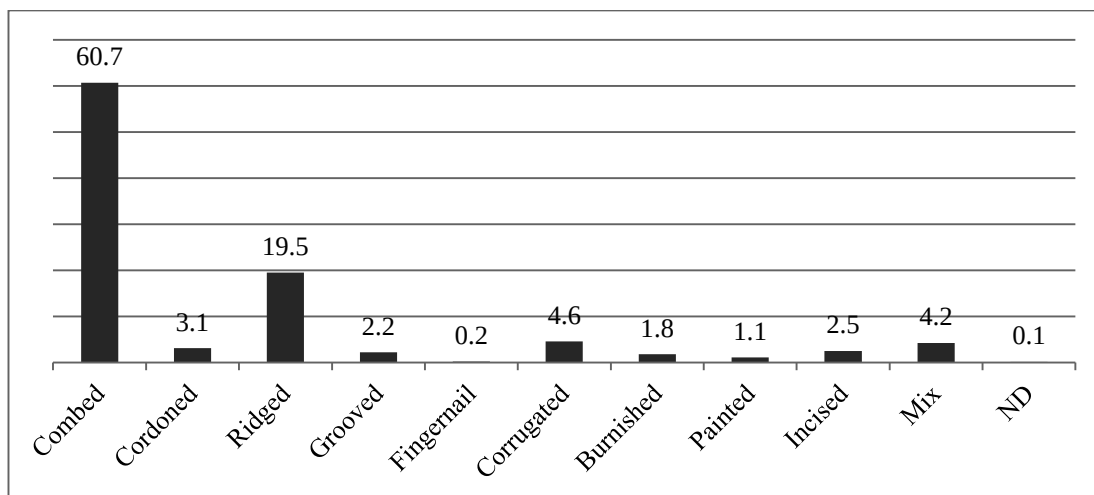


Figure 43. Chart showing the frequency of the surface decorations identified on the external surface of the diagnostic sherds.

One of the most common decorations is the comb rope band (60.7%). This decoration was incised using a comb (probably made of wood or metal) on the wet clay of the vessel as it was slowly turning (Holland, 1980). It reproduces different patterns: horizontal, vertical, wavy, or crossed lines (Fig. 44a). It has been observed that in some cases in realising this decoration the potter has taken limited care. The combing lines are not always clearly marked and they do not always close the pattern. Punctuated patterns have also been identified at Tell Ahmar, made by the end of the comb (Fig. 44b). Combed decorations appear on the upper part of the vessel, usually on the shoulders. In some cases, similar patterns were drawn with a stick rather than a comb (Fig. 44c).

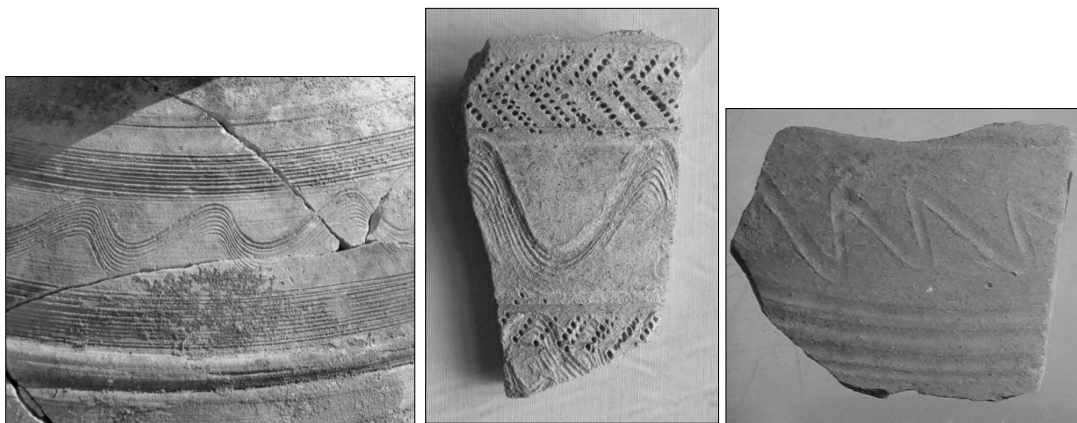


Figure 44a, 44b and 44c. Combed decoration characterised by horizontal and wavy patterns (a), by punctuated pattern (b) and by horizontal and wavy lines made with a stick (c) (photo: Silvia Perini).

Another decoration identified at Tell Ahmar is the cordon rope band decoration (3.1%), which imitates the shape of a thick rope (Fig. 45).

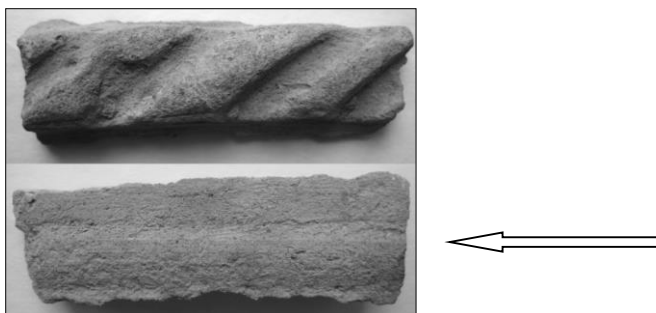


Figure 45. Small fragment characterised by a cordoned decoration. In the inner part, the conjunction of the two different parts of the vessel is visible (photo: Silvia Perini).

This decoration was applied when the vessel manufacture was terminated. In addition to the aesthetic function, this type of decoration also served a practical purpose. It seems that cordoned decorations were applied to cover the conjunction of the different assemblage of clays forming a large vessel. Often the sign of the conjunction of two or more different parts of the same vessel is visible on the inside surface (Fig. 45).

Ridged decorations, characterised by narrow crest inside in the external surface, represent the 19.5% out of the body decorated. This decoration is often associated with a red slip surface treatment (Fig. 46).

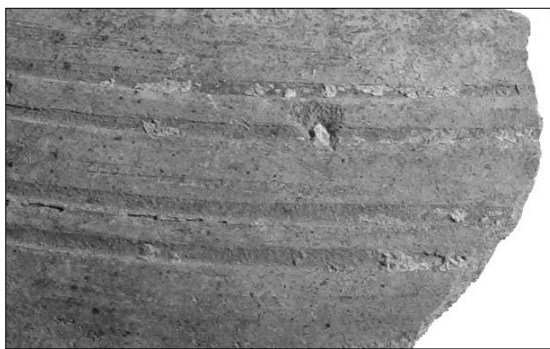


Figure 46. Fragment showing ridge decoration on the body's external surface (photo: Silvia Perini).

Another pattern, which characterised body sherds at Tell Ahmar, is the grooved decoration (2.2%), made by scratching the surface of the vessel with a tool. Grooved decorations (i.e. deep depression) are often present on the rim of large jars (Fig. 47).

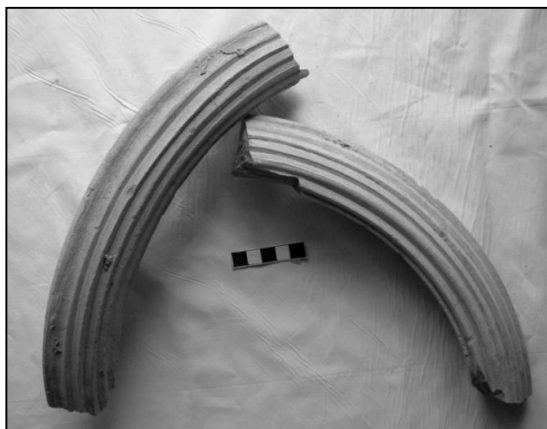


Figure 47. Two fragments of rim jars characterised by grooved decorations (photo: Silvia Perini).

In rare cases, sherds show a decoration obtained from fingernail impressed patterns (0.2%). Such patterns are often associated with cooking pots (Fig. 48).



Figure 48. Fragment showing a fingernail decoration on a fragment of cooking pot (photo: Silvia Perini).

Corrugation decorations affect the whole surface of the vessel and in some cases both inside and outside the vessel (4.6% out of the total decorated sherds on the outside). In this decoration, the individual coils of clay, successively added to form the shapes, were not smoothed so surfaces were left undulating (Fig. 49).

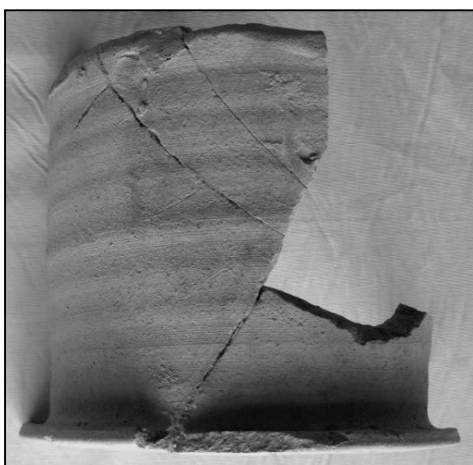


Figure 49. Fragments of a pot stand with a corrugated surface (photo: Silvia Perini).

Burnished patterns are often used to cover the whole surface of the vessel, as well as small parts in isolation. At Tell Ahmar, 1.8% of the total number of diagnostic sherds decorated can be associated with burnished decorations. A vessel was burnished using a spatula of wood or bone. This technique was applied for both

decorative (e.g. to produce a shining effect) and functional (e.g. to improve permeability) reasons. Burnishing the entire vessel surface was probably done in order to imitate the appearance of metal containers. Burnished decoration can be realised both horizontally and vertically (Fig. 50). Among the cooking pots, this technique is used to make the vessel less porous.



Figure 50. Base of a vessel characterised by a horizontal burnished decoration (photo: Silvia Perini).

Painted decorations are not very common at Tell Ahmar (1.1%).³¹ Where present, they are characterised by a red-banded pattern on a natural common ware (Fig. 51). Given the particular decoration, the colour, and the peculiar temper, which differentiates these sherds from the rest of the assemblage at Tell Ahmar, it is argued that they belong to a non-local ceramic production called Khabur Ware (see above in this chapter).

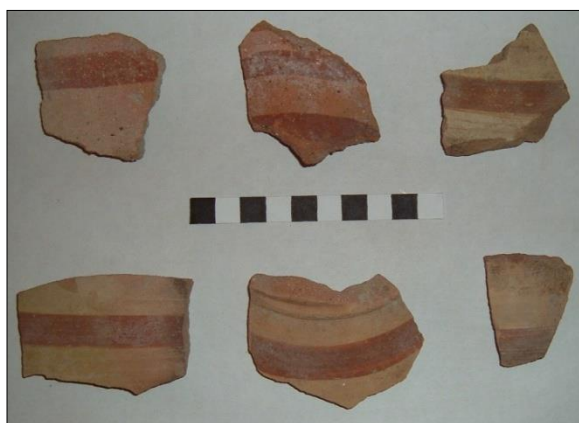


Figure 51. Fragments of Khabur Ware painted with a red-banded pattern (Photo: Silvia Perini).

³¹ See, however, Jamieson, 2005.

Potter's mark (Appendix C, Plate 55-56)

A potter's mark refers to the stylised sign incised (or painted) on the surface of the vessels by the potter during the manufacturing process. Potters' marks on ceramic containers are a common feature and they do not characterise only MBA ceramic vessels. Stefania Mazzoni for the Palace G at Ebla (EBA IV) (Mazzoni, 1988) and, more recently, Ildikó Bösze (Bösze, 2009) have studied Early Bronze Age potters' marks. Mazzoni argued that potters' marks can be interpreted either as signs of special shipment or they may refer to the quality of the product contained (Mazzoni, 1988). Alternatively, from a seriation analysis of the potters' marks found on ceramic offerings in the Early Bronze Age graves at Tell Bi'a, Bösze argued that marks can be interpreted as family-tribe ownership (Bösze, 2009). One of the most complete investigations on potters' marks has been undertaken by Thomas A. Holland at Tell es-Sweyhat, on the ceramic material dated from the Bronze Age to the Roman Period (Holland, 2006). From this detailed analysis, and by making comparisons with a number of other sites, Holland hypothesised that these marks:

Were possibly meant to represent: (1) numbers, (2) numbers in relationship to other features, (3) alphabetical letters derived from a written language, (4) symbols that reflect objects of daily use, (5) potters' or pottery guilds' trademarks, (6) contents or size of vessels, and (7) familial ownership (Holland, 2006, p. 299).

Moreover, rather than emphasising the content of the vessel or their provenance, archaeological and ethnoarchaeological studies have suggested that the potters' marks have a meaning only for the potter. In an analysis of the potters' marks found at Tell Djassa al-Gharbi and Tell Abu Hafur (Northern Syria), Rafal Koliński argued that the marks:

Could have been put on the last pot formed during the day of work, to distinguish a group of pots made during one day from vessels made before or after (Koliński, 1993/94, p. 15).

Ethnographic evidence from Peru, analysed by Christopher Donnan, suggested that small marks were made to help the identification of the pots of each potter during production and prior to the actual marketing of the pots (Donnan,

1971). Although there was no marketing involved, my personal experience in making pots in a ceramic class seems to support Donnan's hypothesis. During the class, once the manufactured vessel was completed, each participant signed their own product with a small mark made on the bottom of the vessel, in order to identify the pot after the firing process. In that case, the potter's mark was made for the potter only, and considerable attention was taken in order to make the mark's visibility as tiny as possible. Nonetheless, this was not the case with the North Mesopotamian and Syrian potters, where it is contended that the mark may have had a socioeconomic significance.

The potters' marks found at Tell Ahmar were all made with a comb, the same appliance that was used to make the decoration. This fact supports the argument that potters' marks were made by the potter during the vessel manufacture. Combed potters' marks at Tell Ahmar characterised only the large shapes used for storage and transport (CS04 and CS10). Potters' marks are also very simple in design as shows in Figure 52.

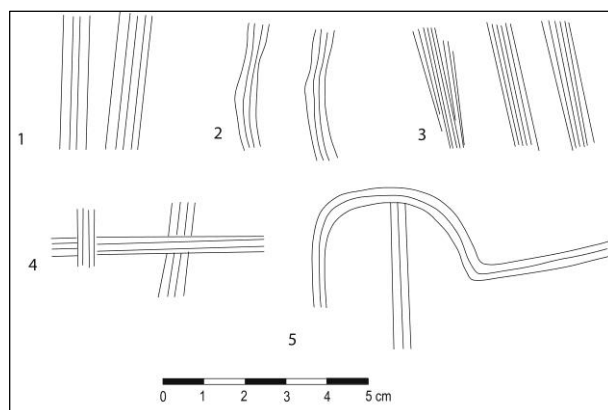


Figure 52. Tell Ahmar potters' marks on CS04 (1, 2, 4, 5) and on CS10 (3) (illustration: Silvia Perini).

Firing temperature and firing atmosphere

The potter controls two main variables during the firing process: temperature and atmosphere that surrounded the vessel. The firing temperature is attained by controlling different elements, for example the type of fuel and the insulation of the material fired. There are two principal firing methods: open firing and kiln firing. Kilns are used as they facilitate temperatures that are much higher than those

attainable in an open firing environment are. Unfortunately, no direct evidence of either method has been found at Tell Ahmar. However, it is possible to make inferences about the firing method used from the sherds themselves. Whilst a greenish shade is indicative of firing at a high temperature, a reddish shade is often associated with reduced heat.³² In addition, the sound that a sherd gives when it is struck can be used to infer information about the firing temperature: the more metallic the sound, the higher the firing temperature. Four distinct conditions of firing temperature have been identified at Tell Ahmar: over-fired (temperature > 1000° C); high (c. 1000° C); medium (c. 700° C); and low (c. 500° C) (Rye, 1981). It seems like that most of the vessels found at Tell Ahmar were fired at medium temperature (c. 750-950° C) (Jamieson, 1998). Some sherd discolouration and evidence of burning can be observed among the assemblage, perhaps in relation to the fire, which burned down the settlement at the end of the MBA (see Chapter 3).

The atmosphere surrounding the ceramic artefact can influence the result of the vessel ware. The firing atmosphere surrounding the vessel is controlled by the amount of oxygen available to combust with the fuel supplied. When there is free air circulation and ample free oxygen, oxidizing conditions result. When the atmosphere lacks free oxygen and carbon monoxide is in abundance, the firing atmosphere is defined as reduced. If the ratio of air to fuel is sufficient to allow complete combustion with no excess of fuel or air, homogeneous conditions exist. In the latter event, the atmosphere is necessarily abundant in carbon dioxide. From a ceramic perspective, similarity in colour between the vessel core and the interior and exterior walls is indicative of firing in a homogeneous atmosphere (Fig. 53) (Rice, 1987). With this analysis in mind, we can infer that most of the processed sherds analysed at Tell Ahmar were fired in a homogeneous atmosphere.

³² More relations between fired colour and original firing conditions have been studied both archaeologically and at the laboratory (Rice, 1987, pp. 345, Table 11.3).

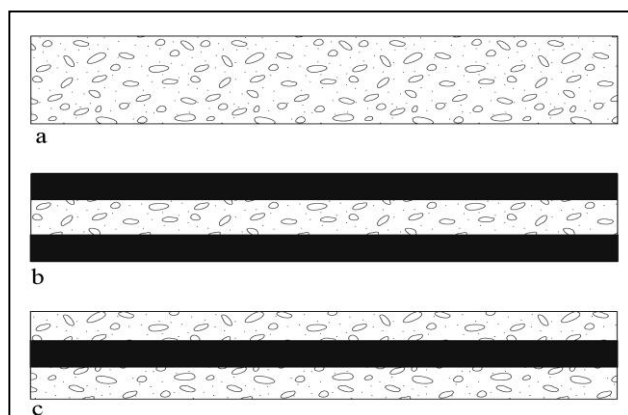


Figure 53. Stylised cross section showing a sherd fired in a homogeneous atmosphere (a), a sherd fired in a reduced atmosphere (b), and a sherd fired in an oxidising atmosphere (c) (illustration: Silvia Perini).

What does ceramic technological analysis reveal about vessel function?

Several experimental studies have been conducted in order to reinforce relationships between physical properties and vessel use (Rye, 1981; Hally, 1986; Rice, 1987). Despite these efforts, one should keep in mind that there are no one-to-one correlations between a vessel's technological features and its form (Rice, 1990).

An approach commonly used to infer vessel use is the examination of the physical characteristics of the ceramic shape, such as wall treatments and decorations; wall thickness; vessel firing; ceramic ware; and type, size, and frequency of vessel inclusions. No thin-section petrography and mineralogical identifications have been undertaken on the ceramic material at Tell Ahmar, so correlations between inclusions, types and functions cannot be examined. Despite being useful for the investigation of vessel function, porosity, which can be defined as the volume of pores in a ceramic expressed as a percentage of total volume, has not been calculated either (Rice, 1987). Notwithstanding these limits, the technological aspects taken into consideration to infer vessel function are discussed as follows.

- Wall treatment and decorations: exterior walls are often burnished to improve heating effectiveness and to increase permeability. In order to compensate the permeability, a slip treatment is often applied (Rye, 1981). Interior slipped surfaces also ensure wall permeability and make the vessel easier to clean (Rice,

1987). Interior vessel surfaces covered by bitumen make also the vessel completely permeable. Surface decorations, moreover, may have also been used for practical reasons. Corrugated and combed decorations, for example, tend to make the surface rougher and allow a more secure grip (Rice, 1987). Cordoned decorations may have been applied in large jars to cover the joining of two parts of the vessel. Furthermore, surface decorations may be employed without reference to vessel function or use. In activities where pottery is used communally, surface decorations may have been applied only for stylistic or aesthetic purposes, emphasising the value of the vessel itself rather than its contents. On the other hand, considering the short life span of vessels used for serving and eating, undecorated vessels may be more associated with daily use.

- Ceramic vessel thickness: thickness of ceramic affects three main aspects of the vessel's mechanic performance: thermal conductivity, breakage rate, and resistance to thermal shock. Thermal conductivity increases as walls become thinner. Thin walls conduct heat more effectively, cooking food faster and saving fuel. At the same time, thick-walled vessels are more appropriate for transporting heated contents because their slower conduction of heat means that the exterior of the vessel will stay cool for longer (Smith, 1985). Thick walls are also likely to be stronger and more durable than thinner walls but this increased strength is logically associated with heavier vessels, which can be difficult to transport.
- Ceramic ware: common ware is associated with the majority of the ceramic material at Tell Ahmar. Cooking is more suitable for processing activities, in particular in activities associated with a heat. It is likely that ceramic shapes that were probably not used daily were associated with fine and Grey Ware. On the other hand, fine wares have a greater thermal resistance but a lower conductivity than coarse ware (Rice, 1987).
- Inclusions: size and frequency of the inclusions may affect the thermal shock resistance. Vegetal inclusions, for example, which burn out during the firing, can create a large void in the paste, which is essential to make the vessel more resistant to the thermal shock (voids help interrupting cracks). Variations in

inclusion size and frequency may be associated with the dimensions of the vessel: large inclusions, for instance, may be required in a large vessel where they prevent the vessel walls from collapsing under their own weight before the firing process (Rye, 1981). Inclusions' size, moreover, can also affect techniques of surface decoration. Large inclusions reduce the precision on reproducing a decorative pattern, since they distort the margins of the cuts (Rye, 1981). Rye argued that in throwing techniques, an inclusion's size is directly proportional to wall thickness and vessel size.

A vessel with walls about 5 mm thick would normally have inclusions smaller than about 1 mm; a vessel with walls 2 cm thick would have inclusions finer than about 5 mm (Rye, 1981, p. 80).

However, inferences from inclusion size and frequency at Tell Ahmar have only been used for those shapes that display a correlation between vessel shapes and temper types.

- Potters' marks are connected to the identification of the product that the vessel used to contain or to the capacity of the container itself. These were usually applied by the potter just below the rim of a vessel before firing. Their presence is vital in the determination of vessel functions, and to infer economic exchanges (see Chapter 10 and Conclusions).
- Firing: the only aspect of the firing technique that can help in the identification of vessel use is the temperature. Higher temperatures are usually associated with fine ware, and lower temperatures with cooking ware.

Summary

Technological investigation has allowed classifying selected samples according to the technique used in their manufacture, as being either wheel-made or handmade. The ceramic ware has been classified into common ware, cooking ware, fine ware, and Grey-Burnished Ware. In addition, a few samples of Khabur Ware have also been identified.

A fabric typology at Tell Ahmar has been built according to the temper frequency, dimension, and colour macroscopic studies. In total, 20 fabric types have been identified. Although colours do not provide any information of vessel function, they provide information on mineralogy and firing techniques. Colours have been detected at Tell Ahmar in three dimensions: inside, outside, and on the core. Inside surface colours depend on mineralogy and firing techniques. The same can be said for the external surface, although a slip treatment can often modify the “original” colour obtained after firing. The interior, exterior and core colours of a sherd were recorded according to the Munsell Chart System.

Surface treatments have been bifurcated as being those applied before firing, and those applied after. The former category is sub-divided into smooth, fingerprint, slip, self-slip, and red-slip. Surface treatments applied after firing tend to be more homogenous, and typically consist of a thick layer of bitumen that has been applied to the interior of the vessel.

Surface decorations at Tell Ahmar are more prominent on the exterior surface of vessels than on the interior. The comb rope band decoration is observable in various forms, including horizontal, vertical, wavy, crossed, and mixed patterns. The pattern can also be punctuated, as in cases where the end of the comb has been used in making it. The cordon rope band decoration appears to imitate the shape of a thick rope. Moreover, grooved, ridged, corrugated, incised, burnished, and painted decorations have also been recorded. Finally, decorations made by the potter’s fingernail impressions are observable on some surface decorations.

In terms of firing temperature and firing atmosphere, the technological analysis indicated that most of the processed sherds analysed at Tell Ahmar have been fired in a homogeneous atmosphere.

6. Ceramic morphological analysis and vessel shape typology

With the technological classification and the fabric typology in place, the second step of the ceramic analysis is the morphological classification of the collected sherds and the vessel shape composition.

Morphological classification

Morphological analysis and examination of vessel size have been undertaken on complete vessels and diagnostic sherds. According to the ceramic morphological features, diagnostic sherds at Tell Ahmar have been classified into rims, body decorations, bases, and appendages (i.e. handle, spout, foot) (Tab. 54).

Morphological Class	Number	%
Rim	1534	41.9
Body decoration	1253	34.2
Base	774	21.2
Handle	89	2.4
Spout	3	0.1
Foot	3	0.1
Pot-stands	3	0.1
TOT N.	3659	100.0

Table 54. Number and frequency of the diagnostic sherds identified at Tell Ahmar with classifications based upon morphological characteristics (note that complete vessels are not included in the total number).

Of the 3659 sherds recovered from Tell Ahmar, 1534 are rims. The rim sherd samples were classified by vessel shape and assigned to distinct vessels with some degree of confidence. Correlations between rim characteristics (i.e. profile, diameter, thickness and orientation) and vessel shapes at Tell Ahmar were initially verified from the complete shapes found at the site (c. 50).

Rims

The rim is located on the opening of the vessel. Diagnostic sherds relating to rims are the most abundant type among the whole assemblage (41.9%) and the most

important because they can be used to infer information about vessel shape. With this in mind, it is appropriate to classify rims according to both their profile and their orientation. Simple rim profiles at Tell Ahmar were classified as either squared, flaring, or rounded (Fig. 54).³³ Each of these rim profiles may appear thickened at the top.

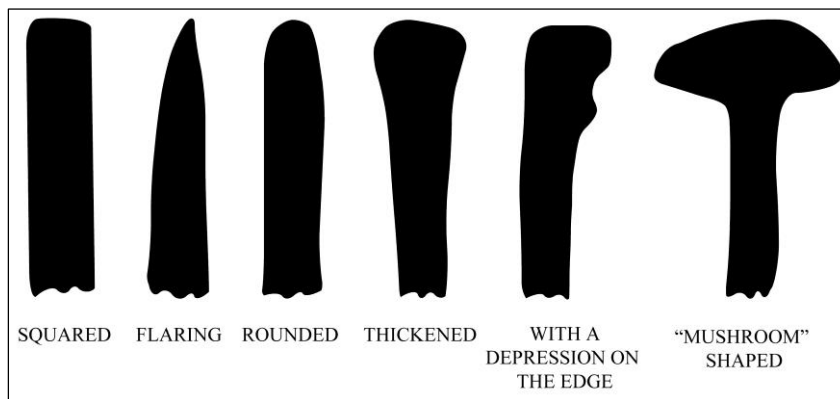


Figure 54. Rim profile classification (illustration: Silvia Perini).

Furthermore, two more rim profiles have been identified at Tell Ahmar: the first is characterised by a depression on its external edge and can be squared, flaring, rounded or thickened. The second profile has been described as mushroom shaped, where the rim protrudes over both the inside and outside of the vessel (Fig. 54). Mushroom shaped rims are usually associated with vessels of large diameter and rim thickness. These rims can be divided further into either plain (where they do not exhibit any decoration on the top) or decorated (where grooves are often present).

In addition to the simple rim profiles identified at Tell Ahmar, two more morphological features that affect rim orientation have been observed. In some cases, simple rims were folded either inside or outside the vessel (Fig. 55).

³³ In this context, “simple” means that the rim was not folded.

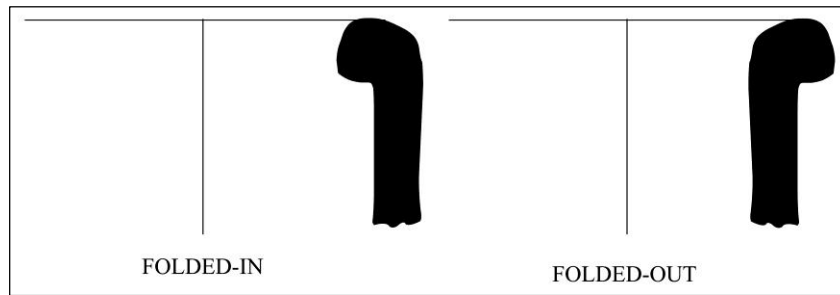


Figure 55. Rim orientation classification (illustration: Silvia Perini).

Correlations between rim profile, diameter, thickness and orientation to vessel shapes and dimensions have been observed. For example, rounded rims folded inside belong to a specific type of bowl, whilst mushroom shaped rims are always associated with large dimension jars. According to these correlations, the rim classification has been replaced subsequently with a general classification based on vessel shapes, where vessels characterised by a similar rim shape have been grouped together.

Body decorations (Appendix A, Plates 1-4)

Body decorations, where present, can be found anywhere between the vessel opening and the base. Second only to rim sherds, body decorations are abundant within the assemblage (34.2%). However, despite being pervasive throughout the vessels recovered from Tell Ahmar, working with body decoration in isolation provides no information about vessel dimension and shape. Furthermore, in most cases it is difficult to identify their original location on the vessel. Nonetheless, many decorations at Tell Ahmar were made with a functional aim as well as a stylistic one. Their study can thus be helpful in the identification of vessel function. The various types of surface decoration identified have been discussed in the previous chapter.

Bases (Appendix A, Plates 5-7)

The base is the underside part of the vessel. Bases are less informative than rims as they are only useful as evidence of the base type used and the base diameter, the

measurement of which is done using a similar diameter chart as that used for rim sherds. Bases represent the 21.2% out of the diagnostic sherd assemblage.

According to their morphological features, bases have been classified as ring, flat/disk, rounded, or perforated (with a hole in the middle). Perforated bases recovered from Tell Ahmar can be either flat or rounded (Fig. 56).

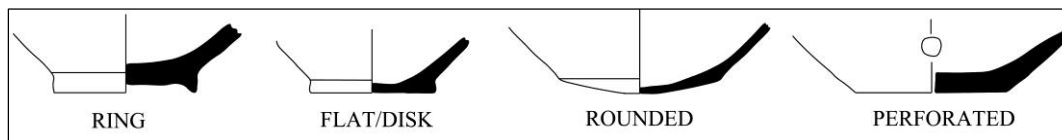


Figure 56. Base profile classification (illustration: Silvia Perini).

The ring type is the most common base within the ceramic assemblage of Tell Ahmar (58.2%) (Fig. 57). Small goblets and bottles, and medium dishes and bowls often have ring bases, where handmade rings are usually added subsequently to the base.

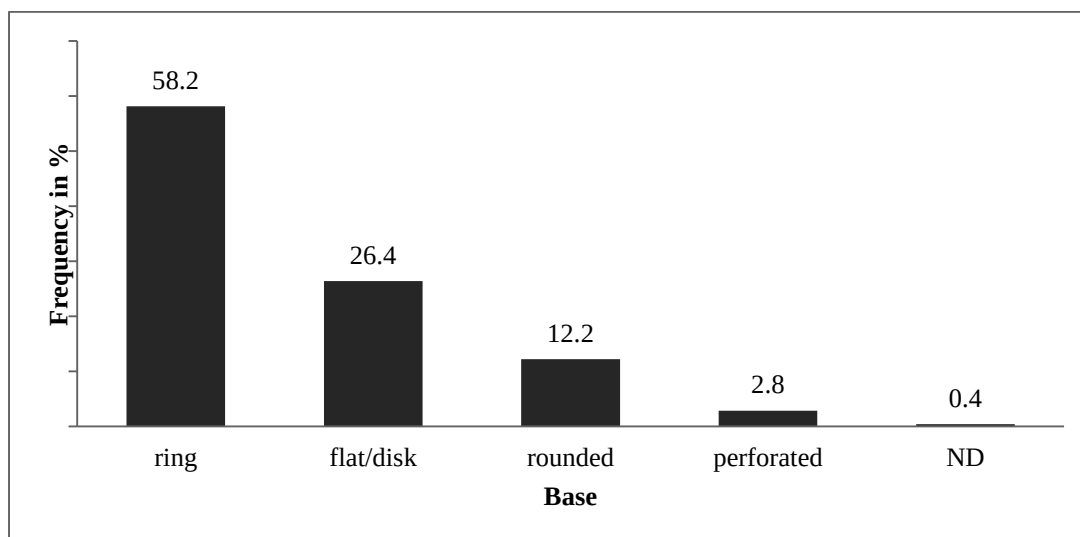


Figure 57. Chart showing the frequency of the base types at Tell Ahmar.

Although flat and disk bases (26.4%) can be distinguished from one another, they have been grouped together because it has been observed that they are often associated with vessel shapes with similar characteristics. Flat bases tend to be characterised by the so-called “string-cut” base, where spiral marks from the string or wire used to remove the shape from the wheel are visible (Fig. 58).



Figure 58. String-cut base showing a spiral pattern, which indicates that cutting was done in order to remove the vessel from the wheel (photo: Silvia Perini).

Rounded bases (12.2%) are related to medium/large dimension jars and cooking shapes, and, owing to their instability, were probably used in conjunction with a support or stand.

Perforated bases identified at Tell Ahmar represent just 2.8% of the whole base assemblage. The diameter of the hole is typically just a few centimetres in size, made by hand using a stick which has pierced the base from the outside to the inside surfaces or vice versa (Fig. 59).



Figure 59. Large jar with a perforated base (photo: Silvia Perini).

Appendage (Appendix A, Plate 8)

The class of the appendages contains those attributes that were added by the potter to a vessel after its basic structure was formed. Appendages were applied to the rim (spouts, handle), to the body (handle) and to the base (feet).

Handles represent only a small part within the complete ceramic diagnostic sherd assemblage (2.4%). Although handles provide no information on vessel dimension, their analysis is useful in defining vessel function.

According to their position and orientation, two main types of handles have been identified at Tell Ahmar, namely vertical and triangular lugs. Both of them are located on the upper part of the vessel, and usually on the rim. Vertical handles form the majority of the handle assemblage (86%) (Fig. 60). Triangular lugs are mainly associated with cooking shapes. Appendages such as feet and spouts were not common.

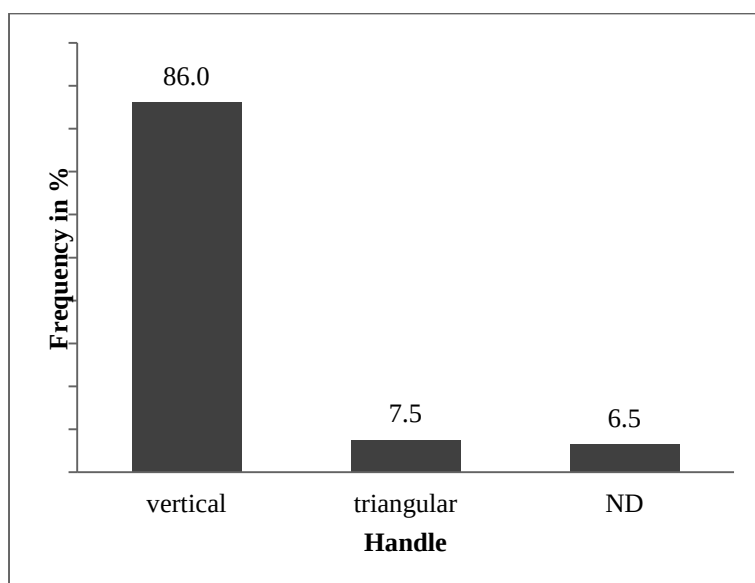


Figure 60. Chart showing the frequency of handle types identified at Tell Ahmar.

Pot stands and trays (Appendix A, Plate 9)

A pot stand cannot be defined as an appendage because it is an element that was not directly attached to the vessels, but rather used in conjunction with them. The presence of pot stands among the assemblage at Tell Ahmar is scarce (three in total). This is unsurprising given the similarly rare incidence of pointed or unstable bases, for which pot stands would have been most useful. Finally, two handmade trays were also found.

Ceramic objects which refer to vessel use

The analysis of two ceramic objects that refer to vessel use are also included in this chapter. They are jar stoppers and bag or jar sealings.

Jar stoppers

Like pot stands, analysis of jar stoppers is important to infer vessel function. Eighteen jar stoppers used to seal jars were found at the site, the majority of which are unbaked and conical/mushroom in shape (only four were baked). Some of the jar stoppers are pinched on their upper part where four depressions have been made with the potter's fingers. In several samples, impressions of the jar's rim diameter are visible on the bottom part of the jar stopper (Fig. 61).

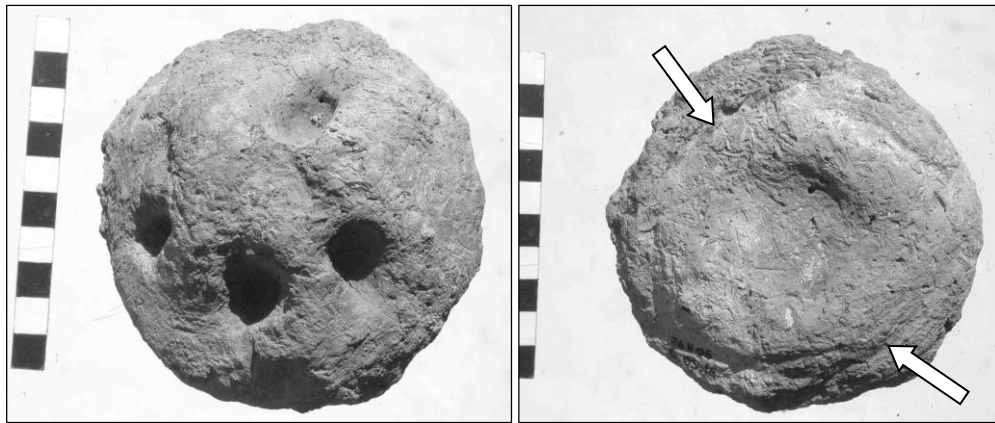


Figure 61. Jar stopper from Area M. On the upper part (to the left) four pinched depressions are visible, whilst on the bottom part (to the right) traces of the jar's diameter can be observed (as per the arrows indicated in the photograph) (photo: Guy Bunnens).

According to the context of recovery and the archaeological features of the material, associations between jar stoppers and vessel shapes have been explored in order to appreciate which types of vessel jar stoppers were best suited to. These analyses indicate that the jar stoppers found at Tell Ahmar are associated with two main shapes only: small dimensions bowls with carinated shoulders (CS08) and small dimensions bottles (CS01) (Fig. 62).

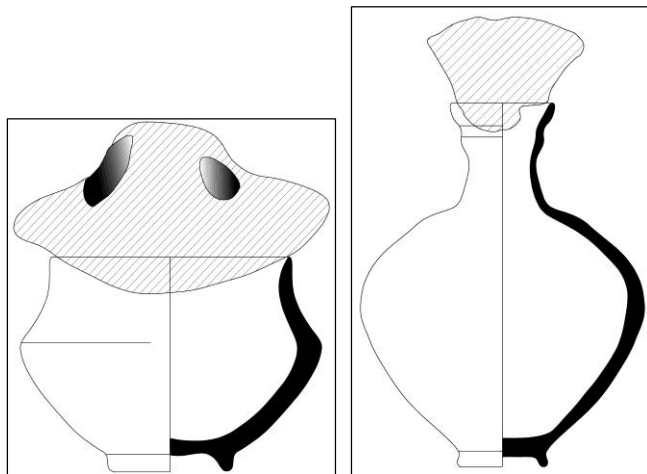


Figure 62. Jar stoppers found at Tell Ahmar are associated with small dimension bowls with carinated shoulders (left example) and with small dimension bottles (right example) (illustration: Silvia Perini).

Bag and jar sealings

Bag and jar sealings are objects commonly found at Tell Ahmar. They are important because their presence may be indicative of vessel function. Given the absence of jar stoppers associated with medium and large dimension jars, it is likely that storage jars at Tell Ahmar were associated with other closing systems. Pieces of cloth tied with string around the jar mouth and neck were probably used (Fig. 63).

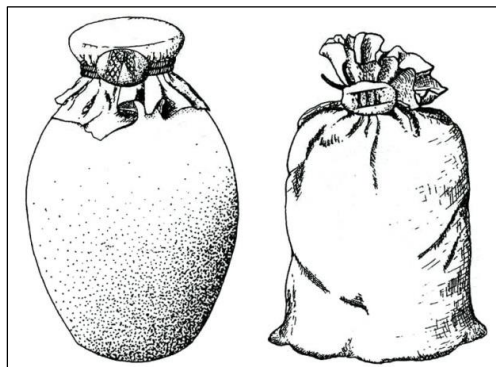


Figure 63. Reconstruction of jar and bag sealing system (illustration: Fortin, 1999, p. 169).

As Michel Fortin argued:

The string was covered with wet clay, which was then imprinted by a cylinder seal rolled on its surface. For goods transported in bundles and cloth sacks tied with cord, lumps of clay were simply applied to knots and then

marked with a cylinder. We know about these methods of sealing things because of the marks of string and cloth left on the underside of clay seals found on the floors of warehouses where they were tossed into careless heaps as the containers used for transport were unsealed after reaching their destination (Fortin, 1999, p. 169).

In total, five seal impressions have been found at the site. From a functional perspective, it is difficult to ascertain if a seal impression was associated with a jar rather than with a bag as there are no morphological elements, which can aid us in making this distinction. The analysis of the context of recovery, however, can be applied to this end. The photo in Figure 64 shows a seal impression, which was found in conjunction with a large jar in Area S14. In this case, it is likely that the impression was used to seal the jar.

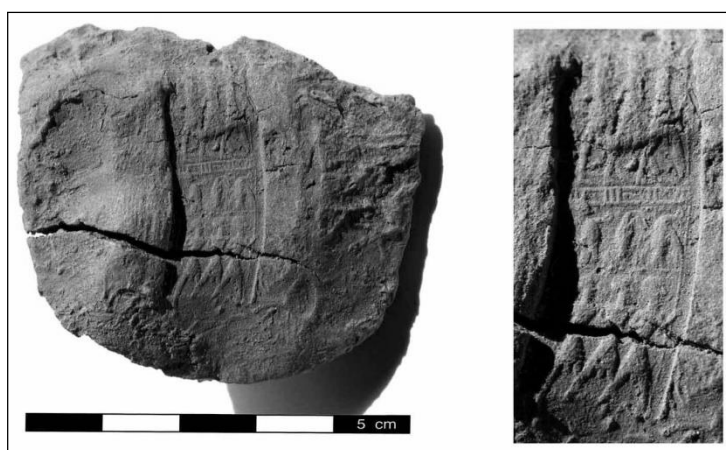


Figure 64. Seal impression from Room 14.2 in Area S14 (Photo: Guy Bunnens).

Another sample shows a seal impression where it is visible the string mark on the underside of the clay (Fig. 65 to the right). This object, together with other three similar samples, was found in Room 3.1 of Block 3 in Area M. In this case, however, there is not any particular correlation between the seal impression and a vessel, so it is hard to say if they were used for closing bags as opposite to jars.

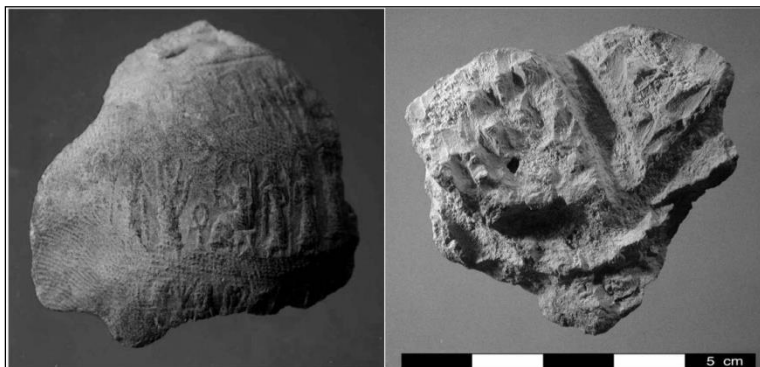


Figure 65. Seal impression from Block 3 in Area M (Photo: Guy Bunnens).

In addition to their physical association with vessel shapes, these finds also provide important evidence of goods ownership and management at Tell Ahmar. The fact that the seal impressions found at Tell Ahmar belong to the same seal iconography emphasises that sealed goods stored in Block 3 at the site were under the supervision of an administrator who had his own distinctive seal and was responsible for the security of those containers (see Chapter 10 and Conclusions).

Description of vessel shape types (Appendix C)

According to wall orientation and the rim morphological properties, each rim sherd was assigned to a vessel shape type. Fourteen vessel shapes have been classified as closed shape (CS), whilst nine have been assigned to the open shape (OS) category. This process was necessary because ceramic functional studies use original vessel shapes as a starting point, and not diagnostic sherds. Sherds grouped together in the same type share general vessel shape similarities even if they show a certain variation in rim profile or wall orientation. Only when dealing with cooking pots (CS12, CS13 and CS14) the technological aspect (i.e. cooking ware) was used to group rim sherds that show a different morphological aspect.

According to both morphological and technological characteristics, descriptions of vessel type are presented in standardised tables rather than in a discursive text (Tabs. 56-78). This method of presentation through tables is particularly advantageous in finding and easily recognising vessel features that

should be examined for linkages to vessel function and facilitating comparisons between similar types coming from different sites (see Chapter 3). However, before discussing the tables, some clarification of the key-terms in used is necessary. Modern conventional terms for containers (such as bottles, flasks, jars, jugs, pots, bowls, dishes, and basins) have been used to facilitate an intuitive representation of vessel types (see top of the table). One should note, however, that morphological features are the main element upon which vessel types were built.

Morphological characteristics refer to rim profile and orientation, neck height, base profile, presence of any appendage, vessel size, rim diameter, wall thickness, vessel volume, and morphological variation (sub-types). The Pot Utility program has been adopted to infer vessel volume, using litres as a measurement for liquid capacity, and kilograms as a measure of barley. According to the measurements of the vessel's diameter and, when available, the vessel's height, CS and OS at Tell Ahmar have been further grouped into three main sizes, namely small, medium, and large (Tab. 55).

Vessel Shape	Diameter (cm)	Height (cm)	Vessel Size
CS	3-11	<15	Small
	12-30	15-40	Medium
	>30	> 40	Large
OS	10-11	<10	Small
	12-38	<10	Medium
	>38	>10	Large

Table 55. Vessel diameter and height measurements and the classification into closed and open shape vessels at Tell Ahmar.

Technological characteristics such as ware, fabric type, surface treatment, and surface decoration were recorded (see Chapter 5). However, information regarding the vessel's colour has been omitted from this analysis on the basis that there is no relationship between vessel colour and function.

The final section of each table shows the absolute number and frequency of the vessel shape type. The frequency has been determined as the percentage of a vessel shape type within the whole rim assemblage. In addition, records have been added for any vessel type if at least one complete sample has been found at the site.

Illustrations of the vessel shape types and sub-types have been given in
Appendix C.

Bottles - CS01 (Appendix C, Plates 1-2)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Small/medium dimension bottle
Rim profile	Rounded, squared, or with a depression on the edge
Rim orientation	Simple, folded-out
Neck height	Medium
Base profile	Ring, flat, or rounded
Appendage	None
Size	Small or medium
Rim diameter (cm)	3-4.5 (small) 5-7 (medium)
Volume (l or kg)	0.16-0.28 l (CS01a) 2.23 l (CS01b)
Variations (sub-types)	According to rim and base profile. CS01b are medium-sized vessels, which present a ridged decoration at the bottom of the neck (Plate 1 No. 1-3). CS01a are small sized vessels with a ring base (Plate 1 No. 4-9 and Plate 2 No. 2, 8-9). Small dimension bottles with no base were also found (Plate 2 No. 3).
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common, fine, Grey, or Khabur?
Fabric No.	Commonly associated with 01, 03, 11, 16, or 20
Surface treatment	Smoothed
Surface decoration	No decoration, burnished, ridged, or painted on the neck and on the rim
Wall thickness (cm)	0.4-0.8
Firing (atmosphere and temperature)	Homogeneous Medium
FREQUENCY	
Absolute No.	33 (30 S + 3 M)
Percentage (%)	2.1
Complete shapes	Yes

Table 56. CS01 techno-morphological characteristics and frequency.

Jars - CS02 (Appendix C, Plates 3-6)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Medium/large dimension jar with carinated shoulders
Rim profile	Rounded or flaring
Rim orientation	Simple
Neck height	Medium
Base profile	Ring or flat
Appendage	None
Size	Medium or large
Rim diameter (cm)	14-28 (medium) 28-50 (large)
Volume (l or kg)	10.16 l or 6.30 kg
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common, fine or Khabur
Fabric No.	Commonly associated with 01, 05, 08, 09 or 13
Surface treatment	Smoothed or red-slipped on interior
Surface decoration	No decoration, ridged or incised on shoulders
Wall thickness (cm)	0.7-3.0
Firing (atmosphere and temperature)	Homogeneous Medium
FREQUENCY	
Absolute No.	84 (2 L)
Percentage (%)	5.3
Complete shapes	None (but one has been restored – Plate 5 No. 3)

Table 57. CS02 techno-morphological characteristics and frequency.

Jars - CS03 (Appendix C, Plate 7)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Medium dimension jar
Rim profile	Squared, often with a depression in the middle
Rim orientation	Folded-out
Neck height	Short or no neck
Base profile	ND
Appendage	None
Size	Medium
Rim diameter (cm)	18-30
Volume (l or kg)	ND
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common
Fabric No.	Commonly associated with 01 or 13
Surface treatment	Smoothed
Surface decoration	No decorated, combed or incised
Wall thickness (cm)	0.7-3.0
Firing (atmosphere and temperature)	Homogeneous Medium
FREQUENCY	
Absolute No.	30
Percentage (%)	1.9
Complete shapes	None

Table 58. CS03 techno-morphological characteristics and frequency.

Jars - CS04 (Appendix C, Plates 8-14)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Medium/large dimension jar with a plain or grooved rim
Rim profile	Mushroom shaped or thickened
Rim orientation	Simple or folded-out
Neck height	No neck, short or high
Base profile	Flat, simple or perforated
Appendage	None
Size	Medium or large
Rim diameter (cm)	20-30 (medium) 30-54 (large)
Volume (l or kg)	ND
Variations (sub-types)	According to combinations of rim profile and neck wall orientation. CS04a have short or non-existent neck (Plate 8 No. 1-4; Plate 9 No. 1-2, 6; Plate 10 No. 1-5; Plate 11 No. 1-4). CS04b have a straight medium/high neck (Plate 11 No. 5; Plate 12 No. 1-3). CS04c have an inverted medium/high neck (Plate 12 No. 4-5; Plate 13; Plate 14)
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common
Fabric No.	Commonly associated with 01, 02, 04, 05, 08, 09, or 10
Surface treatment	Smoothed or red-slipped on interior
Surface decoration	Grooved on top of rim, cordoned or combed body, or vertically burnished
Wall thickness (cm)	0.8-2.4
Firing (atmosphere and temperature)	Homogeneous Medium
FREQUENCY	
Absolute No.	106 (10 M)
Percentage (%)	6.7
Complete shapes	None

Table 59. CS04 techno-morphological characteristics and frequency.

Jars - CS05 (Appendix C, Plates 15-16)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Medium dimension jar with carinated shoulders
Rim profile	Squared, rounded, or thickened
Rim orientation	Folded-out
Neck height	Medium
Base profile	Flat or ring
Appendage	None
Size	Medium
Rim diameter (cm)	20-30
Volume (l or kg)	4.19 l or 2.60 kg
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common
Fabric No.	Commonly associated with 01, 06, or 09
Surface treatment	Smoothed or red-slipped on interior
Surface decoration	No decoration, incised or combed on shoulders, or vertically burnished
Wall thickness (cm)	0.4-1.2
Firing (atmosphere and temperature)	Homogeneous Medium
FREQUENCY	
Absolute No.	51
Percentage (%)	3.2
Complete shapes	Yes

Table 60. CS05 techno-morphological characteristics and frequency.

Jars - CS06 (Appendix C, Plate 17 No. 1-3)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Medium dimension jar
Rim profile	Rounded or thickened
Rim orientation	Folded-out
Neck height	Very short/no neck
Base profile	ND
Appendage	None
Size	Medium
Rim diameter (cm)	12-30
Volume (l or kg)	ND
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common
Fabric No.	Commonly associated with 01, 05, 08 or 17
Surface treatment	Smoothed
Surface decoration	No decoration or combed under the rim
Wall thickness (cm)	0.4-0.8
Firing (atmosphere and temperature)	Homogeneous Medium
FREQUENCY	
Absolute No.	23
Percentage (%)	1.5
Complete shapes	None

Table 61. CS06 techno-morphological characteristics and frequency.

Jugs - CS07 (Appendix C, Plate 17 No .4 and Plate 18)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Jug with a handle
Rim profile	Thickened or depression on the edge
Rim orientation	Folded-out or simple
Neck height	Medium
Base profile	ND
Appendage	Vertical handle
Size	Medium
Rim diameter (cm)	12-14
Volume (l or kg)	ND
Variations (sub-types)	According to the mouth shape which can be rounded in CS07a (Plate 18 No 1-4) or trefoil in CS07b (Plate 17 No. 4)
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common
Fabric No.	Commonly associated with 01 or 13
Surface treatment	Smoothed
Surface decoration	No decorated or combed under the rim
Wall thickness (cm)	0.5-1
Firing (atmosphere and temperature)	Homogeneous Medium
FREQUENCY	
Absolute No.	12
Percentage (%)	0.8
Complete shapes	None

Table 62. CS07 techno-morphological characteristics and frequency.

Jars - CS08 (Appendix C, Plates 19-22 and Plate 23 No. 1-6)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Jar with high/medium neck
Rim profile	Depression on the edge
Rim orientation	Simple
Neck height	High or medium
Base profile	Rounded
Appendage	None
Size	Small or medium
Rim diameter (cm)	8-11 (S) 12-28 (M - but most commonly 12-14)
Volume (l or kg)	16.67 l or 10.21 kg
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common, cooking or fine
Fabric No.	Commonly associated with 01, 05, 06, 07, 08, 09, 12, 13, 15, or 19
Surface treatment	Smoothed
Surface decoration	No decoration or combed on the shoulders
Wall thickness (cm)	0.8-1.2
Firing (atmosphere and temperature)	May vary according to the ware
FREQUENCY	
Absolute No.	200 (3 S)
Percentage (%)	12.7
Complete shapes	Yes

Table 63. CS08 techno-morphological characteristics and frequency.

Jars - CS09 (Appendix C, Plate 23 No. 7-10 and Plates 24-25)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Jar with high/medium neck
Rim profile	Rounded, thickened or flat
Rim orientation	Simple or folded-out
Neck height	High or medium
Base profile	Flat
Appendage	None
Size	Small or medium
Rim diameter (cm)	9-11 (S) 12-18 (M)
Volume (l or kg)	20.29 l or 12.58 kg
Variations (sub-types)	According to the rim profile. CS09a have out-turned rounded rim (Plate 23 No. 7-10 and Plate 25 No. 5). CS09b have thickened rim (Plate 24). CS09c have out-turned flaring rim (Plate 25 except No. 5)
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common, fine
Fabric No.	Commonly associated with 01, 05, 06, 07, 08, 09, 18, or 19
Surface treatment	Smoothed
Surface decoration	No decoration or ridged
Wall thickness (cm)	0.8-0.9
Firing (atmosphere and temperature)	May vary according to the ware
FREQUENCY	
Absolute No.	206 (6 S)
Percentage (%)	13.0
Complete shapes	Yes

Table 64. CS09 techno-morphological characteristics and frequency.

Jars – CS10 (Appendix C, Plates 26-27)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Jar with short or no neck
Rim profile	Rounded, thickened or depression on the edge
Rim orientation	Simple or folded-out
Neck height	No neck or short
Base profile	Ring, rounded, or perforated
Appendage	None
Size	Medium or large
Rim diameter (cm)	14-24 (M) 36 (L)
Volume (l or kg)	ND
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common or cooking
Fabric No.	Commonly associated with 01, 02, 04, 09 or 13
Surface treatment	Smoothed or red-slipped on interior
Surface decoration	Ridged, combed or cordoned
Wall thickness (cm)	0.8-1.5
Firing (atmosphere and temperature)	May vary according to the ware
FREQUENCY	
Absolute No.	14 (2 L)
Percentage (%)	0.9
Complete shapes	None

Table 65. CS10 techno-morphological characteristics and frequency.

Flasks – CS11 (Appendix C, Plate 28)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Flask with a handle and no base (<i>Pilgrim flask</i>)
Rim profile	Rounded or thickened
Rim orientation	Simple or folded-out
Neck height	Medium
Base profile	No base
Appendage	One vertical handle on the body
Size	Medium
Rim diameter (cm)	5-6
Volume (l or kg)	2.60 l
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common or fine
Fabric No.	Commonly associated with 01, 09, 19, or 20
Surface treatment	Smoothed
Surface decoration	Burnished or corrugated
Wall thickness (cm)	0.4-0.8
Firing (atmosphere and temperature)	May vary according to the ware
FREQUENCY	
Absolute No.	5
Percentage (%)	0.3
Complete shapes	Yes

Table 66. CS11 techno-morphological characteristics and frequency.

Cooking Pots – CS12 (Appendix C, Plate 29 No. 1-3)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Cooking pot with two triangular lugs
Rim profile	Rounded or thickened
Rim orientation	Simple
Neck height	ND
Base profile	ND
Appendage	Two triangular lugs on the rim
Size	Medium
Rim diameter (cm)	ND
Volume (l or kg)	ND
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Cooking
Fabric No.	Commonly associated with 12
Surface treatment	Smoothed
Surface decoration	Burnished
Wall thickness (cm)	1
Firing (atmosphere and temperature)	Medium Low
FREQUENCY	
Absolute No.	6
Percentage (%)	0.4
Complete shapes	no

Table 67. CS12 techno-morphological characteristics and frequency.

Cooking Pots – CS13 (Appendix C, Plates 29 No .4-9, Plates 30-31 and Plate 32
No. 1-4)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Cooking pot with no neck
Rim profile	Rounded or thickened
Rim orientation	Folded-out
Neck height	No neck
Base profile	ND
Appendage	None
Size	Medium or large
Rim diameter (cm)	18-30 (M) 32-40 (L)
Volume (l or kg)	ND
Variations (sub- types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Cooking
Fabric No.	Commonly associated with 12
Surface treatment	Smoothed
Surface decoration	No decoration, burnished, ridged, combed, cordoned, or fingernail marks
Wall thickness (cm)	0.8-1.5
Firing (atmosphere and temperature)	Homogeneous/oxidising Medium/low
FREQUENCY	
Absolute No.	108 (3 L)
Percentage (%)	6.8
Complete shapes	None

Table 68. CS13 techno-morphological characteristics and frequency.

Cooking Pots – CS14 (Appendix C, Plate 32 No. 5-6)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Cooking pot with no neck
Rim profile	Rounded or thickened
Rim orientation	Simple
Neck height	No neck
Base profile	ND
Appendage	None
Size	Medium or large
Rim diameter (cm)	12-22 (M) 34-38 (L)
Volume (l or kg)	ND
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Cooking
Fabric No.	Commonly associated with 12
Surface treatment	Smoothed
Surface decoration	No decoration or burnished
Wall thickness (cm)	0.7-1.8
Firing (atmosphere and temperature)	Homogeneous/oxidising Medium/low
FREQUENCY	
Absolute No.	15 (2 L)
Percentage (%)	0.9
Complete shapes	None

Table 69. CS14 techno-morphological characteristics and frequency.

CS miscellanea (Appendix C, Plate 33)

CS miscellanea at Tell Ahmar represent only 1.4% of the whole rim assemblage, and tend to be either medium or small dimension shapes with squared or unidentified rim profiles (Plate 33, No. 1-2). In particular, one miscellaneous CS sample can be defined as a small closed shape with an out-turned squared rim and corrugated decoration on the upper part of the vessel. The base is absent, but is likely to have been associated with a rounded profile (Plate 33, No. 3).

Bowls – OS01 (Appendix C, Plate 34 and Plate 35 No. 1)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Bowl with a carination under the rim
Rim profile	Mushroom shaped or squared
Rim orientation	Simple or folded-out
Neck height	No neck
Base profile	ND
Appendage	None
Size	Medium or large
Rim diameter (cm)	24-36
Volume (l or kg)	ND
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common or cooking
Fabric No.	Commonly associated with 01, 05 or 12
Surface treatment	Smoothed
Surface decoration	Grooved on top of rim, incised or ridged
Wall thickness (cm)	1.00-1.20
Firing (atmosphere and temperature)	May vary according to the ware
FREQUENCY	
Absolute No.	33
Percentage (%)	2.1
Complete shapes	None

Table 70. OS01 techno-morphological characteristics and frequency.

Bowls – OS02 (Appendix C, Plate 35 No. 2-7)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Bowl with a rounded out-turned rim
Rim profile	Rounded
Rim orientation	Folded-out
Neck height	No neck
Base profile	ND
Appendage	None
Size	Medium
Rim diameter (cm)	22-28
Volume (l or kg)	ND
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common or fine
Fabric No.	Commonly associated with 01, 05, 08, or 09
Surface treatment	Smoothed
Surface decoration	No decoration or combed
Wall thickness (cm)	0.6-1.8
Firing (atmosphere and temperature)	May vary according to the ware
FREQUENCY	
Absolute No.	36
Percentage (%)	2.3
Complete shapes	None

Table 71. OS02 techno-morphological characteristics and frequency.

Platter bowls – OS03 (Appendix C, Plates 36-40)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Platter bowl
Rim profile	Rounded, flaring, or thickened
Rim orientation	Simple, folded-in, or folded-out
Neck height	No neck
Base profile	Flat or ring
Appendage	None
Size	Small, medium or large
Rim diameter (cm)	12-38 (M)
Volume (l or kg)	0.11-1.60 kg
Variations (sub-types)	According to the rim profile. OS03a have a simple rim (Plate 36 and Plate 37 No. 1-5). OS03b have a folded-in rim (Plate 37 No. 6-7; Plate 38-39). OS03c have a thickened/simple or folded-out rim (Plate 40 No. 1-8)
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common, cooking, fine, grey, or Khabur
Fabric No.	Commonly associated with 01, 02, 03, 04, 05, 06, 07, 08, 09, 15, 16, 17, 19, or 20
Surface treatment	Smoothed or red-slipped on interior
Surface decoration	No decoration, painted, or burnished
Wall thickness (cm)	0.7-1.5
Firing (atmosphere and temperature)	May vary according to the ware
FREQUENCY	
Absolute No.	266 (1 S)
Percentage (%)	16.8
Complete shapes	Yes

Table 72. OS03 techno-morphological characteristics and frequency.

Bowls – OS04 (Appendix C, Plates 41-42)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Bowl with out-turned wall
Rim profile	Rounded or thickened
Rim orientation	Folded-out
Neck height	No neck
Base profile	Flat
Appendage	None
Size	Medium
Rim diameter (cm)	12-30
Volume (l or kg)	0.80 kg
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common, cooking or fine
Fabric No.	Commonly associated with 01, 05, 08, 16, or 19
Surface treatment	Smoothed
Surface decoration	No decoration, corrugated, incised, or ridged
Wall thickness (cm)	0.5-1
Firing (atmosphere and temperature)	May vary according to the ware
FREQUENCY	
Absolute No.	59
Percentage (%)	3.7
Complete shapes	Yes

Table 73. OS04 techno-morphological characteristics and frequency.

Bowls – OS05 (Appendix C, Plate 43 No. 1-2)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Strainer/colander
Rim profile	Rounded or thickened
Rim orientation	Simple or out-folded
Neck height	No neck
Base profile	ND
Appendage	None
Size	Small or medium
Rim diameter (cm)	10 (S) 16 (M)
Volume (l or kg)	ND
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common
Fabric No.	Commonly associated with 05
Surface treatment	Smoothed
Surface decoration	No decoration
Wall thickness (cm)	0.50-1.00
Firing (atmosphere and temperature)	Homogeneous Medium
FREQUENCY	
Absolute No.	3
Percentage (%)	0.2
Complete shapes	None

Table 74. OS05 techno-morphological characteristics and frequency.

Bowls – OS06 (Appendix C, Plate 43 No. 3-7)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Deep bowl
Rim profile	Rounded, thickened or depression on the edge
Rim orientation	Simple or out-folded
Neck height	Short
Base profile	ND (pedestal?)
Appendage	None
Size	Small or medium
Rim diameter (cm)	8 (S) 14-28 (M)
Volume (l or kg)	ND
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common or fine
Fabric No.	Commonly associated with 01 or 09
Surface treatment	Smoothed
Surface decoration	No decoration, combed, ridged, or incised
Wall thickness (cm)	0.80-1.10
Firing (atmosphere and temperature)	Homogeneous Medium
FREQUENCY	
Absolute No.	8 (1 S)
Percentage (%)	0.5
Complete shapes	None

Table 75. OS06 techno-morphological characteristics and frequency.

Large basins – OS07 (Appendix C, Plate 44)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Basin/vat
Rim profile	Thickened or mushroom shaped
Rim orientation	Out-folded or simple
Neck height	No neck
Base profile	Rounded
Appendage	None
Size	Large
Rim diameter (cm)	> 38 (rectangular shape)
Volume (l or kg)	138.58 l or 85.93 kg
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common (handmade)
Fabric No.	Commonly associated with 01, 02, 03, 04, or 05
Surface treatment	Smoothed
Surface decoration	No decoration or ridged (only 1 sample)
Wall thickness (cm)	1.50-2.40
Firing (atmosphere and temperature)	Homogeneous Medium
FREQUENCY	
Absolute No.	29
Percentage (%)	1.8
Complete shapes	Yes

Table 76. OS07 techno-morphological characteristics and frequency.

Bowls – OS08 (Appendix C, Plates 45-47)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Bowl with carination, the accentuation of which ranges in sharpness from S-shaped to Z-shaped.
Rim profile	Flaring, rounded, or depression on the edge
Rim orientation	Simple
Neck height	Medium or short
Base profile	Ring or flat
Appendage	None
Size	Small
Rim diameter (cm)	6-12
Volume (l or kg)	0.14-0.61 l or 0.8-0.38 kg
Variations (sub-types)	According to the neck wall orientation and the neck height. OS08a have a medium/high neck and out-turned/vertical wall (Plates 45-46 and Plate 47 No. 1-2). OS08b have a medium/high neck and inverted/vertical wall (Plate 47 No. 3-8 and 10). OS08c have a short neck and inverted wall (Plate 47 No .9).
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common, fine, or grey
Fabric No.	Commonly associated with 01, 05, 06, 08, 09, 13, or 16
Surface treatment	Smoothed, red-slipped or bitumen
Surface decoration	No decoration, corrugated, ridged or burnished
Wall thickness (cm)	0.20-1.00
Firing (atmosphere and temperature)	May vary according to the ware
FREQUENCY	
Absolute No.	120
Percentage (%)	7.6
Complete shapes	Yes

Table 77. OS08 techno-morphological characteristics and frequency.

Bowls – OS09 (Appendix C, Plate 48)

MORPHOLOGICAL CHARACTERISTICS	
Vessel description	Deep bowl
Rim profile	Mushroom shaped, or thickened
Rim orientation	Simple or out-folded
Neck height	No neck
Base profile	ND
Appendage	None
Size	Large
Rim diameter (cm)	24-50
Volume (l or kg)	ND
Variations (sub-types)	None
TECHNOLOGICAL CHARACTERISTICS	
Ware	Common or fine
Fabric No.	Commonly associated with 01, 04, 05, or 20
Surface treatment	Smoothed
Surface decoration	No decoration, ridged, combed, or grooved rim top
Wall thickness (cm)	0.40-1.60
Firing (atmosphere and temperature)	May vary according to the ware
FREQUENCY	
Absolute No.	30
Percentage (%)	1.9
Complete shapes	None

Table 78. OS09 techno-morphological characteristics and frequency.

OS miscellanea (Appendix C, Plates 49-50)

OS miscellanea represent 5.1% of the whole rim assemblage. Interpretation of the shapes included in this broad class depends on whether they are considered from a morphological or technological perspective. Vessel dimensions vary widely ranging from 8 to 26 cm in rim diameter. The majority of samples can be classified as common ware, although fine ware and Grey Ware samples are also present. Surface treatments such as corrugation and painted or ridged decorations tend to be associated with smaller bowls. A unique and complete common ware OS has been included in this class, which consists of a medium dimension bowl with a simple rim

and carinated shoulders, a ring base, and combed/ridged surface decorations (Plate 49 No. 9).

Ceramic assemblage morphological composition

With the description of the vessel shape types in place, some observations of the general composition of the assemblage can be made according to the frequency of two main features: vessel shape (open and closed) and vessel dimension.

The majority of the rim sherds analysed at Tell Ahmar is associated with closed shapes (58%) (Fig. 66).

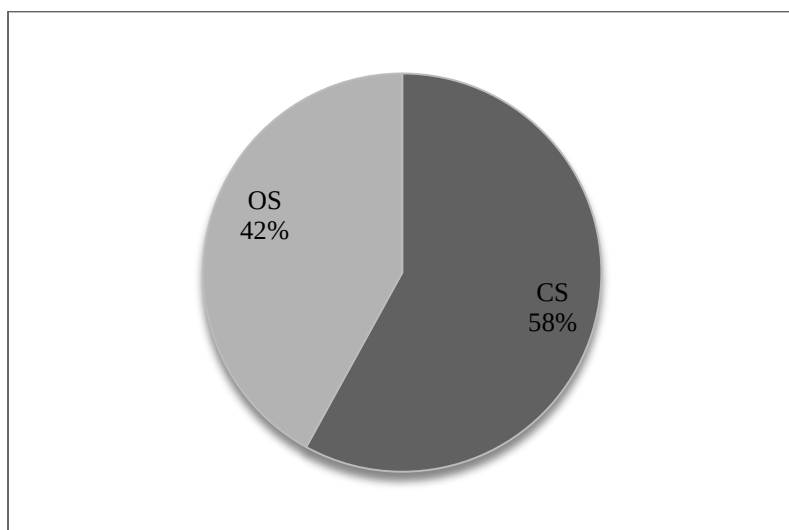


Figure 66. Pie chart showing the percentage of closed shapes (CS) and open shapes (OS) found at Tell Ahmar.

Within this general classification, 14 closed shape forms and nine open shapes have been identified. The most common CS identified at Tell Ahmar are CS08 and CS09, while among OS OS03 and OS08 (Fig. 67). CS12, CS13 and CS14 represent the cooking pot types.

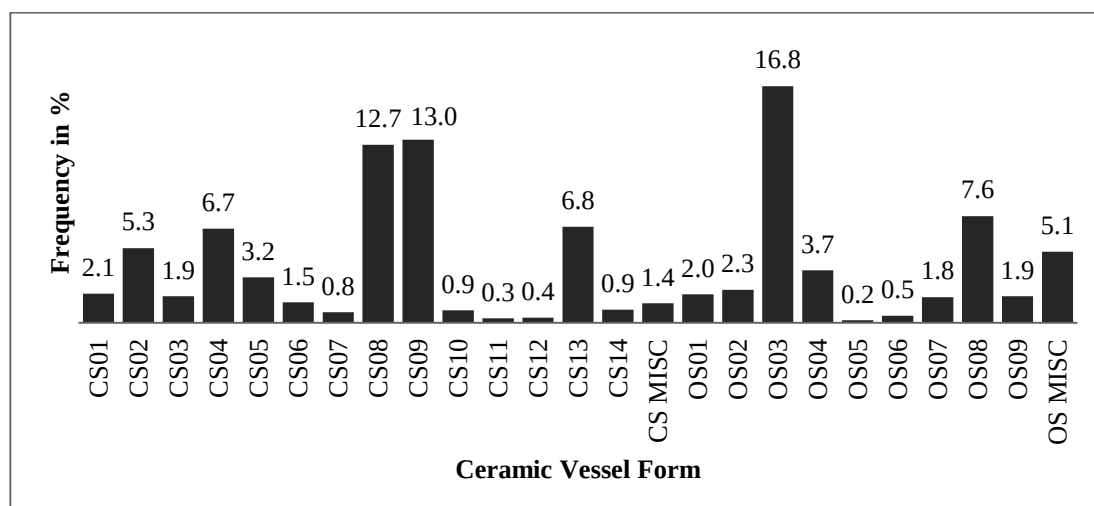


Figure 67. Bar chart showing the frequency of the ceramic vessel shapes identified among the rim ceramic assemblage at Tell Ahmar.

The majority of the vessel shapes found at Tell Ahmar is characterised by a medium dimension (73.4%), while large dimension vessels represent the 9.6%, and small dimension the 12.1% (Fig. 68).

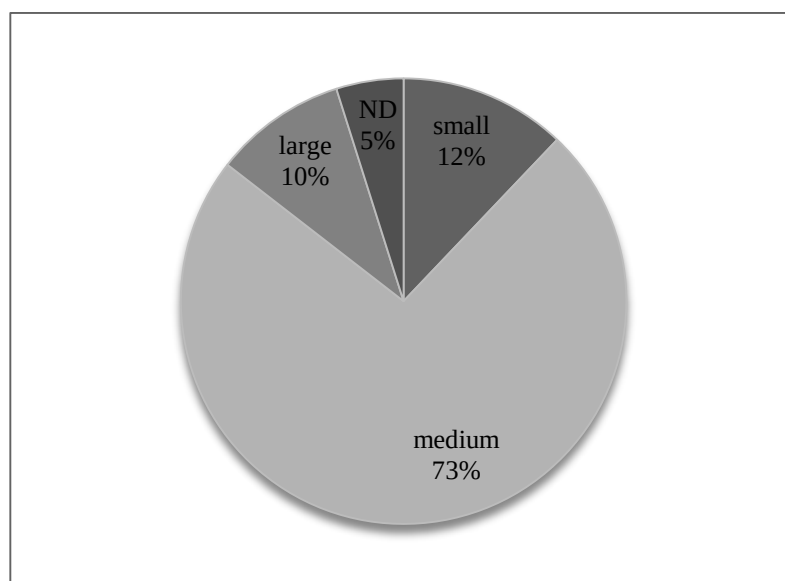


Figure 68. Pie chart showing the frequency of vessel shape dimensions at Tell Ahmar.

A further investigation on the dimensions has been conducted considering CS and OS separately. This analysis indicates that almost half of CS is associated with medium dimensions (47.8% of the whole rim assemblage), whilst medium dimension

OS represent only 25.6%. Small dimensions are more likely to be associated with open shapes than closed ones (OS 9.7% and CS 2.4%). Most of the shapes associated with a large dimension vessel are CS (6.7%), whilst only 3% of the entire assemblage relates to open shapes. Finally, among miscellaneous shapes there is a high concentration of small dimension open shapes (Fig. 69).

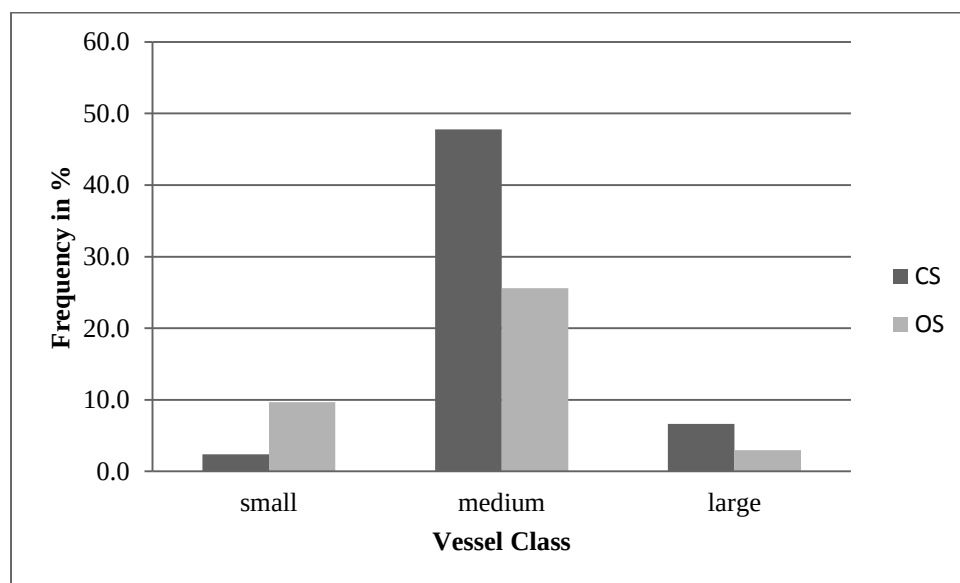


Figure 69. Chart showing the frequency of vessel shape dimensions for closed and open shapes.

What does ceramic morphological analysis reveal about vessel function?

Analysis of vessel shape and dimension represents the fundamentals for investigating vessel function. Several archaeological and ethnoarchaeological studies have attempted to establish associations between vessel morphological characteristics and vessel function (Matson, 1965b; Rye, 1976; Rye, 1981; Henrickson & McDonald, 1983; Arnold, 1985; Smith, 1985; Hally, 1986; Gates, 1988; Rice, 1987; Schiffer & Skibo, 1997). These correlations, which provide a starting point for the present study, have been used in this work. As for the technological implications for vessel use, these are not one-to-one correlations between vessel morphological features and form, rather their relationship is one of “multivariate causality” (Rice, 1987, p. 224). Rice discussed four major use-related properties, namely capacity, stability, accessibility of contents, and transportability (Rice, 1987).

- Capacity and vessel dimensions: capacity can be defined as the maximum amount that a ceramic vessel can contain. It can be calculated only with complete vessels or with reconstructed complete vessel profiles. Capacity, calculated in this study using the Pot Utility Program, is expressed both in litres and in kilograms, and specifically refers to water and barley contents. Large vessels may be so bulky and heavy when full as to make handling and pouring difficult. Large dimension shapes are more difficult to transport or to rotate upside down to allow the cleaning processes. Vessels used for serving or eating are likely to vary in size depending on the quantity of people taking part in these activities (Rice, 1987). Rounded and globular shapes lacking sharp angles are more convenient for cooking because these features improve the vessel resistance to thermal shock. In addition, vessels with smooth rounded profiles reduce cracking than in those with angular profiles (Rye, 1981). In cooking pots, restricted shapes retard evaporation of the content during prolonged heating (Rice, 1987). Vessels with a standardised shape may also be associated with transport activities, in that having a similar shape, and thus a similar capacity, these common features might reflect some particular unit of measurement of specific traded goods. Storage activities are likely to be associated with liquid, rather than with dry food. Liquid food conserves better than dry products, which need constant ventilation to avoid mould growth (Solheim, 1965).
- The vessel's proportions and its base profile determine vessel stability and suggest vessel function. Simple or rounded bases are more effective than flat or angular types for heat generation, but they need a stand to hold the vessel in an upright position. Perforated bases may be associated with filtering processes.
- The dimension and profile of the opening determine the accessibility of the contents, which, in turn, depends on the contents' composition (i.e. liquid or dry), to the way the content is procurable, and how easily it can be poured or manipulated. The content can be removed from the vessel in two different ways: either by pouring or lifting (Hally, 1986). A small opening, for example, can better control the flow of liquid from the vessel. On the other hand, if contents

are removed by manipulation with another implement (i.e. by a ladle or small bowl), the opening has to be large enough to allow this. Where a vessel has a large opening and a high vessel depth, the physical manipulation of the contents inside the vessel (e.g. by mixing or crushing) is considered more likely to have occurred (Smith, 1985). In addition, a restricted opening that can be easily covered and prevents heat loss is often characteristic of cooking pots. A comfortable rim shape (smooth with rounded shapes and moderate in thickness) appears to be most apt for those vessels employed in direct drinking activities. A depression on the rim interior around the rim may be an indication of a possible lid or stopper. Everted or rolled rim with a particular depression is preferable in those storage vessels where a piece of cloth or leather, rather than a stopper, was used to cover the jar (Henrickson & McDonald, 1983). A high neck may be useful for accurately pouring liquid, and in reducing spillage during transportation (Rice, 1987).

- Transportability depends primarily on the vessel's form, size and, in particular, its weight (in relation to both empty and full vessels). In this research, handles and lugs are considered as the foremost morphological features that directly affect vessel transportability. Handles may have been used not only for transporting the vessels, but also as a grip to aid decanting from the vessel. In cooking shapes, handles may have been used to suspend the pot over a fire or to hold hot contents.
- Closure system: the presence of a closing mechanism on an opening may be indicative of storage or transport activities. A hermetic closure would have prevented the passage of air and bacteria that could have contaminated the liquid.³⁴ Jar stoppers may have been used to enclose contents such as alcohol and perfume, which tend to evaporate quicker than water that is characterised by less volatile particles. However, considering the small number of jar stoppers found at Tell Ahmar and their relatively small dimensions, it follows that for the medium

³⁴ McGovern argued that unbaked clay stoppers could have functioned “like a modern-day wine cork, absorbing liquid and expanding to keep out the oxygen, if the vessels had been laid on their sides” (Michel, et al., 1993, p. 410).

and large dimension jars other closure systems were used. A large dimension bowl located on the jar's mouth, for example, or a piece of cloth bounded with a string was possibly employed. This last system seems to be particularly suitable for semi-liquid content (i.e. grain) rather than for liquid. Semi-liquid content, in fact, benefits from adequate ventilation, while liquid lasts longer when stored in airless conditions (Pinnock, 2005).

Summary

Ceramic typology is commonly used to compare assemblages and to determine chronological sequences. The Tell Ahmar ceramic typology, however, has been analysed to suggest vessel functions by evaluating techno-morphological characteristics.

Diagnostic sherds were sub-divided into rim, body decoration, base, handle, spout, stand, body sherd, and slug. Bases were classified into simple/rounded, flat, ring, disk, concave, and perforated (or base with a hole in the centre). According to the orientation of the handles, these were classified into vertical and horizontal. Triangular lugs, in addition, are always horizontally placed.

In addition, two objects that refer specifically to the vessel use have also been considered in this analysis, namely jar stoppers and bag and jar sealings.

Reinforced by evidence of complete shapes recovered at the site, rim sherds with similar techno-morphological features were grouped together in order to define vessel shape types which have characterised the MBA assemblage at Tell Ahmar. Since no typology existed for this material, the first effort focused on differentiating between open and closed shapes.

According to the rim wall orientation, diameter and shape, a vessel shape typology was established. It consists of 14 closed shape types (CS) and nine open shape types (OS). The most representative vessel shapes analysed in this research have been illustrated by the author in Appendix C. Here they are summarised in the following table (Tab. 79).

CLOSED SHAPES	
Small/medium dimension bottles (CS01)	
Medium dimension flasks (CS11)	
Medium dimension jars	
○ With carinated shoulders (CS02; CS05) ○ With mushroom shaped rim (CS04) ○ With medium/high neck (CS08; CS09) ○ With short/non existing neck (CS10) ○ Undetermined (CS03; CS06)	
Large dimension jars	
○ With mushroom shaped rim (CS04) ○ With short/non existing neck (CS10)	
Medium dimension jugs (CS07)	
Cooking pots	
○ With triangular lugs (CS12) ○ Neckless (CS13; CS14)	
OPEN SHAPES	
Medium/large dimension bowls slightly carinated under the rim (OS01)	
Medium dimension bowls	
○ With a rounded out-turned rim (OS02) ○ With out-turned walls (OS04)	
Medium dimension platter bowls (OS03)	
Small/medium/large dimension deep bowls (OS06; OS09)	
Small dimension bowls with carinated shoulders (OS08)	
Small/medium dimension strainers (OS05)	
Large dimension basins (OS07)	

Table 79. Summary of the vessel shapes identified at the site.

For each vessel shape type, a table has been built which summarises technomorphological characteristics, as well as vessel dimensions and frequency as a ratio out of the whole rim assemblage.

A general overview of the ceramic assemblage composition shows that the most common rim sherds recovered belonged to two main vessel shape types: medium dimension jars (CS08 and CS09) and medium dimension platter bowls (OS03). Both elements, composition of the ceramic assemblages and ceramic shape distribution, are further used in Chapter 10 to infer vessel functions.

7. Vessel residue analysis

This chapter introduces a discussion on the vessel residue analysis undertaken for some selected samples at Tell Ahmar in 2010. “Organic residue analysis” is a general term used to describe the examination of a vast range of substances associated with several kinds of archaeological remains, such as osteological, faunal, botanical, as well as the remains from soil. Residue analysis may also refer to the organic remains that are found inside vessel shapes.

Sampling selection

Organic remains in a ceramic container may appear as ceramic vessel fill, which is rare; as encrustations present on the interior or exterior surface of a vessel, which are visible to the naked eye; or as residues which have been absorbed into the ware by the pores in an unglazed piece of pottery (Evershed, 2008). Residue analyses of the substances that are embedded in the pores of the ceramic are the most direct way of telling how a pottery vessel had been used.

At Tell Ahmar, a whitish-grey or light brown material was observed on the inner surface of some selected vessels (Fig. 70).

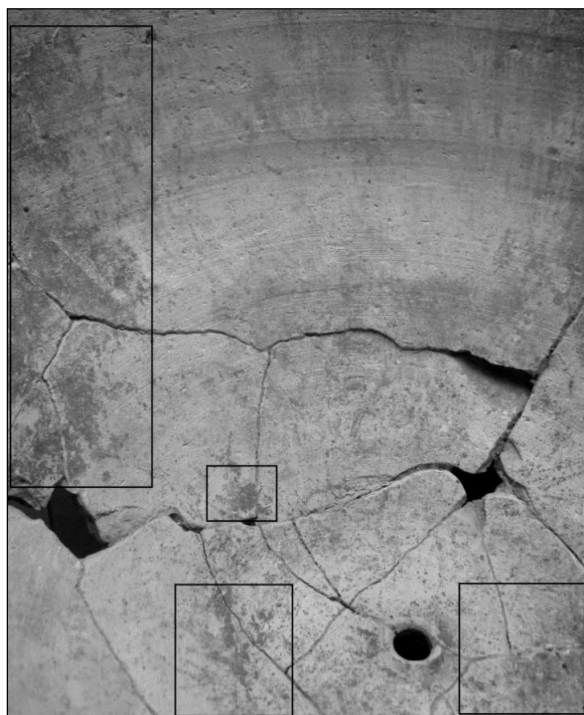


Figure 70. Jar with perforated base showing evidence of residue, indicated by the rectangular shapes in the photo (photo: Silvia Perini).

The samples collected came from 2004 to 2008 excavations undertaken in both Area M and Area S14. All the samples come from a primary context. Vessels from burial context have not been taken into consideration.³⁵ In the selection of from which shapes collect the remains, complete vessels and complete profiles were favoured over sherds. Moreover, medium dimension closed shapes were preferred over small dimension closed or open shapes (Tab. 80).

Vessel Dimension	Sample N.	%
Small	5	21.8
Medium	10	43.4
Large	6	26.1
not determinable	2	8.7
TOT N.	23	100.0

Table 80. Quantity and percentage of the vessel dimensions on the total number of samples collected.

³⁵ The decision on the exclusion was based on the numerous chemical reactions which might take place in burial contexts, some of which may influence the final result of the vessel organic residue.

According to the vessel shape typology (see Chapter 6), the selected samples have been associated with nine vessel shapes, namely: large dimension jars with a perforated base (either CS04, CS10 or OS09); medium/large dimension jars with carinated shoulders (CS02 and CS05); medium/large dimension jars with a restricted neck (CS08, CS09 and CS10); a large dimension basin (OS07); a small/medium dimension bottle (CS01); small dimension carinated bowls (OS08); and a medium dimension dish (OS03).

Residual samples from cooking pots were not taken into consideration for three reasons. Firstly, no complete cooking pots have been recovered at Tell Ahmar. Secondly, analyses on residual material from cooking pots can be misleading, as several products may have been processed inside there. Finally, it is unlikely that wine and beer were contained in cooking vessels, given that their preparation does not necessarily involve boiling activities ³⁶ (for reference on ancient wine and beer making processes see Lutz, 1922; Bottéro, 1985; McGovern, et al., 1996; McGovern, 2003; Homan, 2004; Jenninngs, et al., 2005; McGovern, 2007).

The majority of the samples collected came from vessels characterised by a common ware (Tab. 81) and by a moderated smoothed surface treatment of the surfaces, which left a porous inner surface likely to retain organic residues.

Vessel Ware	Sample N.	%
Common	21	91.4
Fine	1	4.3
Grey	1	4.3
TOT N.	23	100.0

Table 81. Quantity and percentage of the vessel ware on the total number of samples collected.

Residue material was collected from the lower part of the vessel and the vessel's base based on the assumption that these parts absorb more remains than the body or the rim because that is where precipitates accumulate.³⁷

³⁶ Wine and beer were made by fermentation of malted cereal grains (e.g. barley) or crushed grapes stored in large dimension vessels.

³⁷ However, Heron argued that decisions on the part or section of the vessel that was to be chosen for the collection of the deposit may allow a direct indication of the function of that vessel. For example,

Approximately two small spoons of material from the inner surface, and two from the external surface, were gently scraped using a cutter and put into a small plastic transparent zipped bag. Collecting material from the external surface was necessary to investigate that the residue material had actually been contained in the jar, and did not come from the surrounding soil. Contamination from the chemical substances naturally present in the soil can affect the analysis of the spot test. An accurate analysis of the context of deposition is essential to verify that the presence of the remaining material is connected to the vessel, and that it has not been contaminated by the soil (see Chapter 4).

On the bag, the sample number, the sample identification (e.g. year, area, feature and pottery lot), and vessel shape were recorded. Subsequently, the material was brought to Europe and sent to the laboratory at the Technical University of Munich in Germany.

Feigl's spot test analysis

A variety of methodologies and techniques can be used to analyse ancient residual material. Nuclear magnetic resonance and infrared or nuclear magnetic resonance spectrometry analyse the frequency of vibrations between atoms in the molecule. In addition, complex techniques such as thin-layer, liquid or gas chromatography can also be used. According to different behaviours in physical properties, such methodologies separate mixtures into several components. These last techniques are more specific and sensitive and, in particular, they address quantitative issues.³⁸

The method used in this work is known as Feigl (or Feigl)³⁹ spot test analysis. The spot test, developed by Fritz Feigl (Feigl, 1943; Feigl, 1955; Feigl, 1966) is concerned with specific, selective and sensitive reactions of organic chemical analysis on a small scale, which gives specific colour reactions with different elements. Spot reactions are simply determined by bringing together one drop each of the test solution and of the reagent on porous or non-porous support

the presence of a deposit on the upper part of the vessel can be associated with the remains of a particular agent used to facilitate the closing of the vessel, through a lid or a cloth (Heron, 1989).

³⁸ For a summary of the residue analysis methodologies applied in ceramic studies, see Gregg, 2009.

³⁹ Spot test is also known as "spot analysis", "spot method", or "drop test" (Feigl, 1943).

(Feigl, 1943). The reaction produced when adding these substances to the sample collected can be observed by a change in the colour.

This qualitative spot test analysis has been adopted since it presents the following advantages: 1) the economy of material, time and labour used in the spot test is advantageous; 2) this test does not require the destruction, breakage or damage of the ware, but only the removal of the chemical material, which has developed over time. Although the spot test cannot give quantitative results, it offers an estimation of the type of material present in a solution in a shorter time than more complex chemical methods. In addition, Feigl's spot test can still be carried out on ceramic sherds that had previously been washed.

Dr Martin Zarnkow⁴⁰ used this method for the examinations of the samples from Tell Ahmar. Without the aid of any optical instrument, the aim of the spot test analysis of this particular study was to investigate the presence of two organic compounds, namely wine and beer. Two chemical reagents were used in the experiment and can both be classified as organic acids: oxalic, used for investigating beer, and tartaric, used for wine (Feigl, 1943).

When oxalic acid is associated with other minerals, such as sodium, potassium, magnesium, and calcium, the compounds formed are usually referred to as oxalate salts (Tab. 82).

Calcium oxalate, a salt of oxalic acid, is the principal component of "beerstone". Beerstone is a brownish precipitate, which tends to settle on the surface of fermentation and storage tanks used in the brewing of beer. Calcium oxalate, however, is not only present in beer but can be also found in rhubarb (in large quantities in the leaves) and in spinach in varying amounts (Michel, et al., 1992; Michel, et al., 1993).

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Acid and Compound ⁴¹	Molecular formula	Appearance	Solubility in water
OXALIC ACID	C ₂ H ₂ O ₄	white crystals	90 g dm ⁻³ (at 20° C)
CALCIUM OXALATE	CaC ₂ O ₄	white solid	0.00067 g/100 ml (20° C)
TARTARIC ACID	C ₄ H ₆ O ₆	white powder	133 g/100 ml (20° C)
POTASSIUM BITARTRATE	KC ₄ H ₅ O ₆	white crystalline powder	4 g/l in cold water *

Table 82. Main properties of the oxalic and tartaric acids and the related compounds found in beer (calcium oxalate) and wine (potassium bitartrate).

Compared with cereal grains, however, these plants constitute a minor part of the human diet. In addition, because they were normally eaten fresh, it is unlikely that they were stored in large dimension ceramic vessels.

Tartaric acid is a white crystalline organic acid (Senser & Scherz, 2000). Its salts occur naturally in large quantities in many plants, particularly in grapes (Singleton, 1996). The potassium acid, a salt of tartaric acid, is called potassium bitartrate (Tab. 82). Potassium bitartrate crystallises in wine containers during the fermentation of grape juice, thus, it is one of the main acids found in wine. Chemically speaking, once a compound such as potassium bitartrate or tartaric acid is identified, there remains a problem in distinguishing between grape juice, grape syrup, another fruit juice (e.g. from dates or pomegranates), and wine (Michel, et al., 1993). The context of recovery can help in the correct determination.

Results

The Feigl's Spot test is a qualitative and not a quantitative test. The aim of this analysis was not to detect the percentage of a particular compound, but to find out whether members of a particular class of compounds are present or absent.

For both crystals, two methods with different sample preparation have been used. Changes in colour were observed within a +- range, where ++ means that the change in colour was very clear; + means there was a positive result, but that some other ingredients were disturbing the staining, or that the quantity of the sample was

⁴¹<<http://chembiofinder.cambridgesoft.com/chembiofinder/Forms/Home/ContentArea/Home.aspx>>, except * from Singleton, 1996, p. 68. For wine, see also Hornsey Spencer, 2000, Appendix A.

too low to be more accurate; +- means that there was a change in colour but it was not very clear; and finally, -- meant no change in colour, that is, there was an absence of reaction and no presence of chemical reagent. The Feigl spot test provided definitive evidence that the reaction between the material collected and oxalic acid produces a distinctive pinkish red colour, while tartaric acid produces a fluorescent green colour (McGovern, et al., 2004).

This analysis indicates that there are co-occurrences between acid presence and vessel shape (Tab. 83). For example, the two samples associated with CS04 (Sample 01 and 10) show a clearly positive presence of oxalic acid, while in the two samples associated with OS08 (18 and 19), Sample 19 shows a positive presence of oxalic acid, while Sample 18 shows a negative presence. These differences between the two vessels (which share similar techno-morphological characteristics) can be explained in several ways. It may be that Sample 19 was contaminated by oxalic acid components during the archaeological system, even if it did not originally contain beer. This implies that the oxalic acid was not within the goblet, but in the surrounding soil. Moreover, one could argue that although Sample 19 reacted positively to oxalic acid, its use in beer related activities could be attributed to its final use, and not to its actual use; that is, by the way in which the container was used in daily practice. It may also be the case that Sample 19 was accidentally used for beer activities only in the last part of its vessel life cycle. In addition, if we consider the presence of positive results in samples collected from the vessels' external surfaces, those which appear to react positively (++) to oxalic acid are connected, along with fragmentary sherds (Samples 02, 05, 13 and 15), to shapes CS01 (Sample 06 and Sample 23). Considering that these shapes were essentially used for pouring liquid, and that the remaining material has been collected on the upper part of the vessel, it can be assumed that a presence of residue in this area may be linked to some dribble remains of the liquid.

Sample No	Size	Vessel shape type	Room	OA		TA	
				IN	OUT	IN	OUT
01	L	CS04	1.1	+/-	+/-	--	--
10	L	CS04	8.1	++	--	--	--
11	L	Perforated base	8.1	+/-	--	--	--
24	L	Perforated base	14.2	++	+/-	--	--
02	M/L	CS10	8.1	+/-	+++	+/-	--
03	M	CS05	1.3	--	--	--	--
07	M	CS02	1.3	--/+	--	+/-	--
17	L	CS02	14.1	--/++	+/-	--	--
20	M	CS02	14.2	++	--/+	--	--
04	M	CS08	1.3	++/-	--	--	--
21	M	CS08	14.3	--	--	+/-	--
05	M	CS08	1.3	++/-	++/-	--	--
16	M	CS09	14.1	++	+/-	--	--
15	M/L	Simple base	3.1	++/+	+++	--	--
13	M/L	Simple base	8.1	--/+	--/++	--	--
12	L	OS07	8.1	++	--	--	--
06	M	CS01	1.3	--/+	++/+	--	--
22	S	CS01	14.2+14.3	+/-	--/+	--	--
23	S	CS01	14.5	--	++/+	--	--
18	S	OS08	14.1	--	+/-++	--	--
19	S	OS08	14.1	++	--	--	--
09	M	OS03	8.1	--	--	--	--
25	M	OS03	9.6	++	++/-	--	--

Table 83. Residue analysis results according to the vessel shape type (OA = oxalic acid; TA = tartaric acid).

There is not always a stable relationship between acid presence and vessel size either. In general, positive results are more common among large and medium/large dimensions than in medium and small dimension shapes.

The ceramic shapes considered in this analysis come from both excavated areas (M and S14) and from nine different rooms. According to this variable, one can also see that the presence or absence of acids is not associated to any particular room.

What does ceramic residue analysis reveal about vessel function?

Investigations on the jars that were used as beer or wine containers may improve our understanding of those economic activities, such as processing, storage and transport, all of which represent an essential part of the socioeconomic process of MBA

societies (see Conclusions). The identification of the contents, and not only on the analysis of the vessels' techno-morphological characteristics, should emphasise that the principal value of ancient jars was implicit in their contents, and not on the jars themselves. In this regard, Rice argued:

Archaeologists tend to devote a great deal of energy in examining exterior surfaces but the findings of recent studies seem to be suggesting that we should pay equivalent – perhaps far more – heed to vessel interiors (Rice, 1996a, p. 148).

Residue analysis, however, does not necessarily inform about the intended function of a vessel, because it mainly refers to a vessel's actual use. Nevertheless, such investigation offers a remarkable source of information of vessel uses and site economies. In particular, this analysis addresses two following points:

a) Vessel shape positive to wine components: only three samples out of 23 show a +- results to tartaric acids (Samples 02, 07 and 21), and they are associated with CS10, CS02 and CS08, which are all closed shapes. However, according to the textual sources from the MBA containing information about the particular richness of wine cultivation in this area (see Chapter 1) and according to the particular geographical position held by Tell Ahmar in the past, one should expect to find a more generous concentration of samples that reacted positively to tartaric acid (see also Conclusions). Nonetheless, a scarcity of samples reacting positively to tartaric acid is not consequently a sign of the absence of vessels related to wine activities. Studies into the level of degradation or resistance of oxalic and tartaric acid through time are essential to understand whether they may have affected the final data. The length of time over which liquid or dry substances were contained in ceramic vessels may affect the final concentration of residual material, which was higher in storage vessels than it was in vessel shapes connected to service and consumption activities. This aspect may have also played a significant role in the development of the outcome.⁴²

⁴² Martin Zarnkow is currently working on this issue.

b) Vessel shapes positive to beer components: shapes that reacted positively to oxalic acid are more numerous (i.e. CS04, CS10, CS02, CS08, CS09, OS03, OS07 and OS08).

Summary

This analysis focused on the identification of two organic components, namely beer and wine, which would have been contained in the Tell Ahmar vessel shapes. The analysis focused on these two compounds for two reasons. Firstly, according to textual evidence, beer and wine have constituted an important part of the MBA economic and subsistence system in Northern Mesopotamia and Syria (see Chapter 1), so it is likely that they would have offered positive results. Secondly, chemical investigations on other liquids (e.g. water and oil) and solid food (e.g. grain) would have incurred a high economic cost, as well as a lengthy waiting period, neither of which was convenient for this research.

Although more analysis in this direction is needed to have a more complete background of the aliments used by the society, they have indicated a diffuse presence of oxalic acid (mostly associated with beer), and a relatively reduced presence of tartaric acid (wine), which suggests that beer or grain was produced and stored at the site. Together with information coming from techno-morphological analysis and distributional analysis, these shapes will be further investigated in Chapter 10 in order to verify their association with these liquids

PART 3 – VESSEL FUNCTION AND FUNCTIONAL ACTIVITIES

For a long while, potsherds have served as the raw data for stratigraphic and chronological studies, and the human aspects of this man-made and man-used product have been neglected... It is through a combination of many interests – historical, technological, artistic and ecological – that pottery can be made to serve our objective – the better understanding of man through a study of the material remains that have been left for us to excavate (Matson, 1965a, p. 216).

8. Function of the rooms and ceramic distributional analysis

Chapter 8 offers an inferential analysis of the function of the rooms excavated at the site according to architectonic installations and *de facto* refuse (pottery excluded) discovered within the rooms. Evidence from burial context is also included in this discussion.

With the function of the rooms in place, this chapter examines correlations of room and vessel shapes in order to infer vessel functions. Distributional implications of vessel functions focus on co-occurrences between different vessel shapes, non-ceramic material and vessel shape, room and ceramic ware, and room and vessel shape, as they would have appeared at the time of the site abandonment.

The function of the rooms

Given the rapidity of the fire that took place at the site, the artefacts recovered during excavations were found as deposited at their abandonment stages in the systemic context (see Chapter 3). Although artefact cannot provide information about the complete use-life of the rooms at the site, they can give an insight of the activities that took place in the areas just prior this catastrophic event. However, in order to avoid circular reasoning such as “using room function to infer vessel function and using vessel functions to infer room functions”, the analysis of the function of the rooms is based upon the distribution of the non ceramic objects and architectural features found within the rooms.

Block 1

Block 1 is formed by three rooms (Fig. 71).

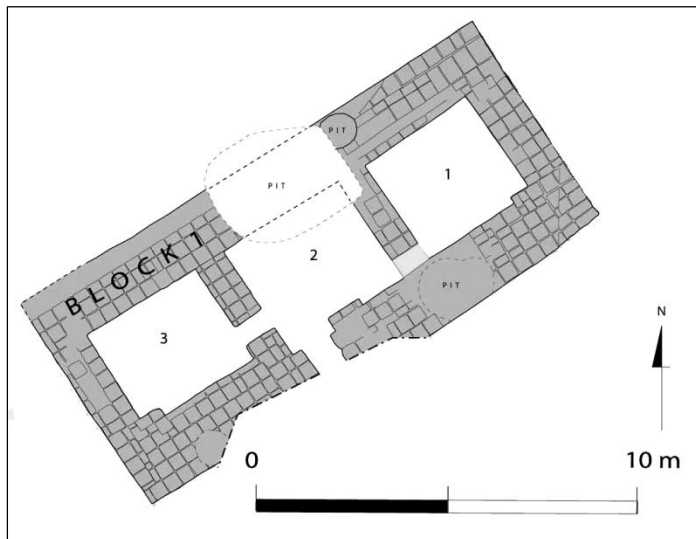


Figure 71. Area M – Block 1.

The doorway of **Room 1.1** (c. 30 m²) was blocked with a layer of bricks. The access to the room may have been through the roof. Fragments of beams found in Room 1.1 and belonged to a ladder would support this hypothesis. A bench is located along the northeast wall of the room. The presence of basalt grinding stones and a pestle suggest that processing activities were undertaken in this room. The bench that characterised this room could have been used to support the basalt tools or may have been used for seating.

The entrance to Block 1 was in the southern wall of **Room 1.2** (c. 26 m²) that is located in the middle of Block 1. It may have served only as passage area. From Room 1.2, one could reach Room 1.3 to the east and Room 1.1 to the west. At the doorway of Room 1.2, a bronze pin and a few horns were found.

Room 1.3 measures c. 27 m². Excavations reached the room floor. A grinding basalt stone and a pestle were also found in the room, suggesting similar activities as for Room 1.1. Moreover, a small baked clay object with a triangular shape, probably used as a jar stopper, was also discovered in this room.

Block 2

Block 2 is composed of five rooms (Fig. 72).

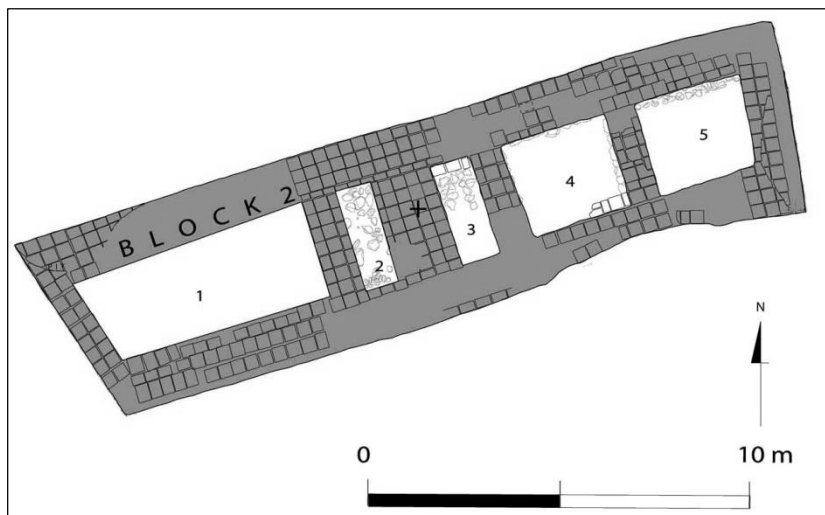


Figure 72. Area M – Block 2.

The first room to the west is **Room 2.1**, c. 38 m², the largest room of Block 2. Floor room was not reached in this room and no doorway was found. Although this room has been partially excavated, considering that it is the largest room within Blocks 1-3, one can speculate that Room 2.1 was used to host people in, probably undertaking consumption activities. If such activity was undertaken, then only a restricted number of individuals would have been accommodated inside.

No doorway and only little archaeological material were found in **Room 2.2** (c. 12 m²) and **Room 2.3** (c. 12 m²). Because of their small dimension, Bunnens argued that these rooms formed the staircase of Block 2 (Bunnens, 2010). Alternatively, they can be seen as a sort of *casemate* of this block.

In **Room 2.4** (c. 19 m²), a doorway is visible in its southwest corner although it was blocked with a layer of bricks. Two small jar stoppers were found here. The presence of jar stoppers suggest that storage perhaps related to long-distance transport activities were undertaken in this room. Room 2.4, as well as Room 2.5, was filled with debris.

Contrary to the other rooms of Block 2, traces of occupation were found in **Room 2.5** (c. 21 m²). The wall between Room 2.4 and Room 2.5 seems to have been a later addition. This might have been a single room in an earlier phase, with similar dimensions to Room 2.1. The basalt grinder and pestle found in this room suggest

that processing food activities were undertaken. The seal impression found may have been used to seal a jar used to contain the processed food.

Block 3

Block 3 is formed by four rooms (Fig. 73).

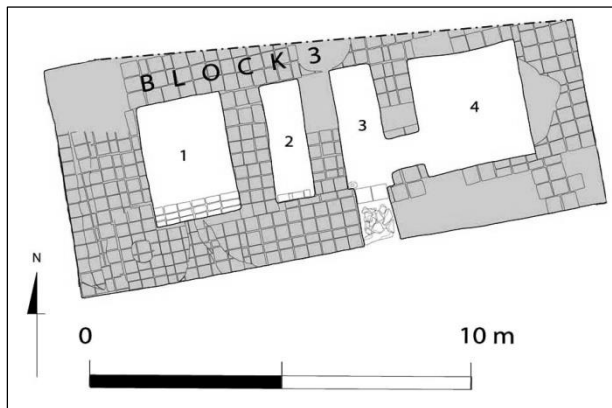


Figure 73. Area M – Block 3.

Room 3.1 (c. 28 m²) has no doorway. It may have been another *casemate* structure, with access from the roof. Beam fragments of a ladder found in this room support this hypothesis. Excavations brought to light a large quantity of grain seeds. In addition, a seal and 15 seal impressions⁴³ (five of them used for jars and bags sealing), nine jar stoppers, a bronze axe, and a grindstone were also discovered. It is likely that Room 3.1 was used to process and store food (grain). The exceptional number of seal impressions discovered here would suggest that such activities were controlled by an administrator/s.

Room 3.2 (c. 13 m²) has a rectangular shape similar to Room 2.2 and Room 2.3 of Block 2. No doorway was found for this room, which suggests it may be another *casemate* structure. A broken terracotta human figurine was found within this space.

Room 3.3 (c. 12 m²) has the same shape as Room 3.2. However, here a doorway was discovered. The door is placed on the southwest corner of the room.

⁴³ For the iconographic analysis of the seal impressions see Bunnens, 2010.

Many stones were found in the doorway; these may have been used to close the access to the building after its destruction. From Room 3.3, one could have access to the building and to Room 3.4, located to the west of Room 3.3. A jar sealing was found in the doorway between Room 3.3 and Room 3.4 with the same seal used in Room 3.1, and some grain seeds. The sealing was probably used to close a jar or, given the location, it is also possible that it was used as a door sealing (for either Room 3.3 or 3.4). Room 3.3 was probably used as a storeroom.

Room 3.4 (c. 25 m²) showed a whitish layer that covered the floor. A jar burial was found under the floor of this room (see later in this chapter). Two jar stoppers, a door sealing and grain seeds were also discovered. The function of this room is particularly intriguing. Although the jar burial would suggest a domestic use, grain seeds and a door sealing would indicate an administrative use of this space connected to the storage of grain products that were controlled by some administrators.

Building M8

Three different spaces were recognised in this building: a) the main room which measures c. 32 m²; b) a paved ramp with large flat stones located in the southeastern corner of the room and which gives access to Room 8.1a; and c) a small area to the west, not completely excavated, which divided the western wall of Room 8.1a by a thin, one-brick wide wall (Fig. 74).

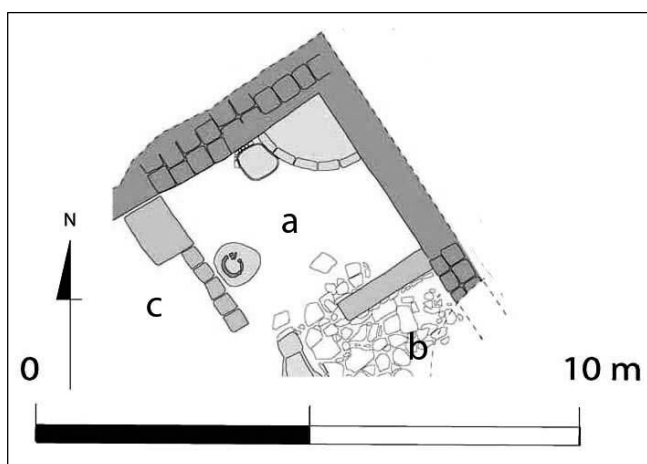


Figure 74. Area M – Building M8.

Room 8.1a is the space that offered the most archaeological material. In the northeast corner of Room 8.1a, there was a kind of earth space delineated by small bricks that formed a curving line. It was probably used as a storage area. However, no ceramic material was found inside. Moreover, among the debris in the middle of this space, some well-preserved fragments of the roof were discovered. Of particular importance, there is a rounded piece of clay still attached to a brick (Fig. 75).

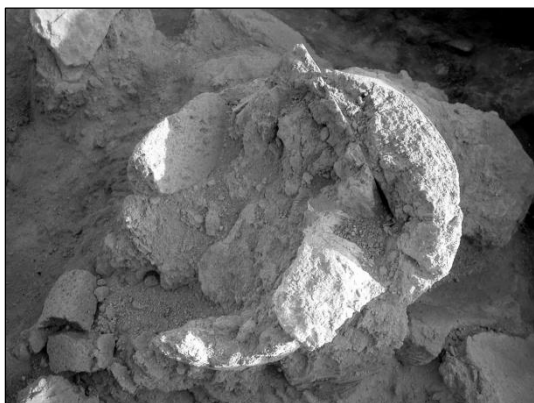


Figure 75. Edge of the roof found collapsed on the floor of Room 8.1a (photo: Guy Bunnens).

Bunnens interpreted this fragment as part of the edge of the roof, probably the part that served to prevent rain from flowing down along the walls (Bunnens, 2010). A *tannur*, grain seeds, two jar stoppers, a grindstone and pestle were also discovered here. The composition of the room assemblage implies that food preparation was a major activity in this room. This assumption is supported by the discovery of an infant jar burial located under the floor in the northwest corner of the room supports that Room 8.1 was used as a kitchen. Jar burials were often placed under the floor in a domestic context relating to food preparation and consumption activities (see later in this chapter).

Building M9

This building is formed by four rooms and by three open spaces. The open spaces 9.5 and 9.6 are connected to Rooms 9.1 and 9.2, while space 9.7 was probably a common space of Rooms 9.3 and 9.4 (Fig. 76). In this building, as in the other structures of Area M, the access was through the south.

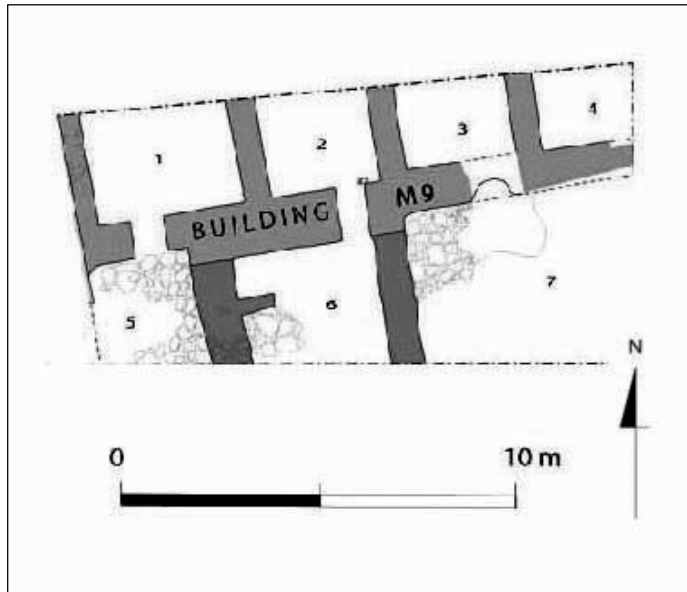


Figure 76. Area M – Building M9.

In the first room to the west, **Room 9.1** (c. 15 m²), a doorway was found in the southern wall and the space outside the Room 9.5 was paved with irregular slabs. Several seal impressions were brought to light, one of which was probably used to close the door; two jar stoppers and some lithic material were also found in this room. The seal impression and the door sealing would suggest a storage function of this room with limited access.

Room 9.2 measures c. 11 m². A child's jar burial was found under the floor of the room, as well as two door sealings. The function of this room is difficult to define because, as with Room 3.4, jar burials were commonly buried under the floor in a domestic context. However, the door sealings discovered in this room would not suggest an association with a domestic context, but rather that an administrator controlled the access to the room.

Room 9.3 and **Room 9.4** are two small rooms (respectively c. 9 and 7 m²). A jar stopper was found in Room 9.4. Because of the little archaeological material found here, these two rooms were probably the rest rooms of the administrators of this building.

Space 9.5 measures 9.44 m². The floor of this courtyard was covered with irregular flat stones. Grindstone and pestle found suggest that in this open space food preparation activities were undertaken.

Space 9.6 measures 15.54 m². This space has been only partially excavated so its function cannot be attributed with certainty.

Spaces 9.7 (28.86 m²) is a large open area. It is likely that several activities, perhaps associated with food production and consumption, were carried out in this area.

To conclude, if we consider Area M and look at the general map of the excavated rooms (Figs. 71-76), it is clear that the relatively reduced dimension of the rooms, particularly of those belonging to the three blocks (c.15 m²), would not have accommodated a large number of people. For buildings M8 and M9 it is reasonable to assume that both buildings were in some way part of a public complex, perhaps the living quarters of the personnel in charge of its daily management (Bunnens, *pers. comm.*, November 2011).

Burnt House

In Area S14, a private house formed by five rooms was excavated (Fig. 77).

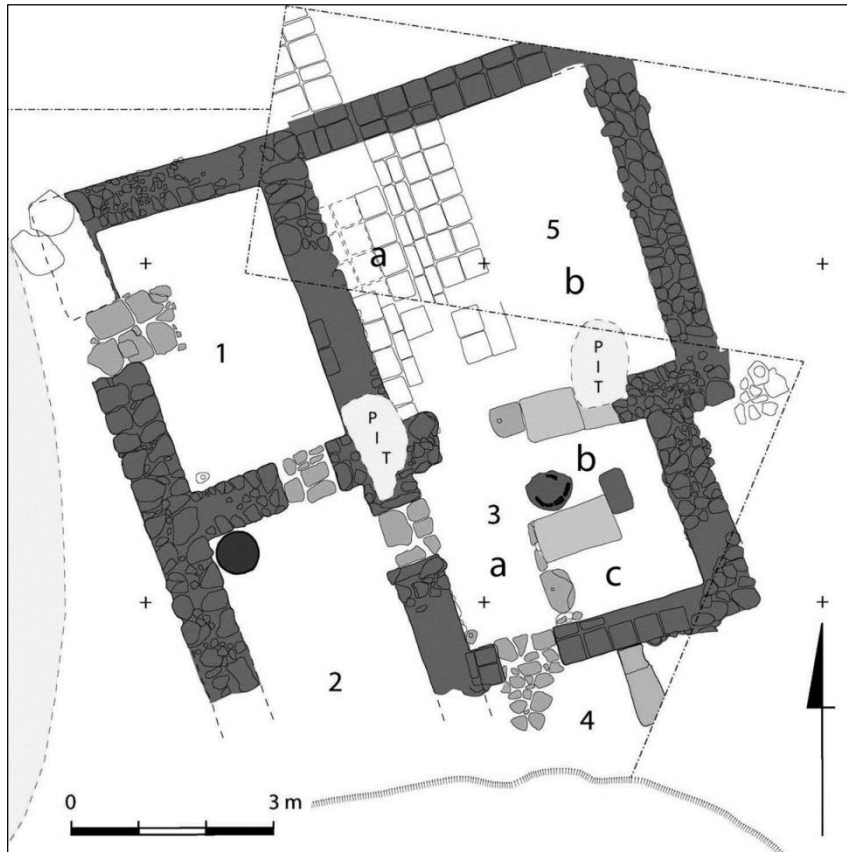


Figure 77. Area S14 – Burnt House.

The main entrance to this house is located on the northwest side of the **Room 14.1** (c. 19 m²). The doorway was paved with large flat stones that extended about 80 cm into the room. A thin layer of white plaster covered the inner faces of the room. Basalt objects and a grindstone were found here, as well as a child jar burial, grain seeds, and a jar stopper. The composition of the room assemblage suggests that food processing activities were undertaken. In the southern wall, a paved doorway gave access to Room 14.2.

The southern part of **Room 14.2** was not completed, thus it is not possible to determine its dimension. They may have been very similar to Room 14.1, certainly the same width. Near to a large jar sunk into the floor in the northeastern corner, a jar

sealing was found.⁴⁴ In addition, a jar stopper was also discovered. Given these particular objects, it is argued that in Room 14.2 storage activities were undertaken. To the eastern wall of Room 14.2, a paved access gives way to Room 14.3.

Room 14.3 (c. 16 m²) has been divided into three different sections (a, b and c). Section (a) was a kind of passageway from which it was possible to go either to sections (b) and (c) or to Room 14.4. Moreover, from section (a) it was also possible to go north towards Room 14.5. Section (b) was separated from section (c) by blocks of bricks, which may have been either a platform or a wall. Section (c) was separated from section (b) by a line of stones, which might have been a wall foundation or step (Bunnens, 2010). An oven of the *tannur* type was found in section (b) along with a basalt grinding stone. Four child jar burials were also found in this room, in the northeastern and southeastern corners. The typology of the archaeological material found would suggest that this room was the kitchen of the house.

In the southeastern corner of Room 14.3, a paved doorway gave access to **Room 14.4**. Large flat stones covered also part of the room next to the door, like in the Room 14.1. This room is not completed: its southern part was eroded away.

Room 14.5 is the largest room in the house, measuring c. 26 m². This room was connected to Room 14.3 by a passage located on the southwestern corner of the room. Room 14.5 had been divided into two sections (indicated on the map as a and b) by a partitioning wall, characterised by parallel lines of bricks (Fig. 77). It is difficult to reach a conclusion about Room 14.5, given that the absence of artefacts and scarce ceramic material puts a limit on functional interpretation. Bunnens argues that the particular architectural evidence in Room 14.5 should be interpreted as a support for stairs leading to an upper storey (Bunnens, 2010), probably located above Room 14.1 and Room 14.2. Archaeological comparisons encourage this interpretation. Otto, for example, investigating evidence of the commensality areas at Bazi during the LBA, argued that eating and drinking activities may have taken places on the upper floor, where these rooms were much more ventilated and it was

⁴⁴ Bunnens, however, argued that it is not exactly a jar sealing but rather a strip of clay on which a seal was impressed, perhaps to help identify consignments sealed with the same seal (Bunnens, *pers. comm.*, 2012).

more comfortable to spend time there especially in the summer (Otto, 2012). In addition, an access to the roof would have allowed to undertaken processing activities also in this open space. At Tell Aushariye a similar situation has been documented, where the ground floor was probably reserved for storage and the upper floor for food preparation and consumption activities (Jakobsen, 2011). If we accept that this building comprised two floors, the analysis of the ceramic material found on the ground floor of the rooms is largely influenced by the collapse of the upper floor, which would have caused a disturbance of the archaeological artefacts (see Chapter 3).

According to the distribution of *de facto* refuse, the allocations of the jar burials, as well as the architectonic installations, the function of the rooms inferred in this chapter can be summarised as follows (Tab. 84).

Room	Room floor dimension (m ²)	Architectonic installations	Archaeological material	Activity
1.1	30	A bench	A grinder and a pestle; grain seeds	Food processing
1.2	26			Storage
1.3	27		A grinder and a pestle	Transport, storage and food processing
2.1	38		Lithic material	Food processing and consumption?
2.2	12			<i>Casemate</i> or staircase?
2.3	12			<i>Casemate</i> or staircase?
2.4	19		A jar stopper	Storage and transport
2.5	21		A grinder and a pestle; seal impression	Food processing and storage
3.1	28		A grinder and a pestle; grain seeds; seal impressions; jar stoppers; a bronze axe	Food processing and storage controlled by an administrator
3.2	13			<i>Casemate</i> ?
3.3	12		Jar sealing; grain seeds	<i>Casemate</i> ? Storage?
3.4	25		Jar stoppers; a door sealing; a jar burial; grain seeds	Storage
8.1	32	A <i>tannur</i>	A jar burial; grain seeds; jar stoppers; a grinder and a pestle	Food processing (heating) and storage
9.1	15		Seal impression	Storage
9.2	11		A door sealing; a jar burial	Storage controlled by an administrator
9.3	9			N/A

Room	Room floor dimension (m ²)	Architectonic installations	Archaeological material	Activity
9.4	7		Jar stoppers	Storage or living area?
9.5	9.5		A grinder and a pestle	Food processing
9.6	15.5			N/A
9.7	29			Food processing, (collective) consumption and storage
14.1	19		Grinder and pestle; grain seeds; a jar burial	Food processing
14.2	N/A		Jar sealing; jar stopper	Storage
14.3	16	A <i>tannur</i>	Three jar burials; a grinder and a pestle	Food processing (heating)
14.4	N/A			N/A
14.5	26			Staircase?
Upper floor?	N/A			Food processing and consumption

Table 84. Association between non-ceramic material and function of the rooms.

Ceramic assemblages from Area M and Area S14: a comparison

This section offers a techno-morphological comparative analysis of the composition of the ceramic assemblages from Area M and Area S14 in order to assume their contemporaneity of use.

From a technological point of view, the same composition of ceramic ware types characterised the two assemblages, namely: common ware (CMW), cooking ware (CKW), fine ware (FNW), Grey Ware (GRW), and Khabur Ware (KHW) (Fig. 78).

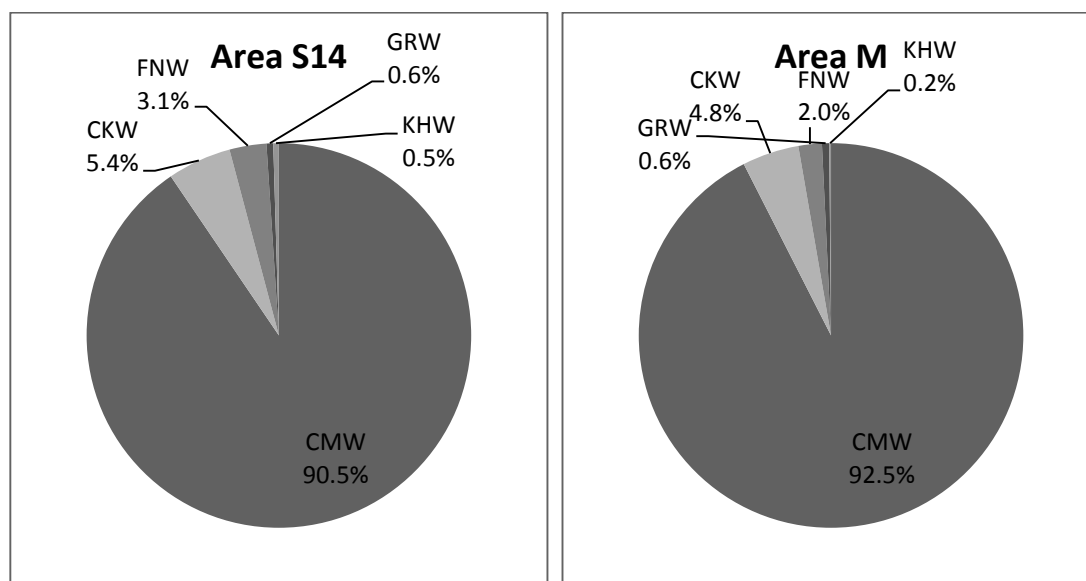


Figure 78. Ceramic assemblage ware composition from Area S14 and Area M.

Grey and Khabur wares are relatively scarce in both assemblages. Fine and cooking wares are slightly more frequent within the house in Area S14 than in the complex in Area M.

Vessel decorations have also shown a similar typology and frequency (Fig. 79).

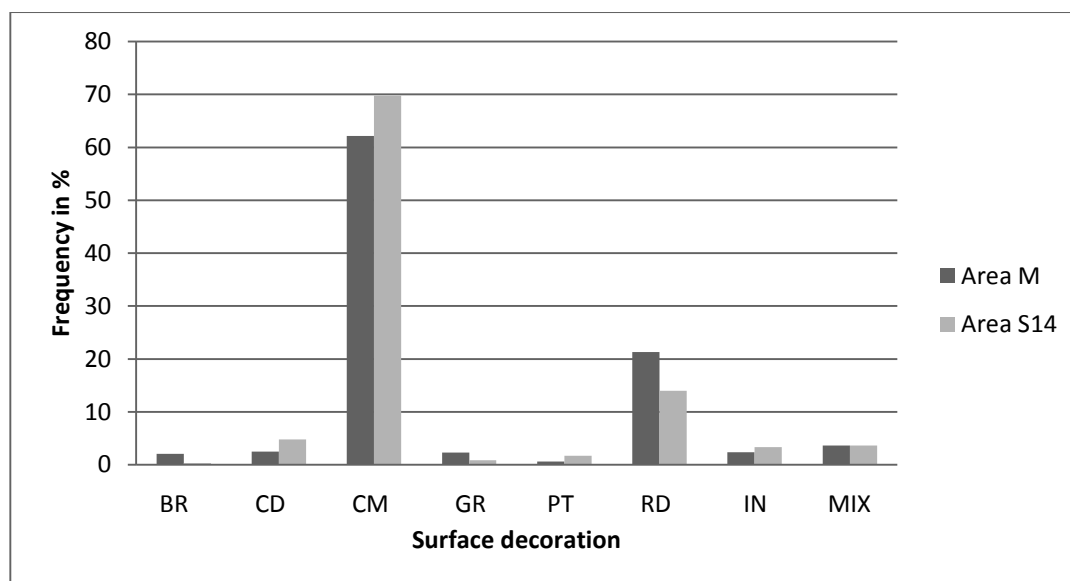


Figure 79. Surface decoration composition from Area S14 and Area M assemblages

Combed (CM) and ridged (RD) decorations are the most common in both assemblages, while cordoned (CD) and incised (IN) decorations, as well as painted vessels (PT) are rare.

From a morphological point of view, ceramic vessel shapes from the two assemblages also present several similarities. The following charts (Figs. 80-83) show the frequency of closed and open shapes in both areas. In general, the frequency of similar vessel types is comparable between the two assemblages. In particular, CS04 and CS08 are more common in Area M than in Area S14, while OS03 is more diffuse in Area S14.

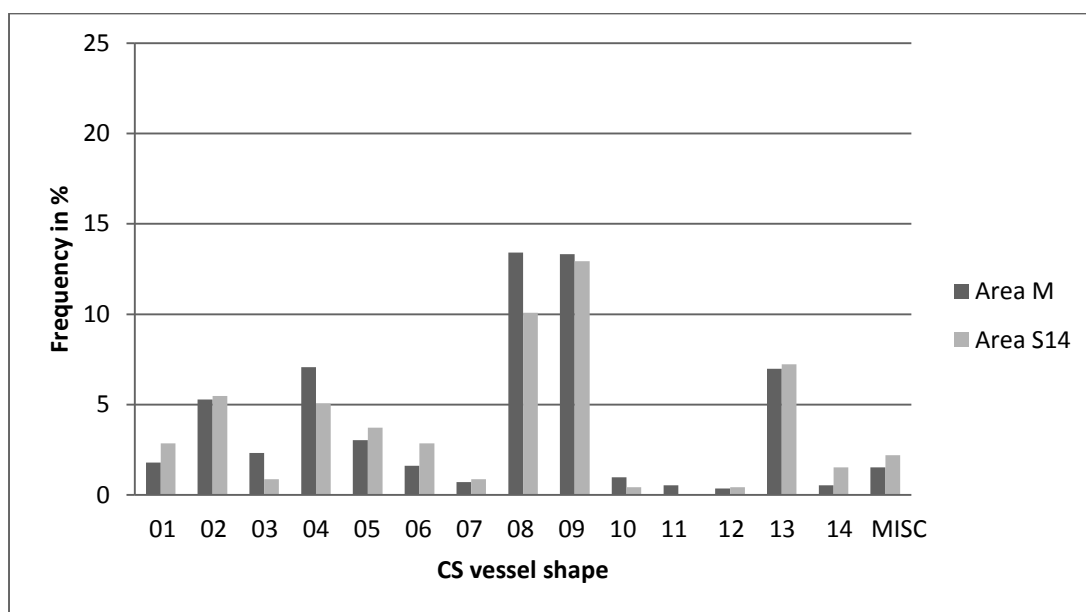


Figure 80. CS vessel type frequency from Area M and Area S14 assemblages.

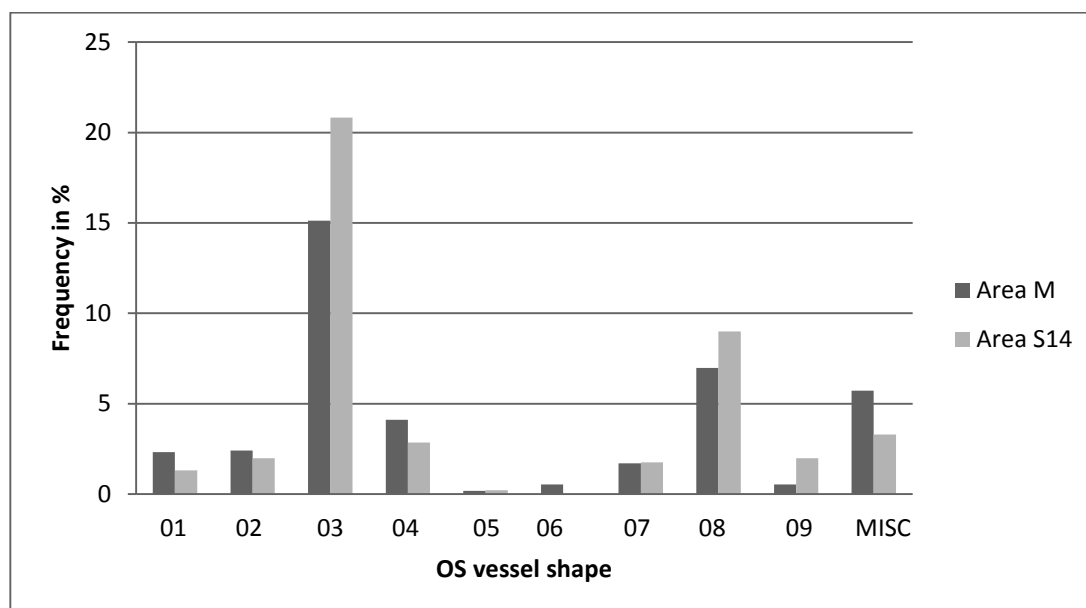


Figure 81. OS vessel type frequency from Area M and Area S14 assemblages.

The most representative vessel shapes in both assemblages have medium dimensions (Fig. 82).

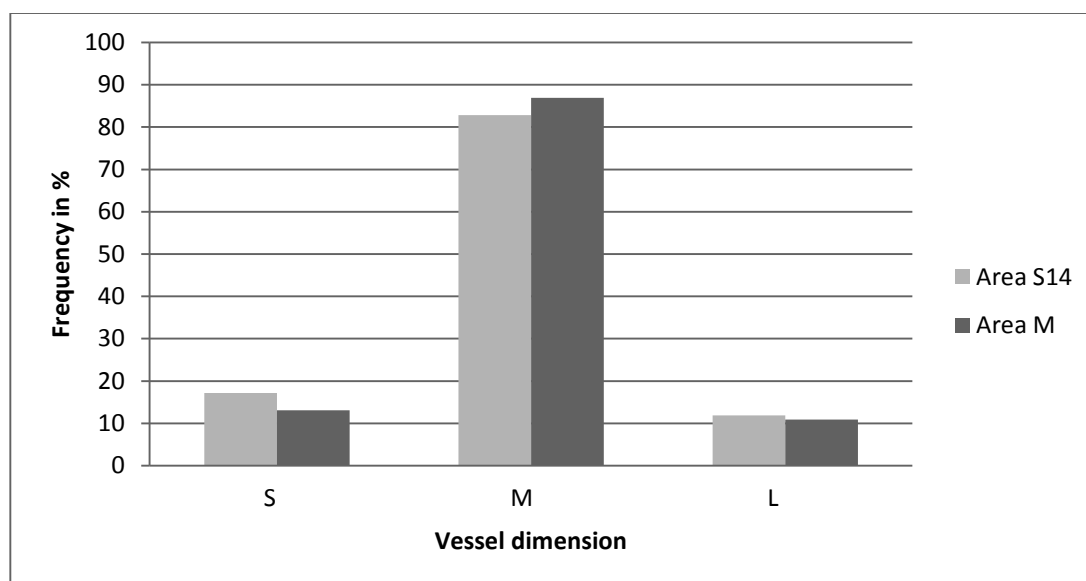


Figure 82. Vessel dimension frequency from Area M and Area S14 assemblages.

Base types are also very similar. Ring bases are the most common in both assemblages, while bases characterised by a perforation in the centre are less diffuse (Fig. 83).

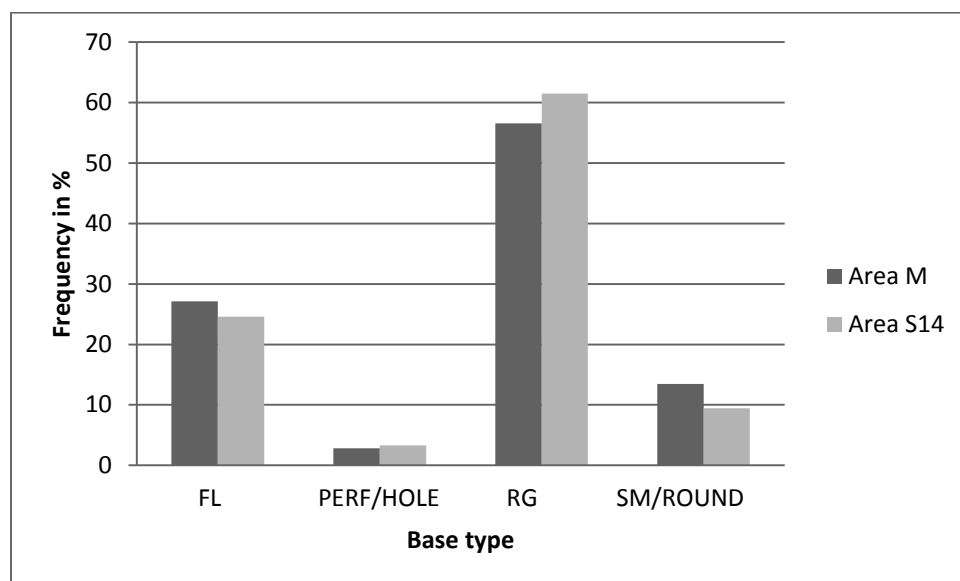


Figure 83. Base type frequency from Area M and Area S14 assemblages.

Given the evident techno-morphological similarities of the vessel shapes collected from the complex in Area M and the house in Area S14, it can be assumed that the ceramic material analysed in this research was in use at the same time. With this analysis in place, the following paragraph examines ceramic evidence from burial context that will be also used to investigate vessel function.

Ceramic evidence from burial context

A jar burial is generally a large storage vessel (Tell Ahmar type CS10), often with the rim or base missing. These jars were deliberately broken in order to place the body and the grave artefacts inside (Dornemann, 1977; Dornemann, 1981; Ilan, 1995; Baffi-Guardata, 2000). In some cases, the jar burials were closed by a different jar than the one used to lay the body in, or they may have been closed by a bowl. Vessels from burials are more likely to be recovered intact because of their limited exposure to the disturbances of subsequent archaeological processes. In addition, the particular burial ritual that included buried the deceased under the floor seems to have favour the conservation of the intact vessel shape.

Under the floor of the rooms in Area M and Area S14, seven jar burials were discovered, three in Area M (Room 8.1; Room 3.4; Room 9.2) and four in Area S14 (one in Room 14.1 and three in Room 14.3).⁴⁵

In Room 8.1, a tomb of an infant was found in the northwestern corner of the room (Fig. 84).

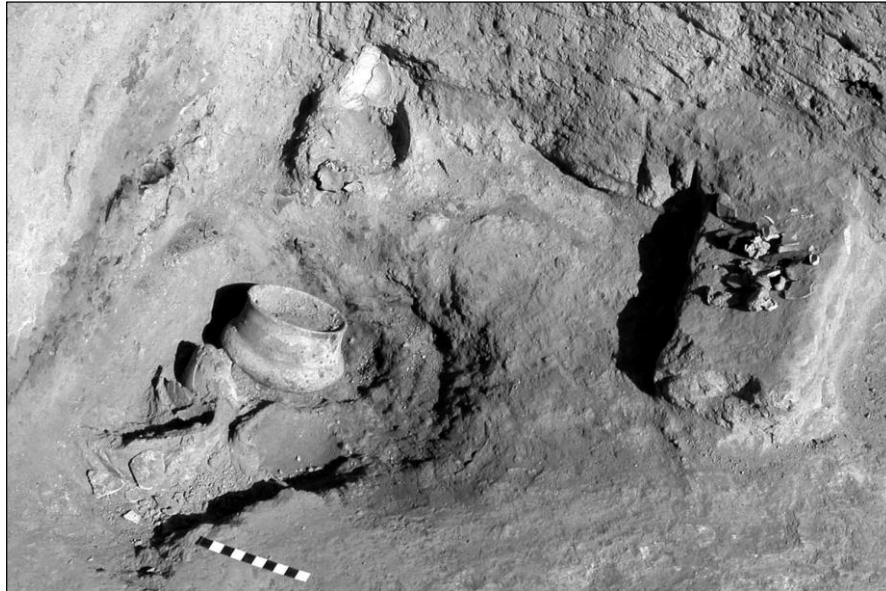


Figure 84. Infant tomb discovered in the northwestern corner of Room 8.1 (photo: Guy Bunnens).

The tomb contained a bronze pin and a complete bowl (Appendix C, Plate 45 No. 4) (Fig. 85).



Figure 85. Small bowl found in the infant's tomb in Room 8.1 (photo: Guy Bunnens).

⁴⁵ A further large grave dated also MBA has been discovered in Area S. However, because its excavation is not completed, this data has not been inserted in this analysis.

In Room 3.4, an inhumation made in a large jar was discovered. This large jar burial (Appendix C, Plate 27 No. 4) contained no offerings, only the bones of the deceased were recovered (Fig. 86).



Figure 86. Jar burial under the floor of Room 3.4 (photo: Guy Bunnens).

In Room 9.2, an infant was buried under the floor. The grave consists of a shaft lined with mud bricks (Fig. 87).



Figure 87. Burial in Room 9.2 (photo: Guy Bunnens).

Three bowls (type OS08) were deposited in this grave as funerary offerings (Appendix C, Plate 46 No. 10 and Plate 47 No. 1 and No. 3) (Fig. 88).



Figure 88. Three small bowls recovered from the burial in Room 9.2 (photo: Guy Bunnens).

Moreover, four graves were discovered in the private house in Area S14, and they all contained child bodies. In the burial S14.174 found against the east wall in Room 14.1, no pottery was found (Fig. 89).



Figure 89. Jar burial discovered under the floor of Room 14.1 (photo: Guy Bunnens).

Under the northeastern corner of Room 14.3, two jar burials were uncovered. Burial S14.172 contained a body of a child lying down in a foetal position with the head to the east. Together with the body, a small bronze earring (deposited close to the left ear), a small bowl (Appendix C, Plate 46 No. 7) (Fig. 90) and a dish (Appendix C, Plate 39 No. 3) (Fig. 91) were recovered.

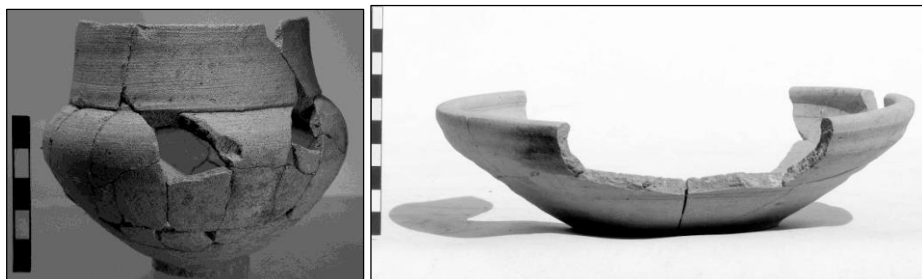


Figure 90 and Figure 91. Ceramic shapes recovered in the jar burial in Room 14.3 (photos: Guy Bunnens).

Another jar burial (S14.203) was discovered in the same room. The body of the infant was deposited in a broken jar and subsequently closed with a large base with a perforation in the middle (Appendix A, Plate 7 No. 10) belonging originally to a different vessel (Fig. 92).



Figure 92. Jar burial under the northeastern corner of Room 14.3 (photo: Guy Bunnens).

The body was laid in foetal position with the head to the north. Together with the human bones, the tomb contained a necklace of jasperite beads, a bronze pin, a small bowl (Appendix C, Plate 47 No. 9) and a small bottle (Appendix C, Plate 2 No. 2) (Fig. 93).



Figure 93. Grave goods from the jar burial under the northeastern corner of Room 14.3 (photo: Guy Bunnens).

A third jar burial was discovered under the southeastern corner of Room 14.3. As for the jar burial S14.203, the vessel used as a container of the deceased is of the type CS10 (S14.178 PL664.4).

To summarise, the ceramic found in the jar burials refers to a repertoire of commonly occurring vessel shape types made up of small bottles (CS01), carinated bowls used for drinking (OS08), and platter bowls used for eating (OS03). The small dimension bottles were probably used as containers for precious liquids (e.g. perfume), or they may be related with oil container used during the process of preparation of the corpse (Felli, 2012). These vessels were placed in the graves with the main intention to offer durable food to accompany the deceased.

Ceramic distributional analysis

With the hypothesised function of the rooms in place, this section provides a discussion of the ceramic distribution within the buildings. Given the sudden fire that marked the end of the MBA occupation at the site and assuming that the ceramic material found during excavations belongs to the systemic context (see Chapter 3), investigations of frequency, diversity, and co-occurrence of vessel shapes within a room can offer crucial information towards an understanding of the vessel functions.

Block 1

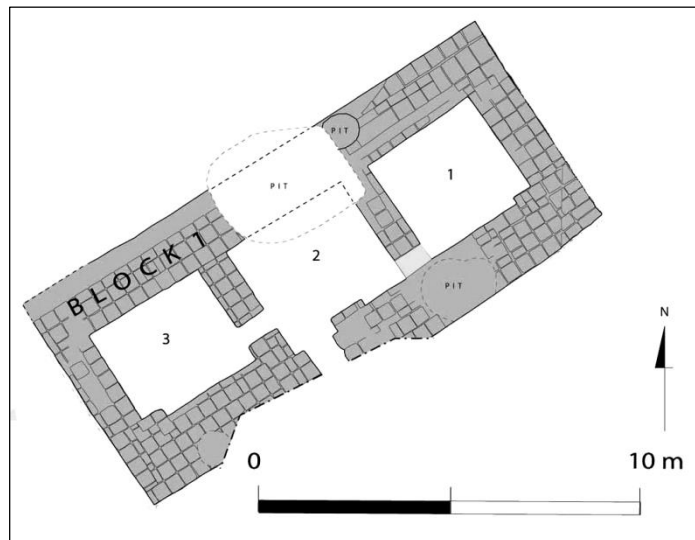


Figure 94. Area M – Block 1.

Five diagnostic sherds, a complete OS03 shape (Appendix C, Plate 39 No. 1), a large dimension CS04 with a perforated base and a potter's mark (Appendix C, Plate 13 No. 1) were found in **Room 1.1**, while in **Room 1.2**, 364 diagnostic sherds and four complete vessels were discovered, of which a tray and three OS08. No Grey Ware samples were found in Room 1.2, which presents mainly common ware (Fig. 95).

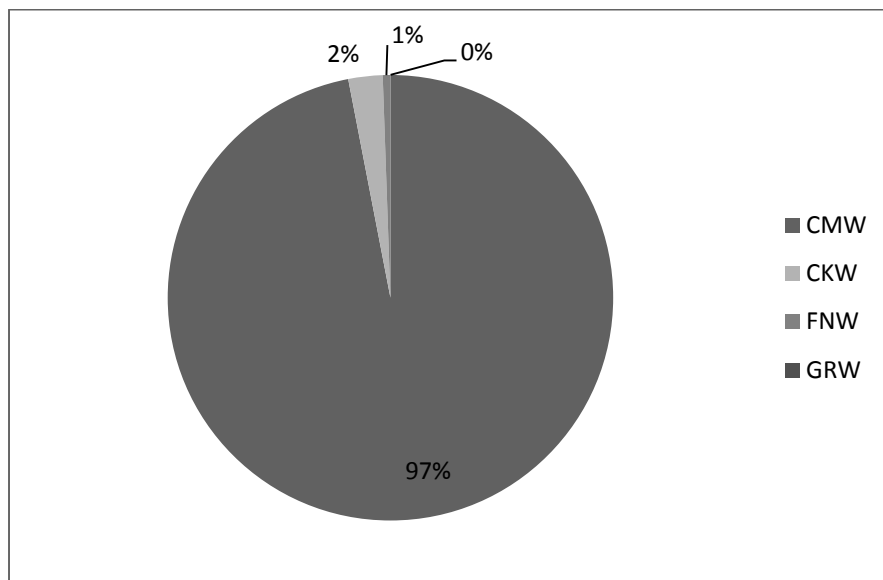


Figure 95. Chart showing the composition of ware in Room 1.2.

The majority of rim diagnostic sherds identified in Room 1.2 has been classified as medium dimension CS08 and OS03. OS miscellanea are also common (10.4%) (Fig. 96).⁴⁶

⁴⁶ The percentage shown in the bar charts has been defined as the ratio of the number of rim sherds of a ceramic shape type over the total number of rim sherds counted in a specific room.

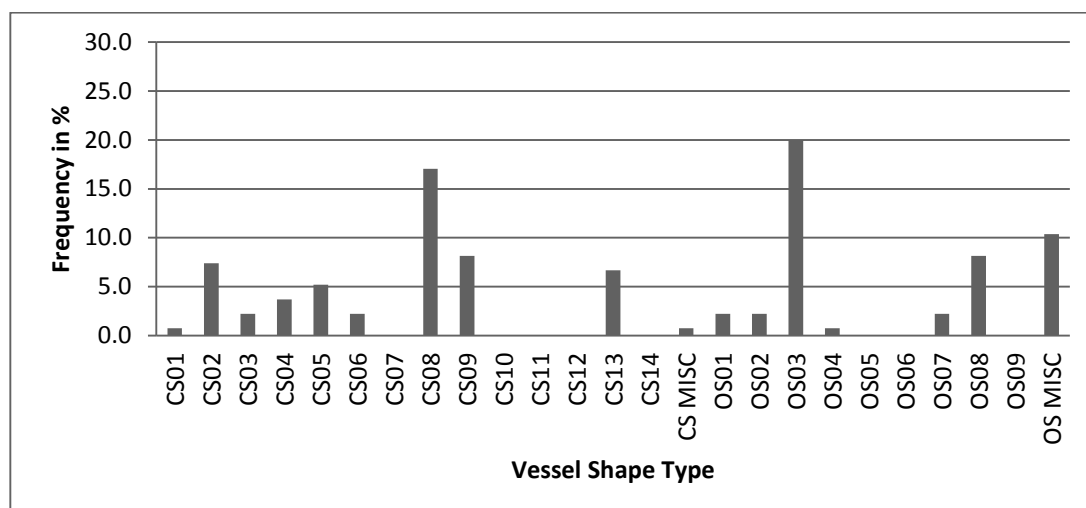


Figure 96. Frequency of ceramic shape types in Room 1.2.

Room 1.3 yielded 124 diagnostic sherds and six complete vessel and complete profile shapes. A fragmentary tray and six fragmentary handles were also found in this room. The majority of the room assemblage has been classified as common ware; 5% out of the room assemblage is cooking sherds (Fig. 97).

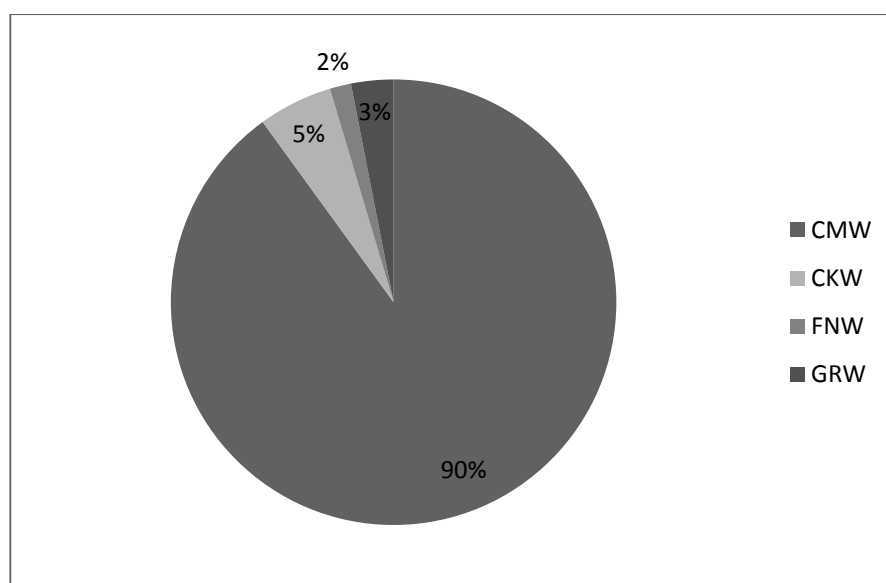


Figure 97. Chart showing the composition of ware in Room 1.3.

Among these shapes there are four closed shapes namely CS01, CS05, CS08 and a complete CS11 (Appendix C Plate 29 No. 1) and one OS03. The majority of the rim sherds identified in Room 1.3 has been classified as medium dimension CS02 and

medium dimension OS03. At the contrary, medium dimension open shapes (OS02, OS04 and OS05) and large dimension OS07 are absent (Fig. 98).

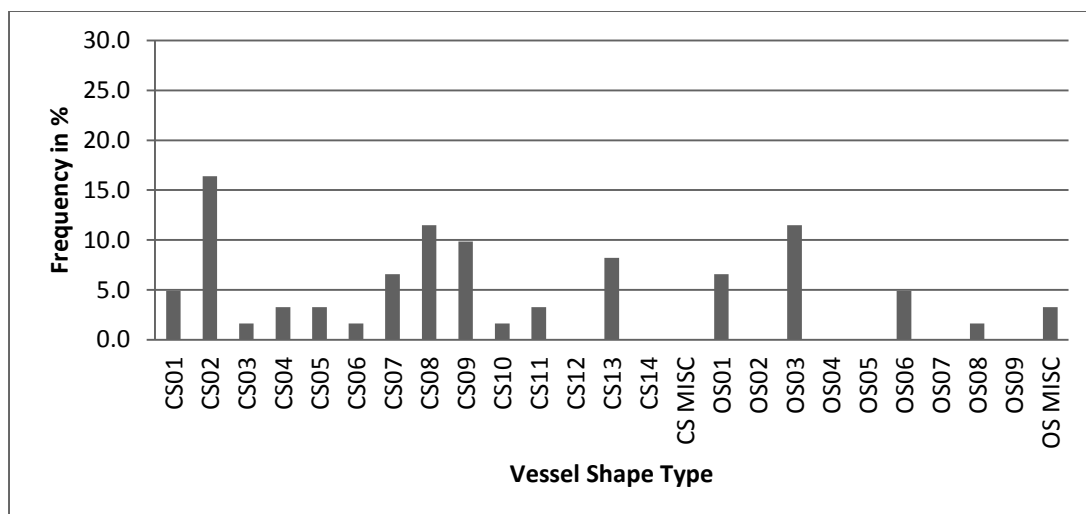


Figure 98. Frequency of ceramic shape types in Room 1.3.

Block 2

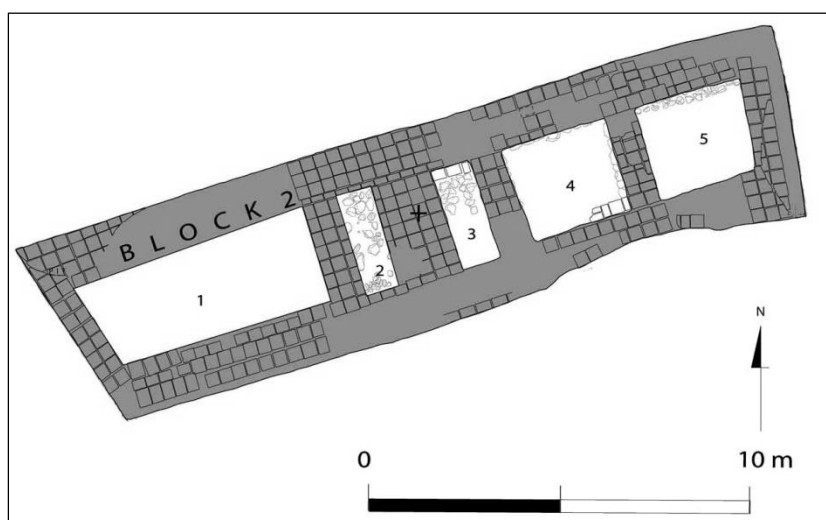


Figure 99. Area M – Block 2.

In **Room 2.1**, 181 diagnostic sherds, most of which is common ware, while cooking ware represents the 4.4% out of the whole room assemblage were brought to light (Fig. 100).

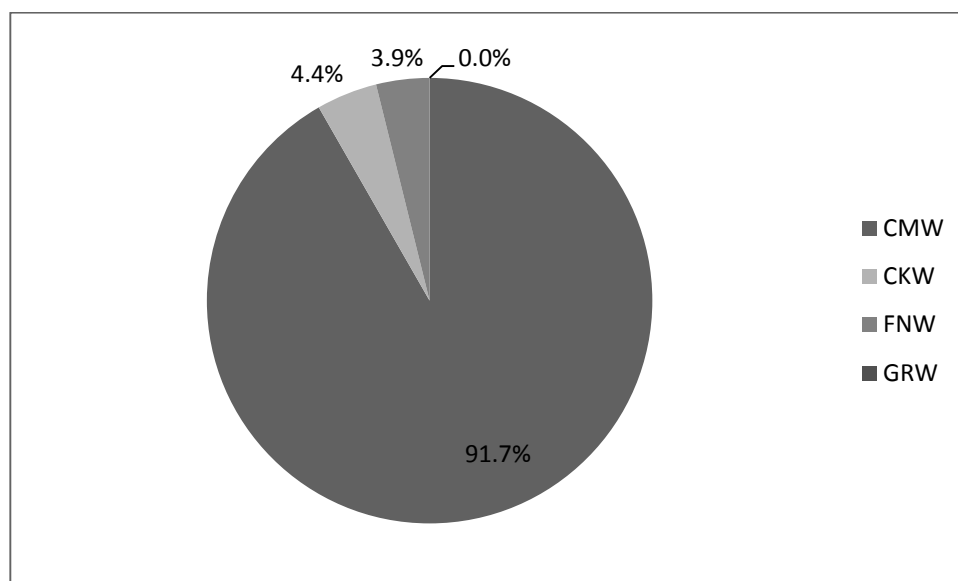


Figure 100. Chart showing the composition of ware in Room 2.1.

As for Room 1.2, most of the closed shapes of Room 2.1 are associated with medium dimension jars CS08 and CS09, while among open shapes OS03 and OS08 are the most frequent (Fig. 101).

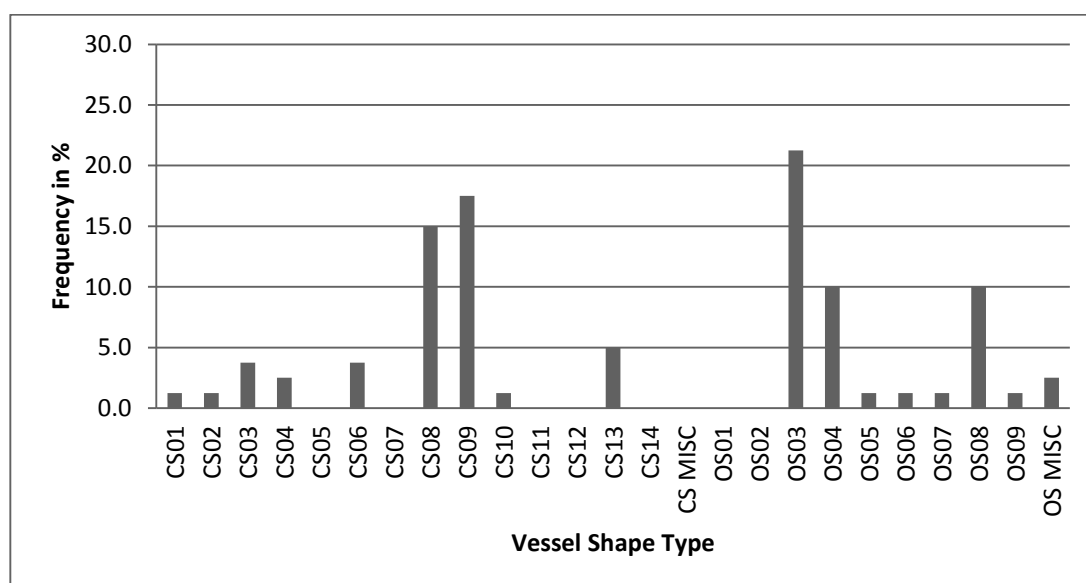


Figure 101. Frequency of ceramic shape types in Room 2.1.

Ten diagnostic sherds were found in **Room 2.2**, while 15 in **Room 2.3**, among which seven are rims associated with CS09 (three sherds), CS13 (one sherd), OS03 (one sherd), OS04 (one sherd) and OS08 (one sherd).

In **Room 2.4**, two small jar stoppers were found, along with 106 diagnostic sherds, of which 50 are rims. Only four sherds have been classified as cooking sherds. Among closed shapes, the most common shape is medium dimension jar CS08, while large dimension OS01 and medium dimension OS03 characterised the open shapes (Fig. 102). No CS01, which would have been suitable for use as jar stoppers, were uncovered in this room.

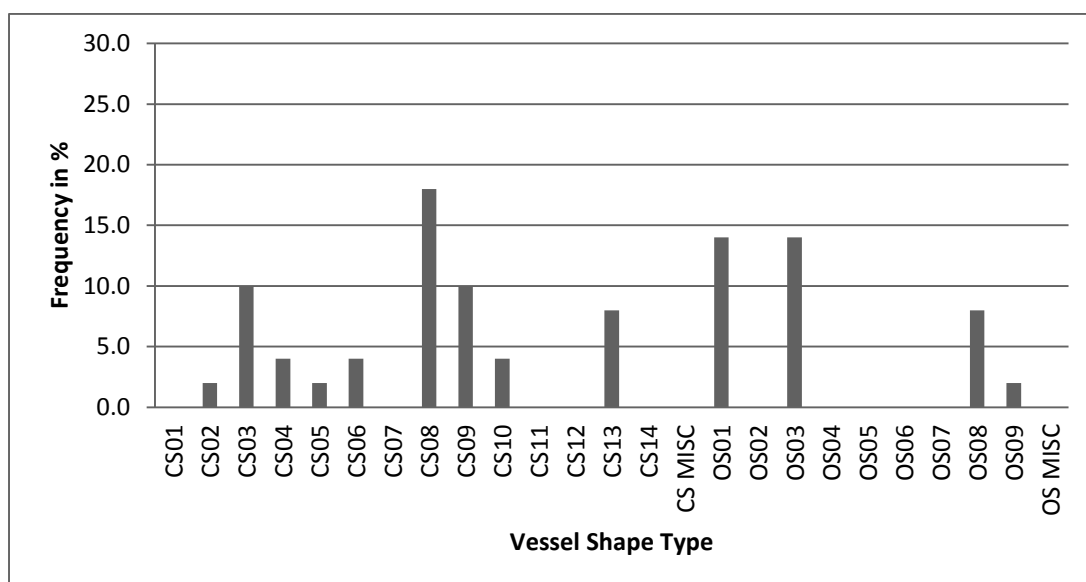


Figure 102. Frequency of ceramic shape types in Room 2.4.

Twenty-five diagnostic sherds were found in **Room 2.5**, among which two sherds belong to a cooking pot (CS13) and two sherds to OS08.

Block 3

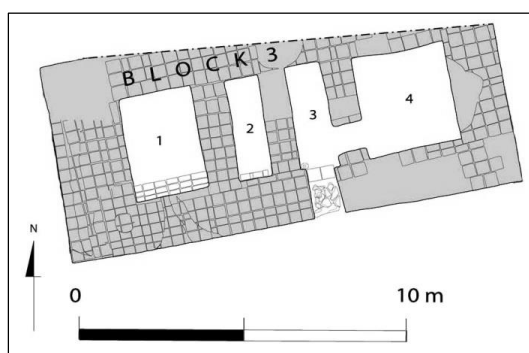


Figure 103. Area M – Block 3.

The ceramic assemblage of **Room 3.1** is formed by 410 diagnostic sherds, most of which have decorations on the body (52.4%). Within the body decoration, one fragment of red-banded Khabur Ware was found (Appendix A, Plate 4 No. 7). The majority of the decorations is combed. A perforated base was also recovered. The ceramic assemblage included also three sherds of Grey Ware (Fig. 104). They probably belonged to a small bottle (CS01). Some of the jar stoppers fit the small dimension OS08 and CS01.

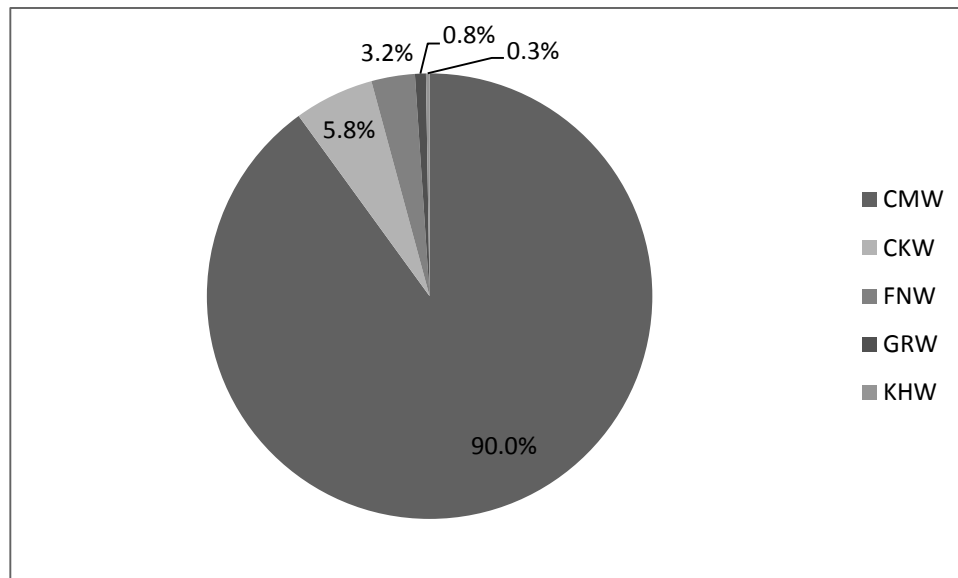


Figure 104. Chart showing the composition of ware in Room 3.1.

Most of the ceramic shapes are associated with the medium/large dimension CS04 (26.4%). Of the open shapes, medium dimension bowls OS02 and large dimension bowls OS09 are the most common (Fig. 105).

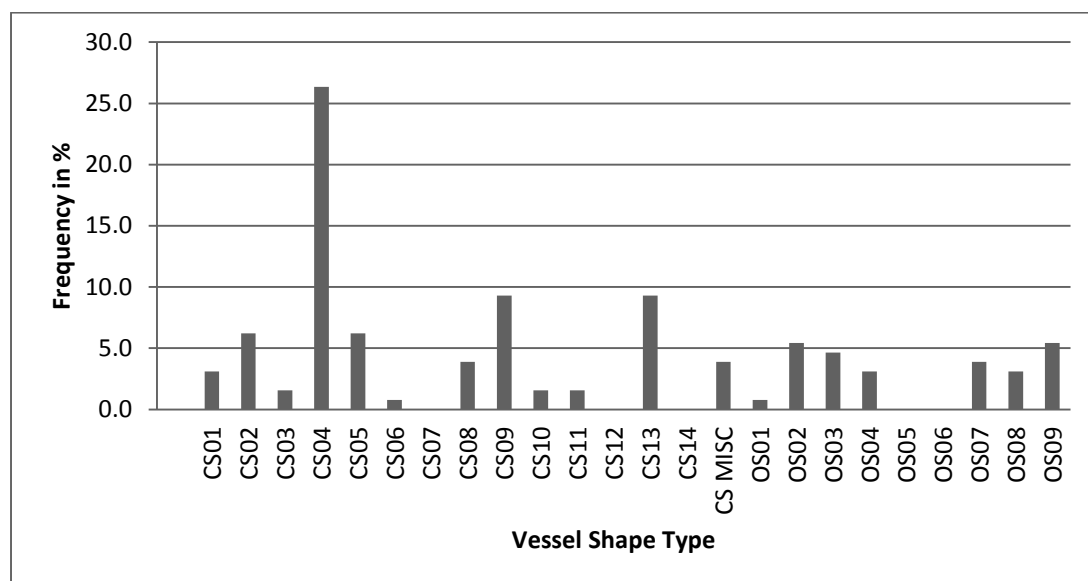


Figure 105. Frequency of ceramic shape types in Room 3.1.

Seventeen diagnostic sherds were recovered in **Room 3.2**, among which three fragmentary handles and five rims sherds. The rim sherds are associated with closed shapes.

Within the 53 diagnostic sherds discovered in **Room 3.3**, 37.7% are rims. Most of the rims are associated with the medium dimension jars CS08 and CS09, and with the small dimension bowls OS08. From Room 3.3, one could have access to the building and to Room 3.4, located to the west of Room 3.3.

Two-hundred and twenty-six diagnostic sherds were found in **Room 3.4**. Among the diagnostic sherds, 45.6% are rims, 28.3% body decorated, 21.7% bases and 3.5% handles. Two complete OS08 were also discovered (Appendix C, Plate 46 No. 8-9). Most of the ceramic sherds have been classified as common ware, although the frequency of fine ware is particularly high here (6.2%) (Fig. 106).

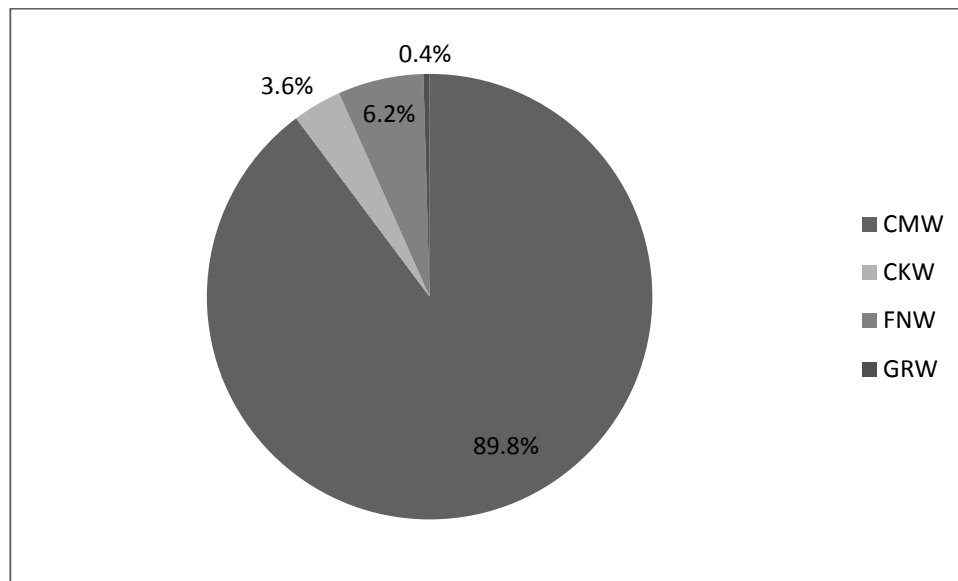


Figure 106. Chart showing the composition of ware in Room 3.4.

Most of the vessel shapes are medium dimension jars, CS08 and CS09, and the medium dimension bowls, OS03 and OS04. It is interesting to notice the high frequency of OS miscellanea (which usually have small dimensions). There is only a very limited presence of the large jars CS04 (Fig. 107).

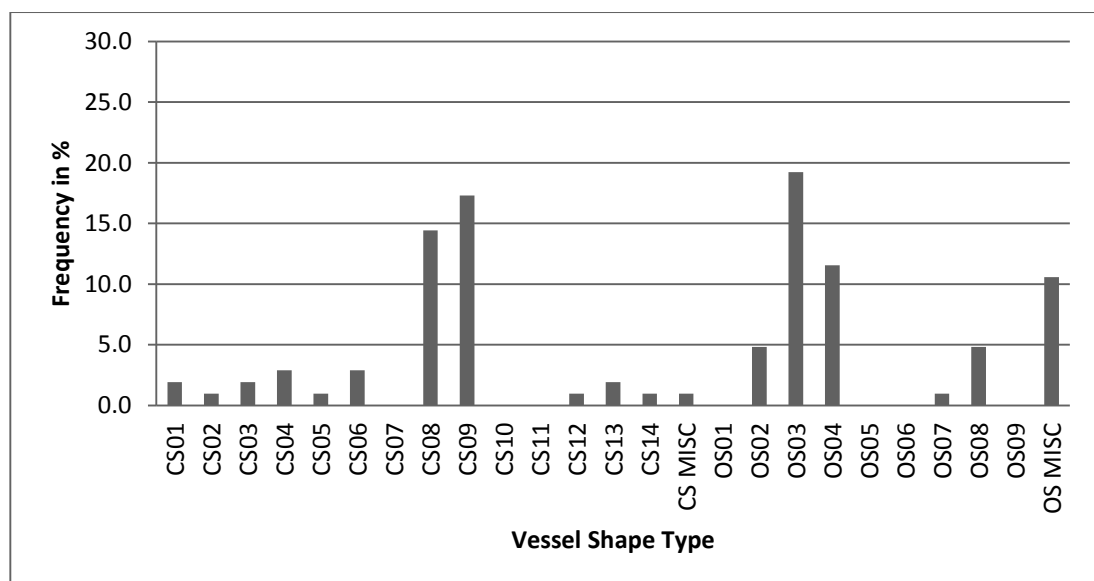


Figure 107. Frequency of ceramic shape types in Room 3.4.

Building M8

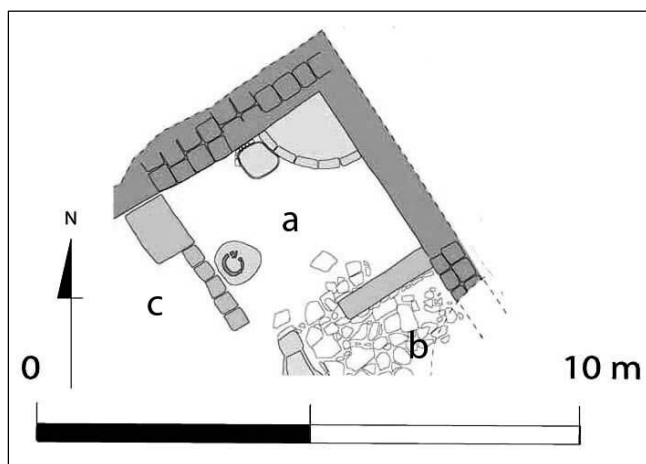


Figure 108. Area M – Building M8.

Three-hundred and forty-seven diagnostic sherds were found in **Room 8.1** (a, b and c, see Fig. 108) of which 40.1% are rims. Common ware and cooking ware sherds form 4.6% of the whole assemblage, whilst fine ware is very scarce (only one sherd), and Grey Ware has not been identified at all. Two perforated bases were found, while on the rims of three large jars potters' marks have been noted. CS08, CS09 and OS03 are again the most common shapes, while CS04 and CS03 are also quite frequent (respectively 8.3% and 6.9%) (Fig. 109). A large basin *in situ* was found against the northern wall of Room 8.1a (Appendix C, Plate 44 No. 1). Two jar stoppers were recovered in this room and they are associated with small dimension OS08.

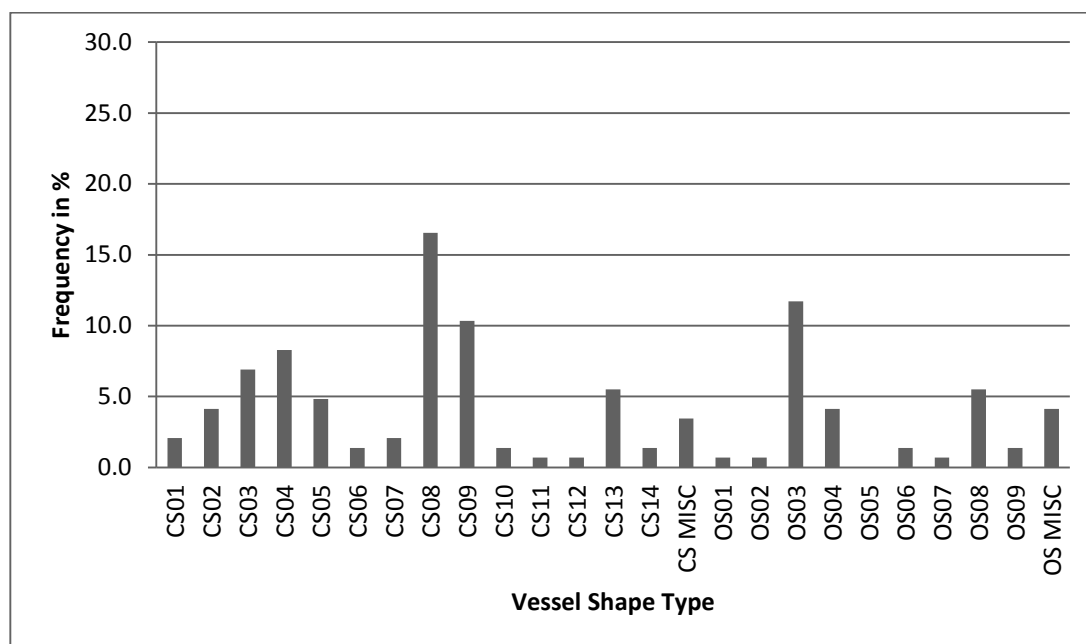


Figure 109. Frequency of ceramic shape types in Room 8.1.

Building M9

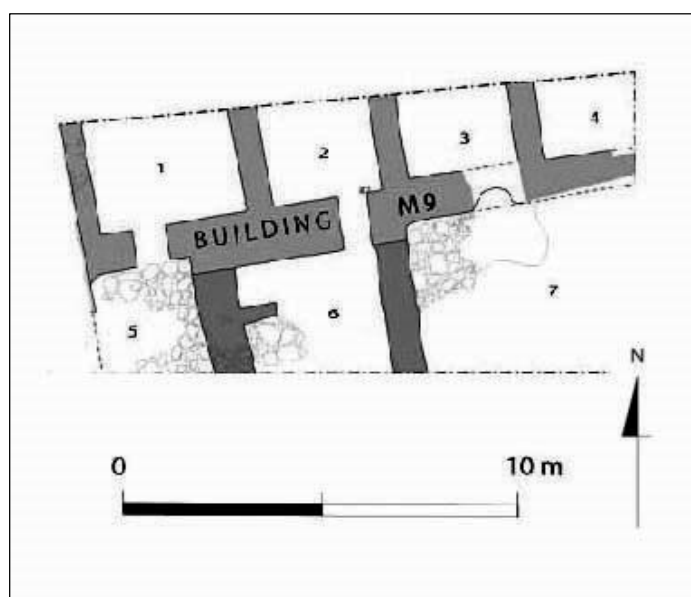


Figure 110. Area M – Building M9.

Ninety-six diagnostic sherds were recovered from **Room 9.1**, of which 45.8% are rims, 29.2% body decorated, 22.9% bases and 2.1% handles. A perforated base was

found, as well as a CS02 fragment with a painted decoration on the rim edge (Khabur Ware) (Appendix C, Plate 6 No. 4). The majority of the ceramic has been classified as common ware, 83.2% as cooking ware, 6.3% as fine ware, and 1.1% as Grey and Khabur wares (Fig. 111).

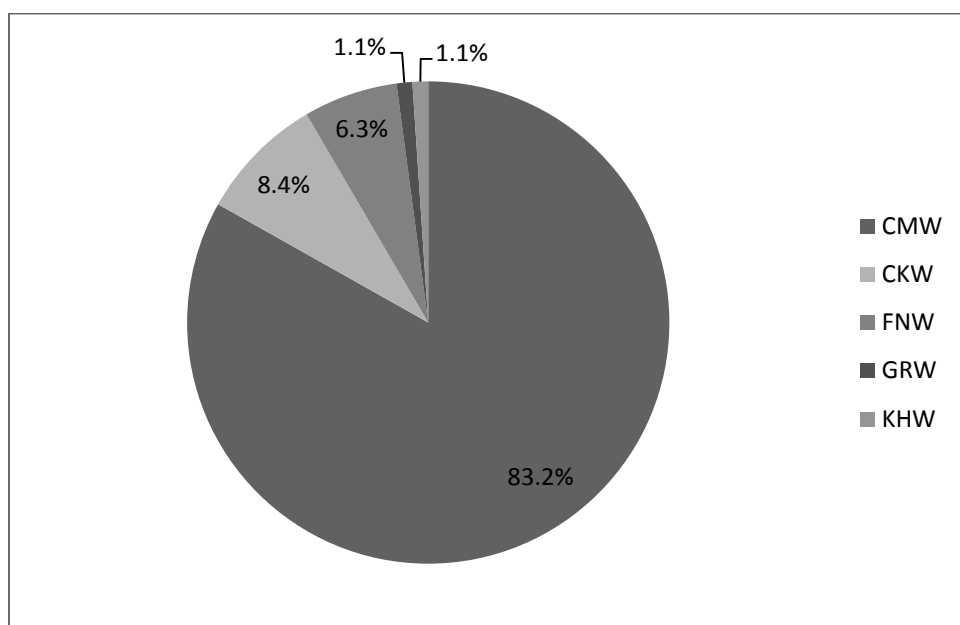


Figure 111. Chart showing the composition of ware in Room 9.1.

Among the rim sherds only, CS08 and CS09 form the majority, whilst CS13 (cooking pots) is also common (9.1%). The most attested open shapes are the large dimension basins OS07 and the small dimension bowls, OS08 (Fig. 112).

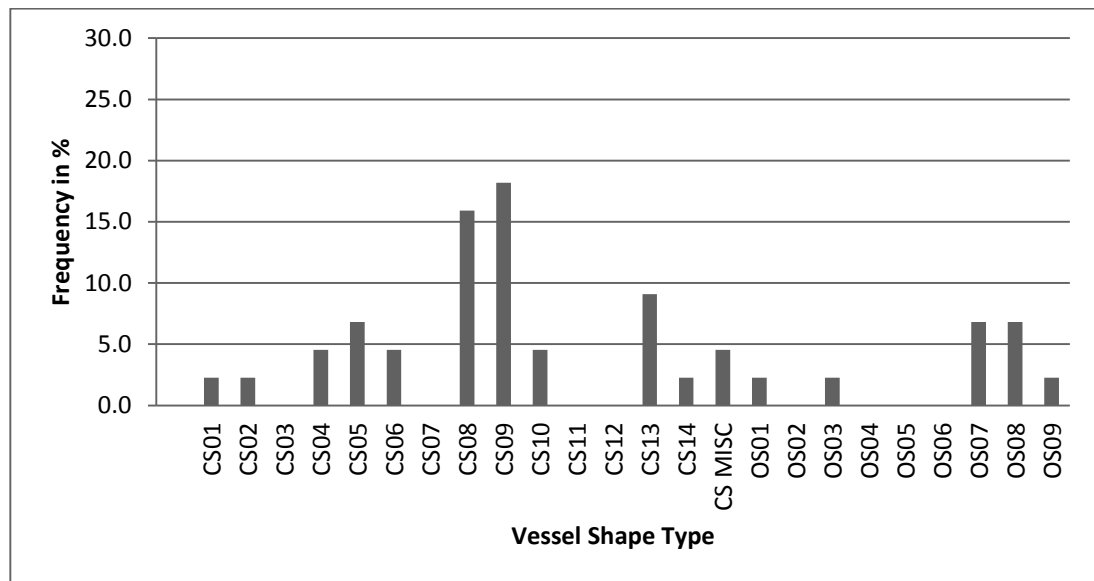


Figure 112. Frequency of ceramic shape types in Room 9.1.

From **Room 9.2**, 242 diagnostic sherds were counted: 47.1% are rims, 33.5% body decorated, 16.5% bases, and 1.7 handles. Three OS08 complete shapes were found in a jar burial. The majority of the ceramic material analysed is common ware (95%), while cooking ware represent the 3.7%. A fragment of Grey Ware was also found and two samples with a painted decoration. CS02, CS08 and CS09 represent the most common closed shapes of Room 9.2, while OS03, OS08 and OS miscellanea the most frequent within open shapes. OS03 is the most common vessel shape type in the room (Fig. 113), with a remarkable percentage of 20.2%.

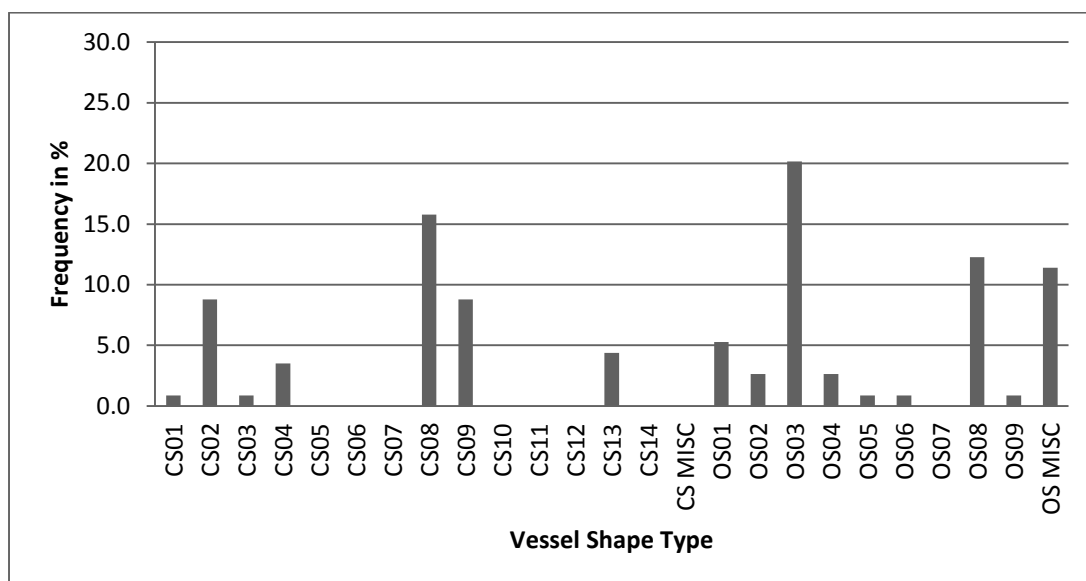


Figure 113. Frequency of ceramic shape types in Room 9.2.

Although in **Room 9.3**, only little ceramic material was found, a jar stopper and 160 diagnostic sherds were recovered from **Room 9.4**: 46.3% rims, 36.3% body decorated, 15.6% bases and 1.9% handles. The majority of the ceramic ware has been defined as common ware (90.7%) while cooking ware represents 7.3%, and fine ware 2.0% (Fig. 114).

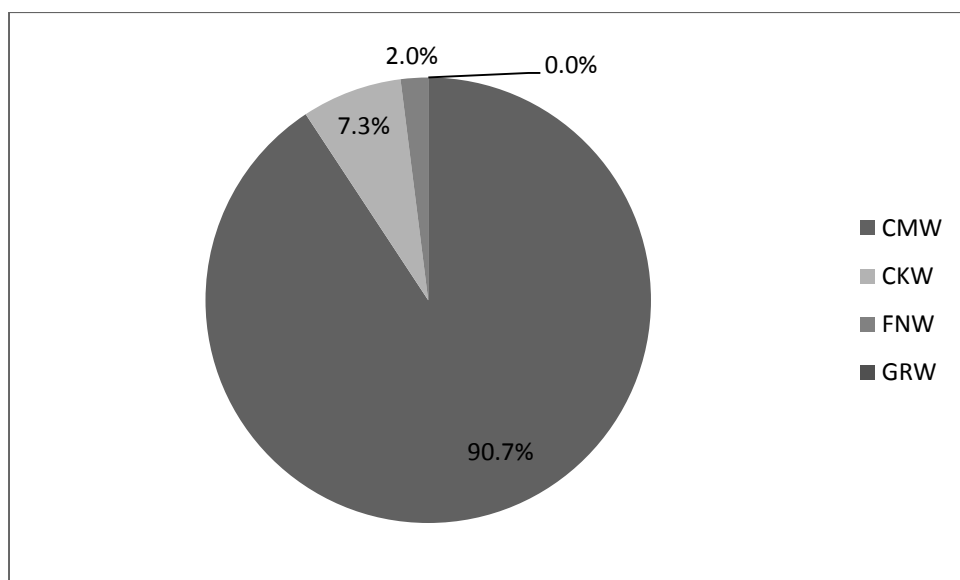


Figure 114. Chart showing the composition of ware in Room 9.4.

Most of the vessel shape types are associated with medium dimension jars CS09, CS08 and cooking pots CS13 (Fig. 115). Among the open shapes, OS03 and OS miscellanea are the most common.

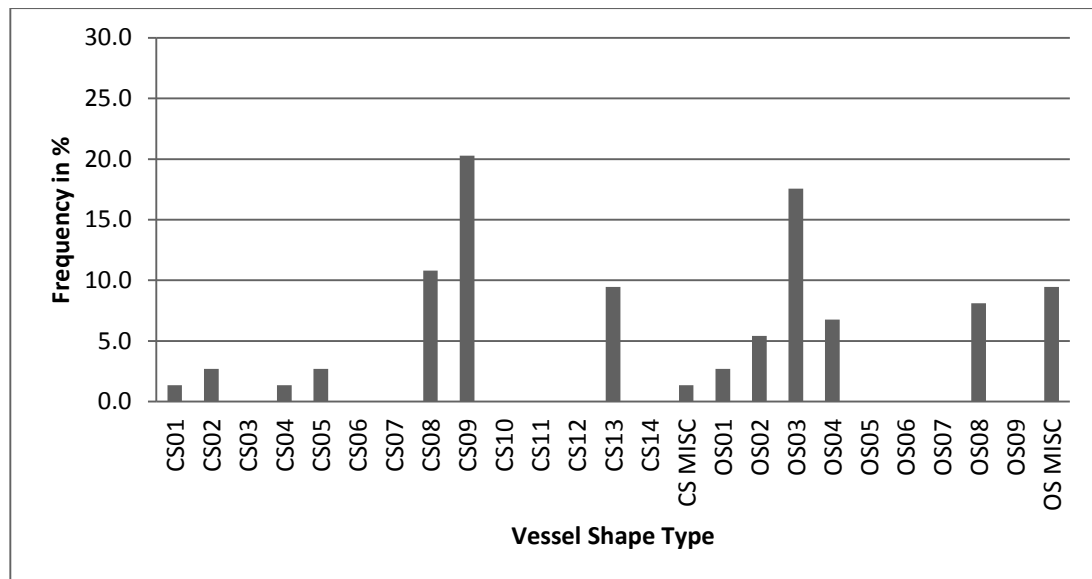


Figure 115. Frequency of ceramic shape types in Room 9.4.

Only four rim sherds were found in **Space 9.5**, while 66 diagnostic sherds in **Space 9.6** and they included a perforated base and a complete profile OS03. The majority of ceramic material has been classified as common ware (87.9%), but cooking ware and fine ware have been also observed (Fig. 116).

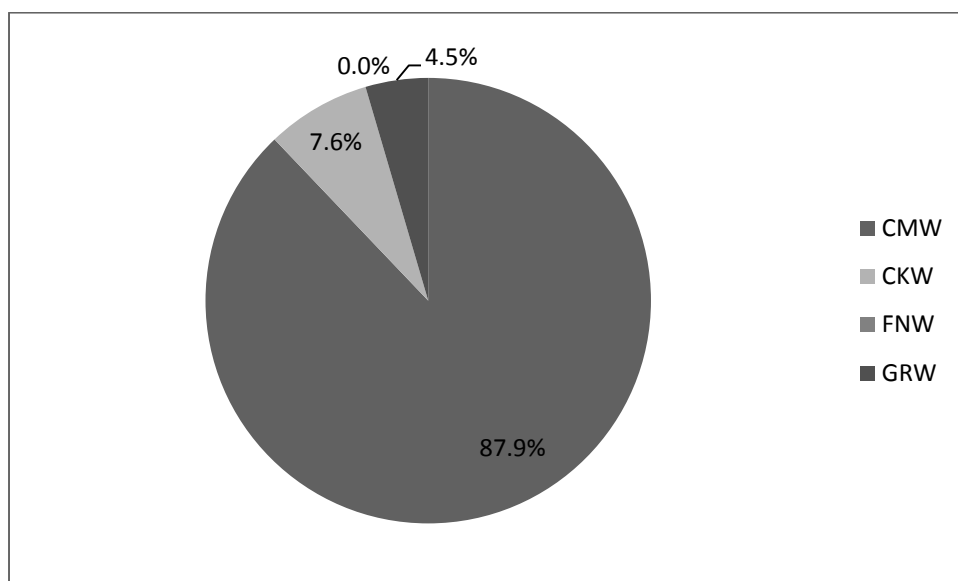


Figure 116. Chart showing the composition of ware in Space 9.6.

Several shape types are represented in Space 9.6. However, OS03 is the most common (19.4%) (Fig.117).

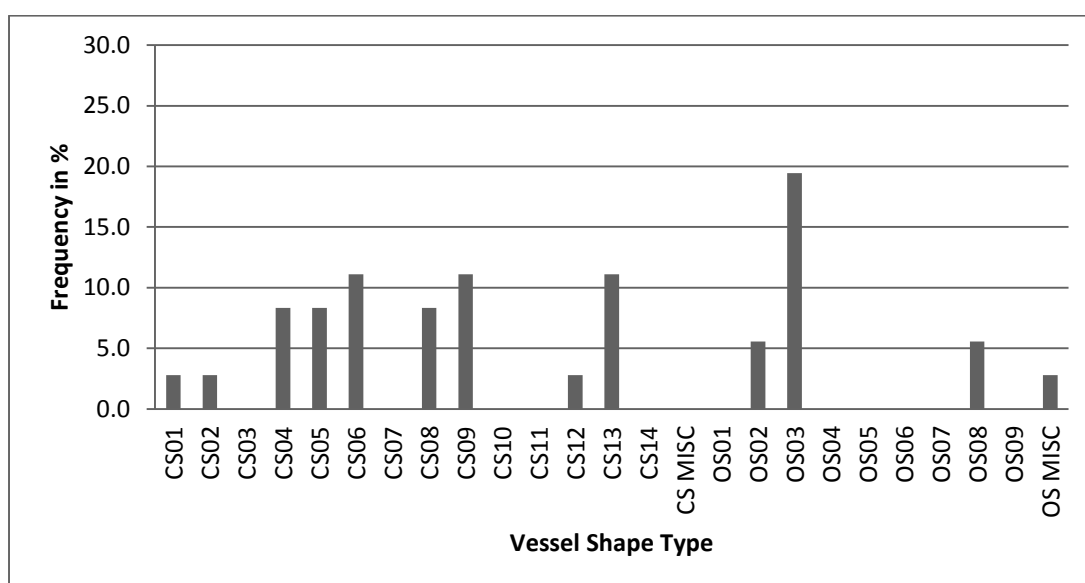


Figure 117. Frequency of ceramic shape types in Space 9.6.

The ceramic assemblage from **Space 9.7** is formed by 203 diagnostic sherds. Most of these are common ware (94.6%), and the rest cooking sherds (3.9%), Grey Ware (1%), and Khabur Ware (0.5%) (Fig. 118).

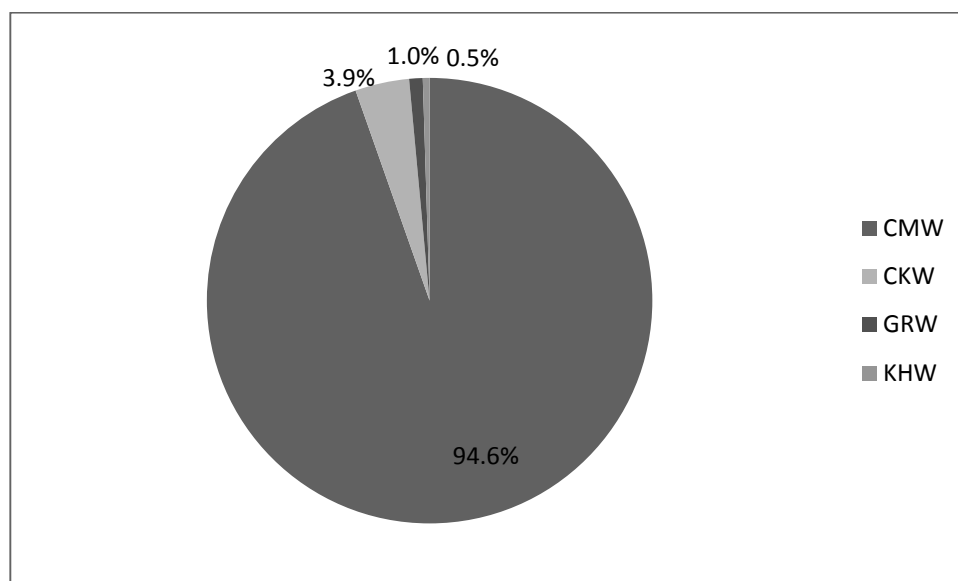


Figure 118. Chart showing the composition of ware in Space 9.7.

As with Space 9.6, several vessel types are also represented in Space 9.7, although in the latter space there is a higher frequency of CS09 and CS08 (Fig. 119). A cup with red paint bands was also found here (Appendix C, Plate 49 No. 6).

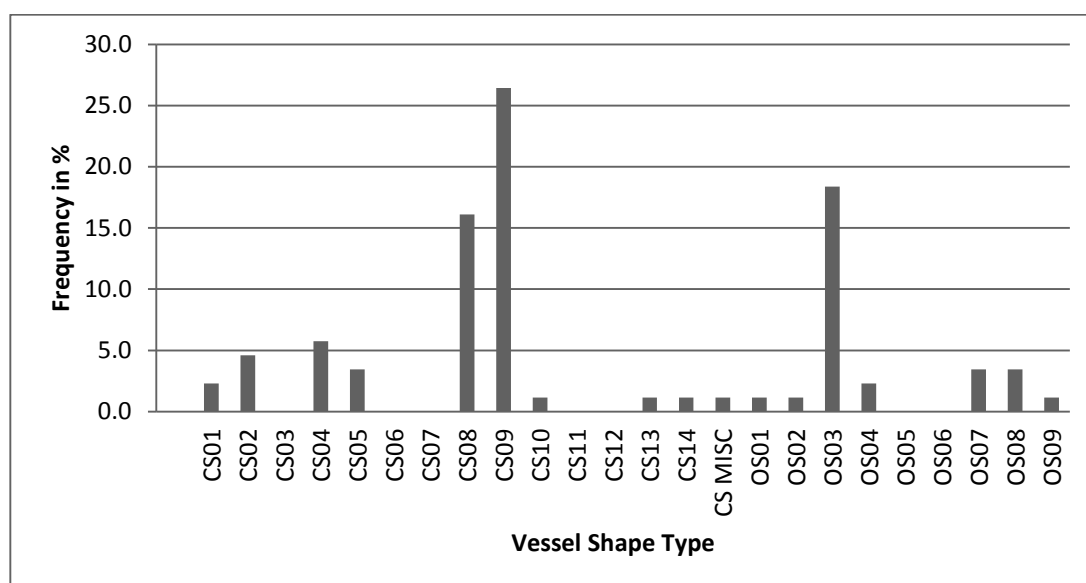


Figure 119. Frequency of ceramic shape types in Space 9.7.

Burnt House

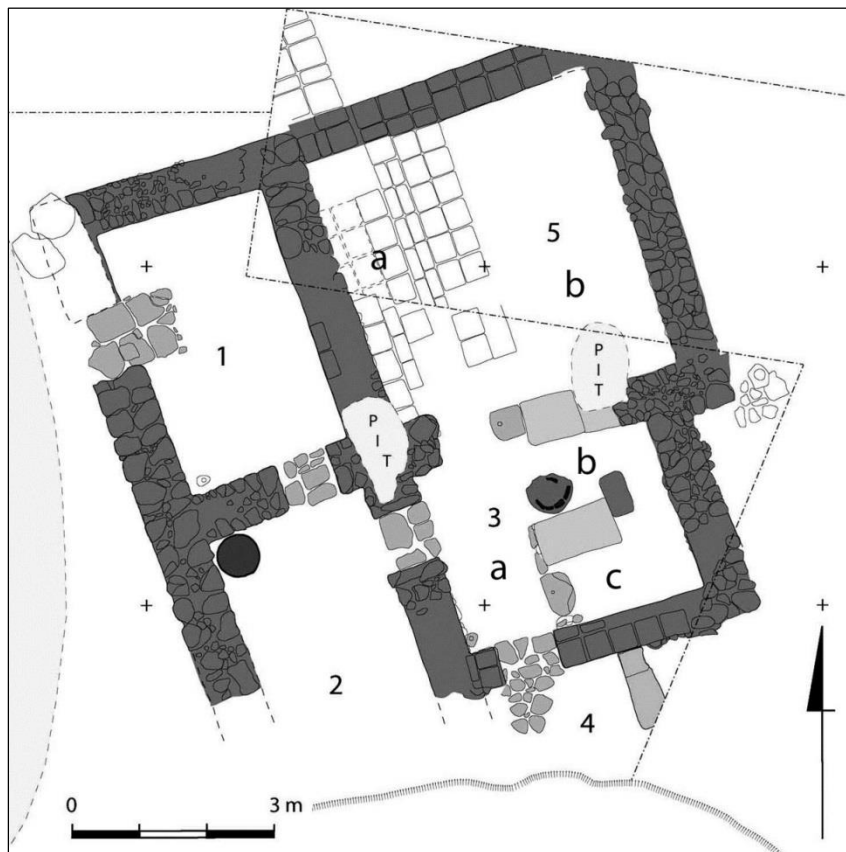


Figure 120. Area S14 - Burnt House.

The assemblage of **Room 14.1** is very rich, with 596 diagnostic sherds and ten complete vessels having been recovered. Within the group of diagnostic sherds, 43.0% are rims, 31.9% are body decorated, 22.0% are bases and 1.3% handles. Of the ware analysed, 92.3% have been defined as common ware, 6.0% cooking ware, 1.2% fine ware, and 0.2% Grey Ware, and 0.3% Khabur Ware (Fig. 121).

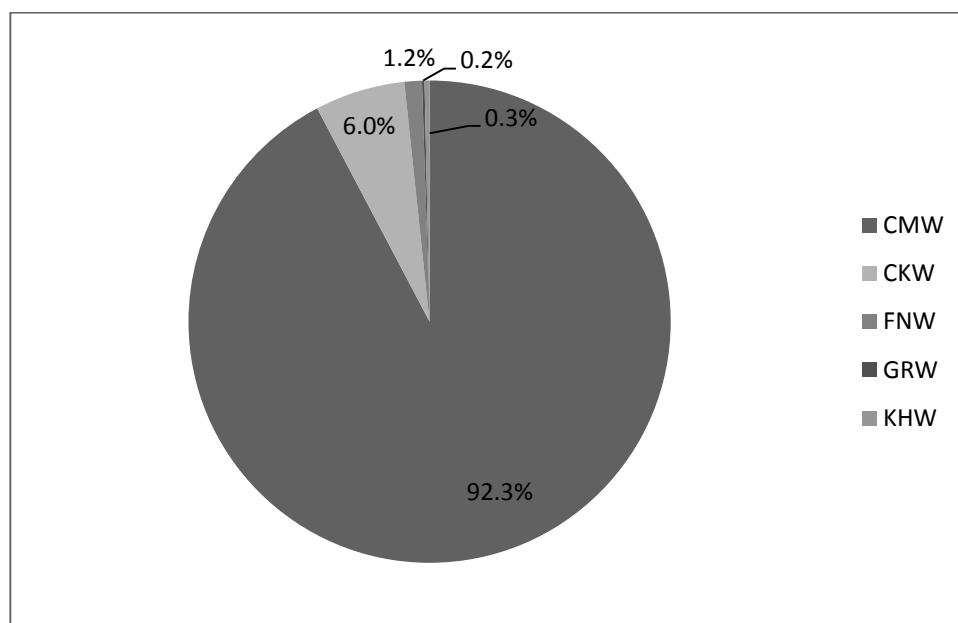


Figure 121. Chart showing the composition of ware in Room 14.1.

The room assemblage shows a high frequency of CS08 and CS09 within closed shapes, and OS03 and OS08 within open shapes (Fig. 122). A CS04 sherd found in this room is characterised by a potter's mark. A perforated base was also recovered.

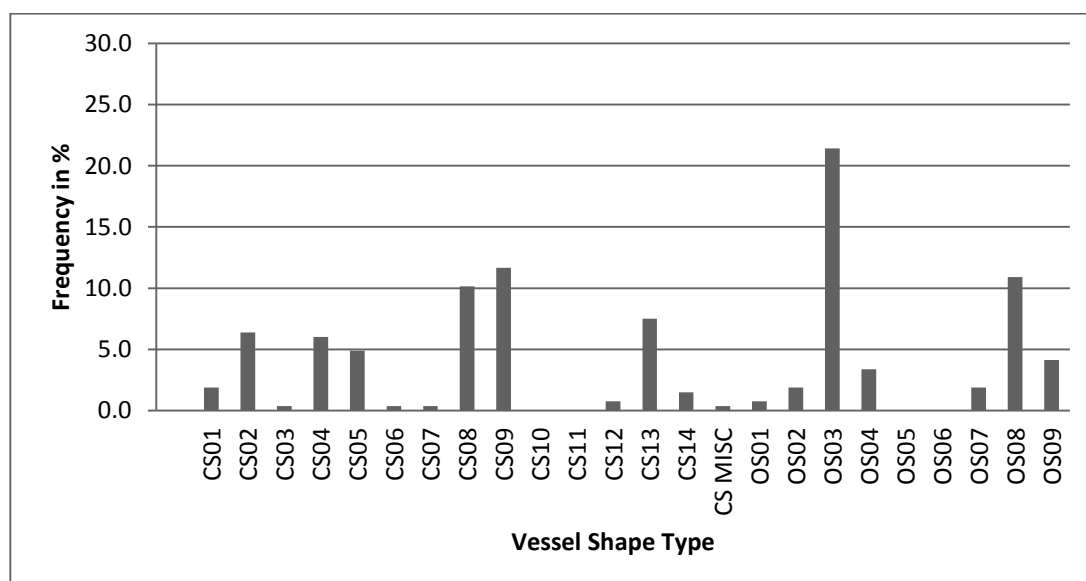


Figure 122. Frequency of ceramic shape types in Room 14.1.

One-hundred and fifty diagnostic sherds and three complete profile shapes were found in **Room 14.2**. Within the diagnostic sherds, 42.0% are rims, 28.0% body

decorated, 22.7% bases, and 4.7% handles. In the northwestern corner of the room, a large jar with perforated base was sunk in the floor of which only the lower part has been conserved (Appendix A, Plate 7 No. 9). The majority of the diagnostic sherds has been classified as common ware (92.0%), while cooking ware represents 4.0%, fine ware 2.7% and grey ware 1.3% out of the whole assemblage (Fig. 123).

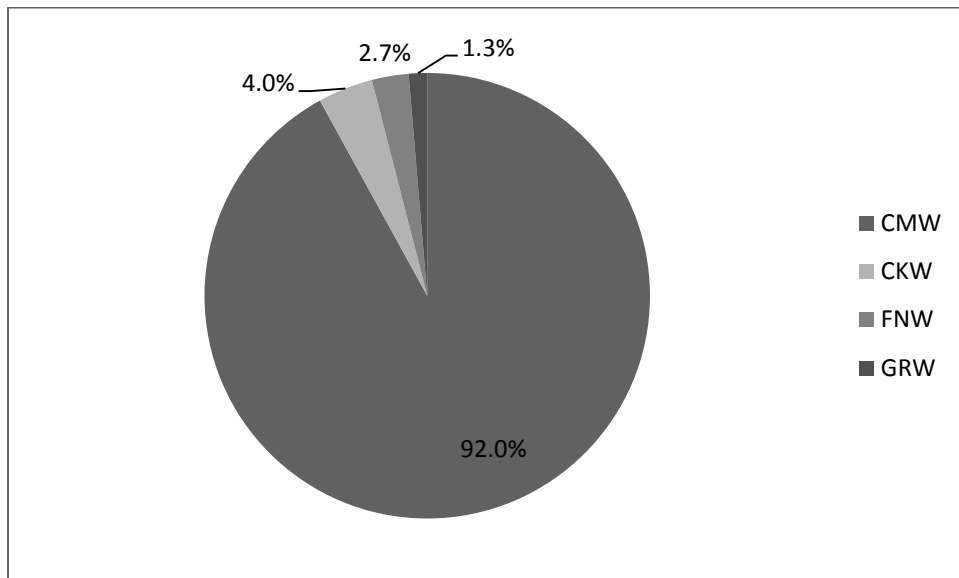


Figure 123. Chart showing the composition of ware in Room 14.2.

The composition of the rim sherds assemblage is very similar to Room 14.1. In Room 14.2, however, the frequency of CS08 and CS09 is slightly higher than in Room 14.1. In fact, CS09 forms 18.5% of the whole assemblage, being equal in percentage to that of OS03 (Fig. 124).

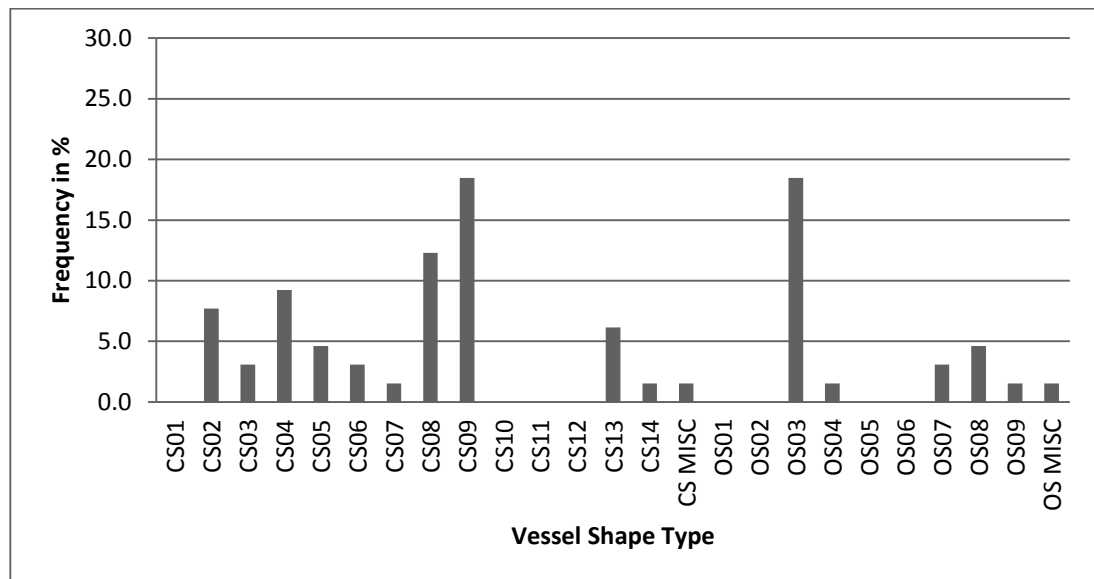


Figure 124. Frequency of ceramic shape types in Room 14.2.

In **Room 14.3**, 240 diagnostic sherds were found, along with five complete vessels of which four come from jar burials. A perforated base was reused for closing the jar burial (Appendix A, Plate 7 No. 10). Three fragmentary red-banded Khabur Ware with decorated bodies were recovered from this room (Appendix A, Plate 4 No. 5, 8, 9). It is interesting to note that the recovered diagnostic sherds assigned as body decorated represent 38.3% of the whole assemblage, while rims represent 34.2% and bases 25.0%. Most of the ceramic sherds analysed have been classified as common ware (86.7%). The presence of fine ware is also considerable (6.3%) (Fig. 125).

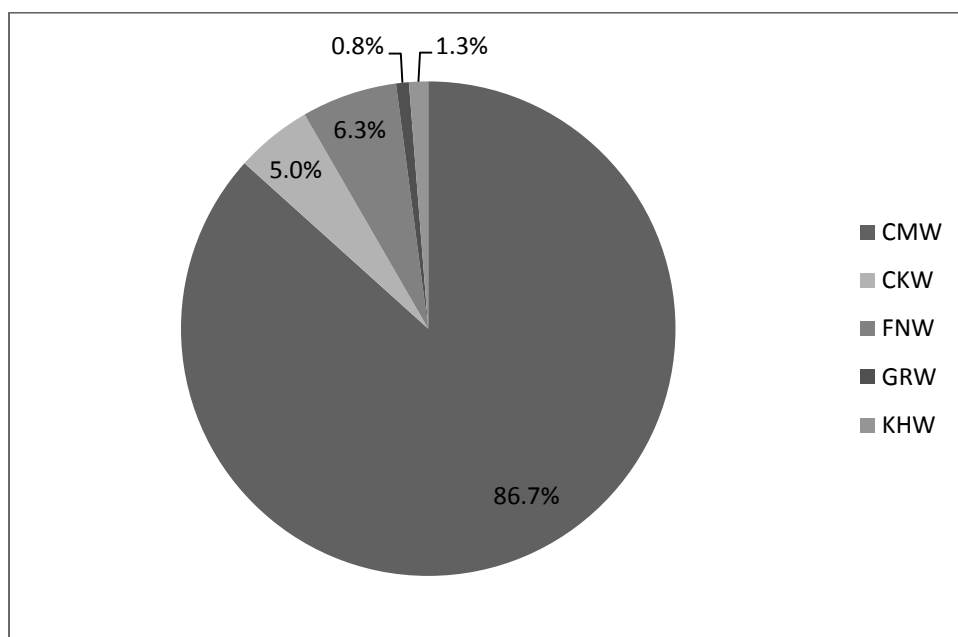


Figure 125. Chart showing the composition of ware in Room 14.3.

Of the 87 rim sherds discovered in Room 14.3, most have been associated with OS03 (25.3%) (Fig. 126). The frequency of cooking pots (CS13) is not particularly high considering that no ovens were found in this room. Within closed shapes, CS08 and CS09 are the most abundant.

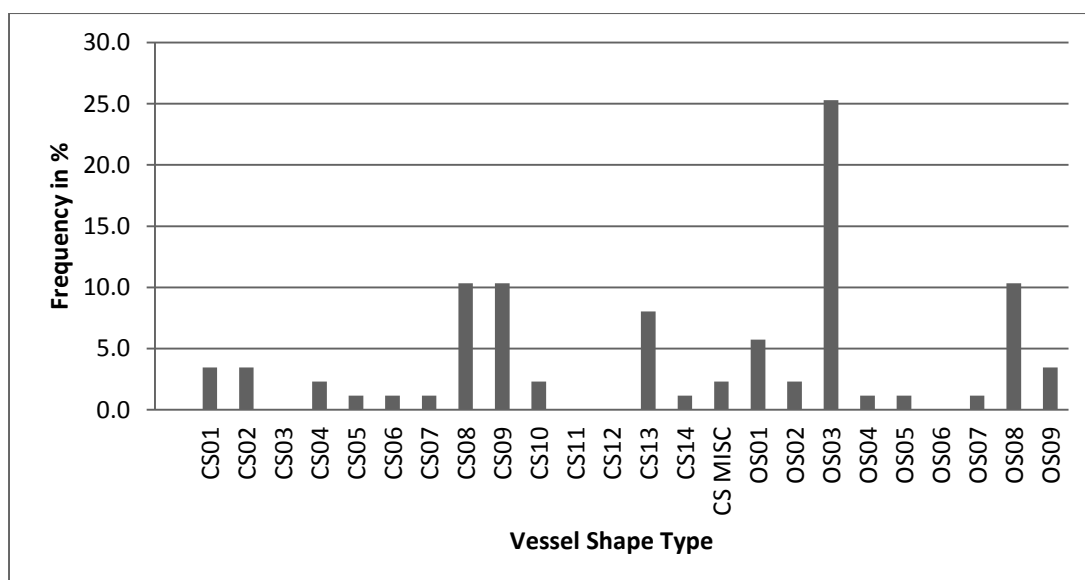


Figure 126. Frequency of ceramic shape types in Room 14.3.

In **Room 14.4**, 36 diagnostic sherds were found: 47.2% are rims, 27.8% are bases, and 25.0% body decorated. The majority of the ceramic sherds has been described as common ware. Only one fine ware sherd and one cooking ware sherd were recovered. Within the 17 rim sherds the majority has been classified as OS03 (23.5%) (Fig. 127). It is remarkable the presence of two diagnostic sherds associated with the large basin OS07. Not many closed shapes were in Room 14.3. Rather, its assemblage seems to be characterised by open shapes.

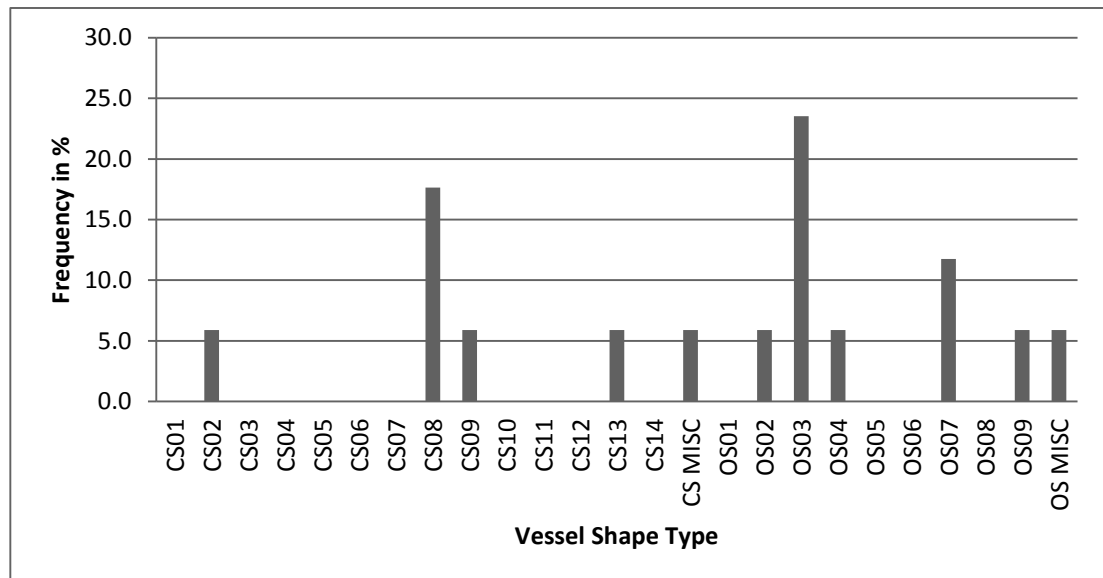


Figure 127. Frequency of ceramic shape types in Room 14.4.

Finally, in **Room 14.5** a complete CS01 (Appendix C, Plate 1, No. 6) and 37 diagnostic sherds were recovered, among which 14 rim sherds. CS01 (three sherds) and CS09 (six sherds) are the most common vessel types.

What does distributional analysis reveal about vessel function?

According to the site formation analysis discussed in Chapter 4, ceramic distribution was further investigated to examine co-occurrences between ceramic shape and activity areas. Of immediate relevance for this study is that different activities will leave varying concentrations of material. More in particular:

- Co-occurrences between ceramic ware and activity area

The analysis of the distribution of the ceramic sherds according to ware typology follows the general pattern of ceramic sherd frequency across the site. Common ware, for example, is particularly abundant in Rooms 1.2, 3.1, 8.1 and 14.1 (Fig. 128).

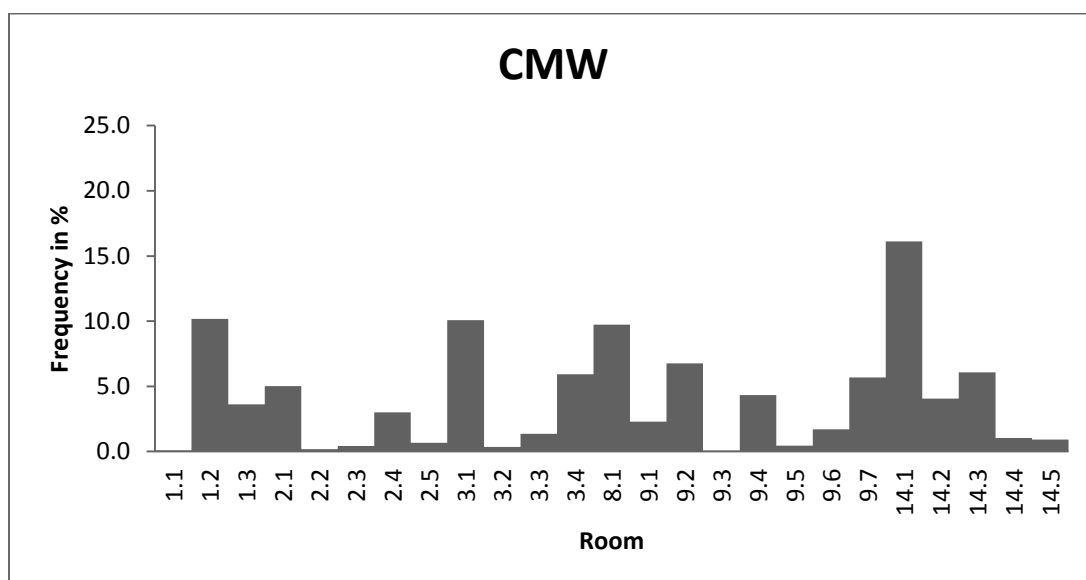


Figure 128. Distribution of common ware sherds across the excavated rooms.

Despite the presence of a *tannur* in both Room 8.1 and Room 14.3, cooking sherds are more common in Room 3.1 and Room 14.1 (Fig. 129).

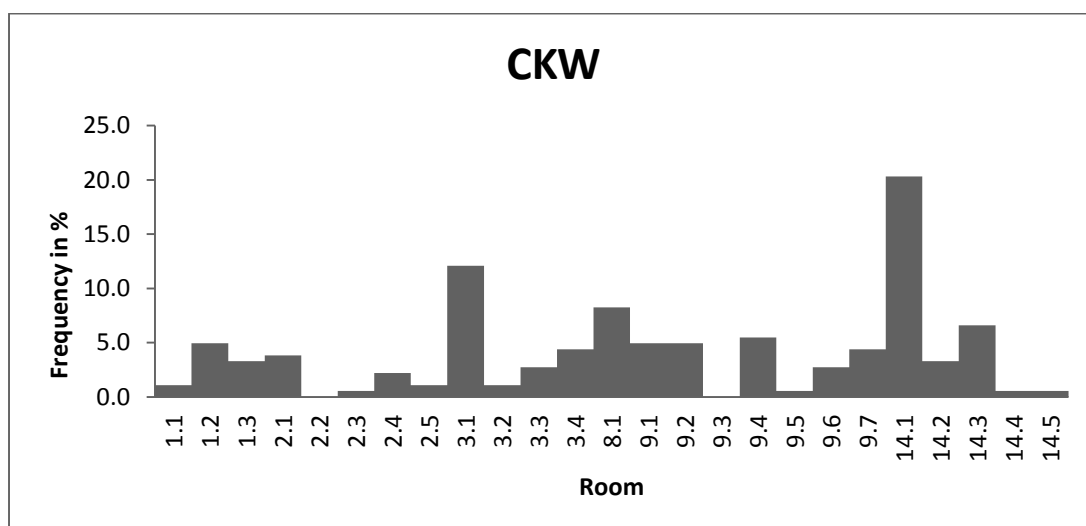


Figure 129. Distribution of cooking ware sherds across the excavated rooms.

Fine ware sherds are not particularly common at Tell Ahmar (see Chapter 5), and they are completely absent in various rooms (Fig. 130). Room 3.4 and Room 14.3 are the rooms that show the highest percentage of fine ware.

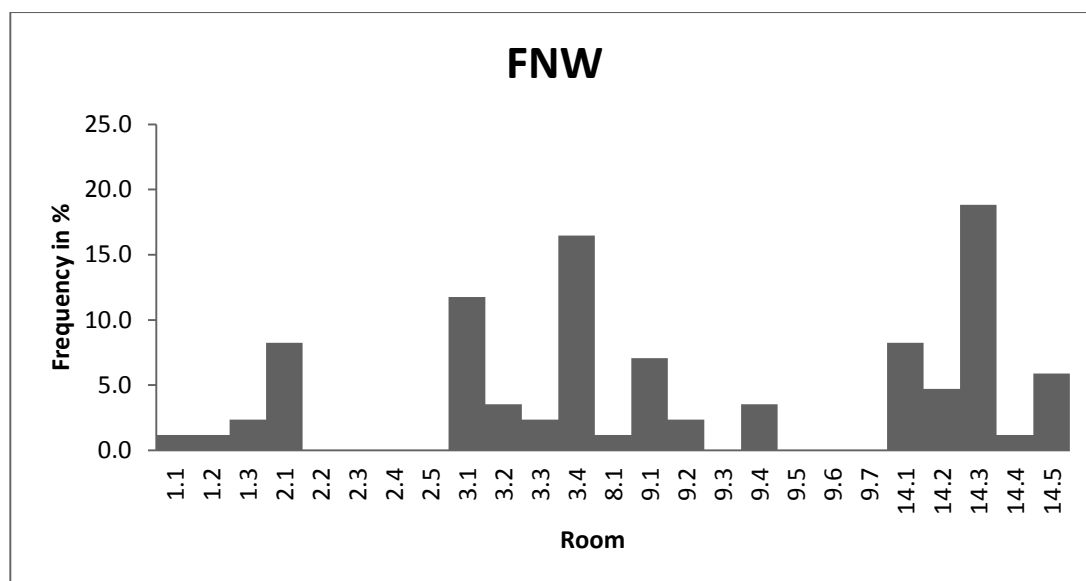


Figure 130. Distribution of fine ware sherds across the excavated rooms.

Specimens of Khabur and Grey Wares are very scarce (less than five), and are completely absent from Block 2 (Fig. 131).

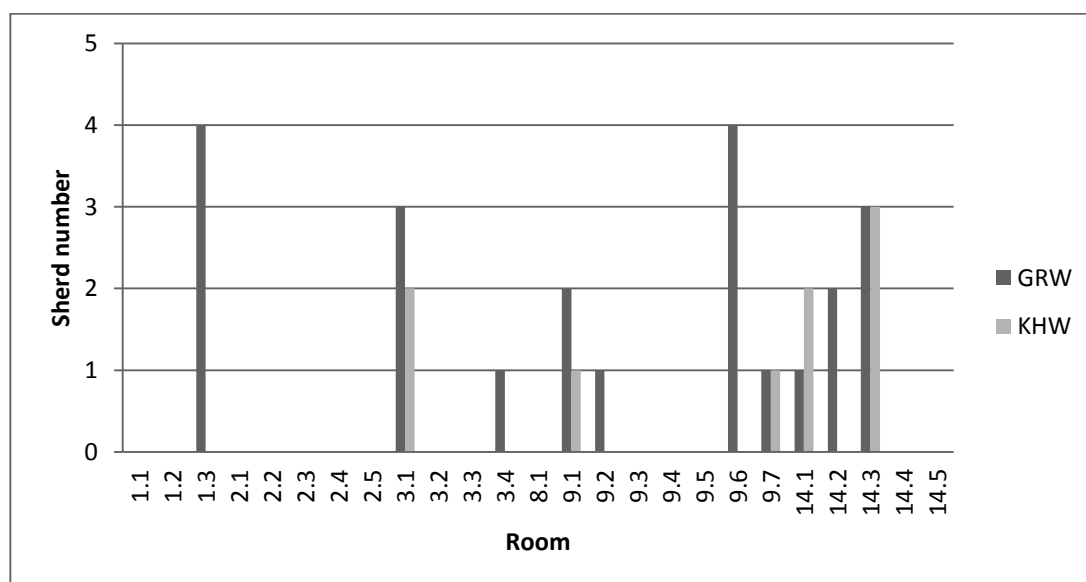


Figure 131. Distribution of Grey Ware and Khabur Ware sherds across the excavated rooms.

■ Co-occurrences between vessel shape and activity area

From a morphological point of view, the two vessel types that recur most frequently at Tell Ahmar (i.e. CS08/CS09 and OS03) are commonly distributed within the rooms, whereas the less common shapes (i.e. CS07, CS10-12, CS14 and OS06-07) occur irregularly across the rooms. A more consistent correlation between vessel shape type and context of recovery has been observed only in a few cases. For example, CS04 was remarkably abundant in Room 3.1 (Fig. 132) while CS09 was more frequent in Room 14.1 (Fig. 133) and OS01 in Room 2.4 (Fig. 134). OS03 and OS08 were more widely dispersed in Room 14.1 (Fig. 135 and Fig. 136). Finally, vessels with a perforated base are more frequent in Room 8.1 and Room 14.1 (Fig. 137).

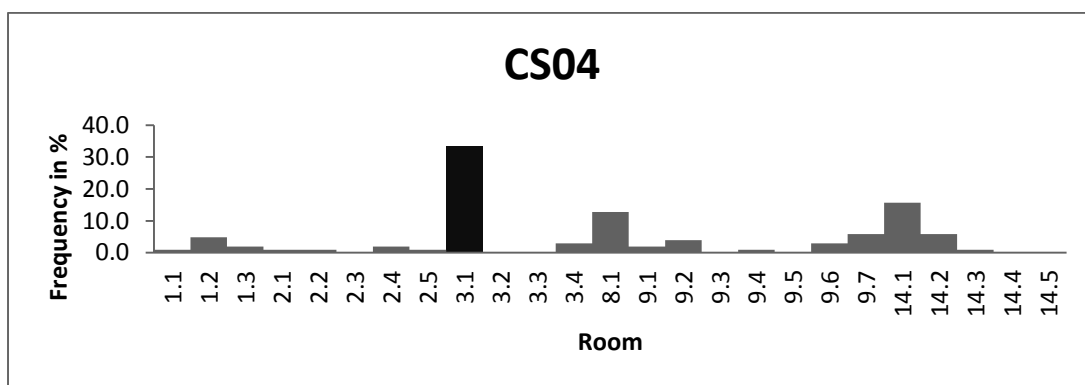


Figure 132. Distribution of CS04 across the excavated rooms.

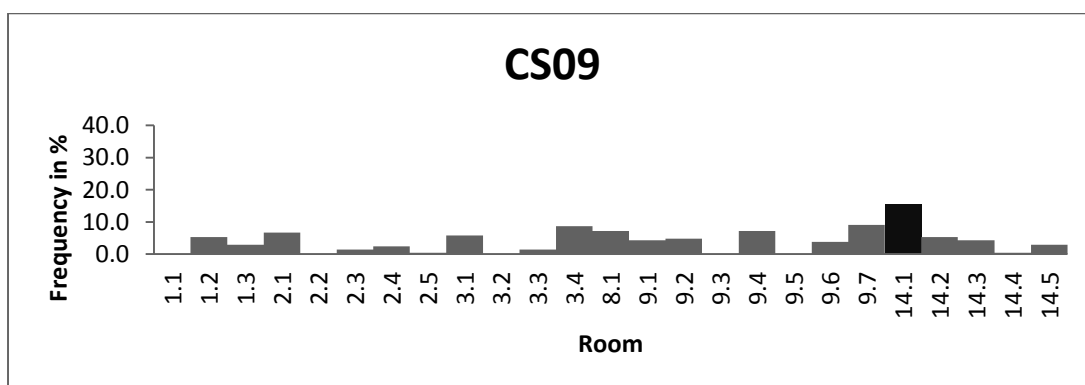


Figure 133. Distribution of CS09 across the excavated rooms.

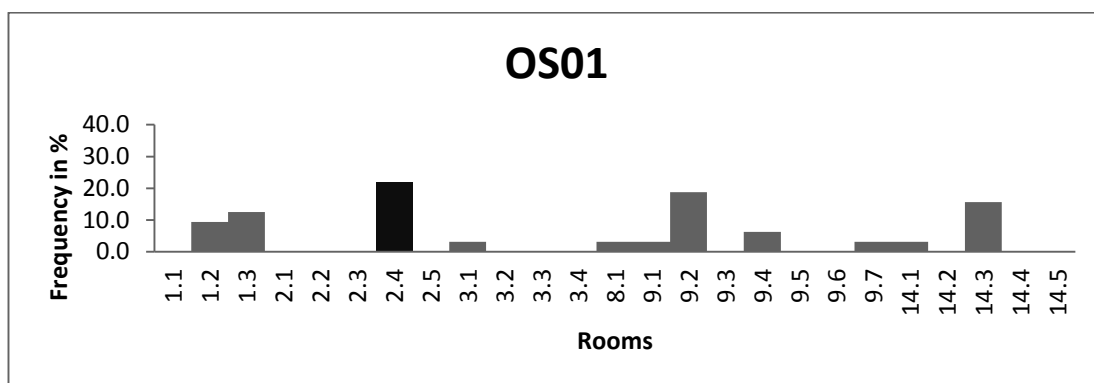


Figure 134. Distribution of OS01 across the excavated rooms.

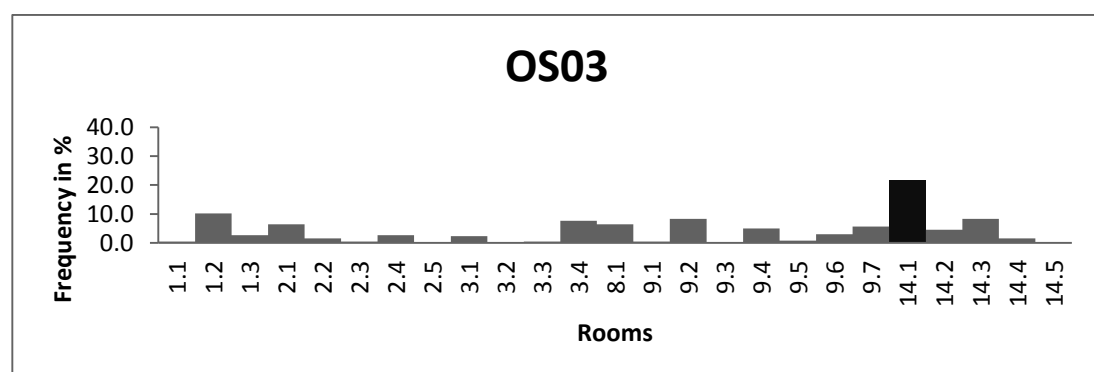


Figure 135. Distribution of OS03 across the excavated rooms.

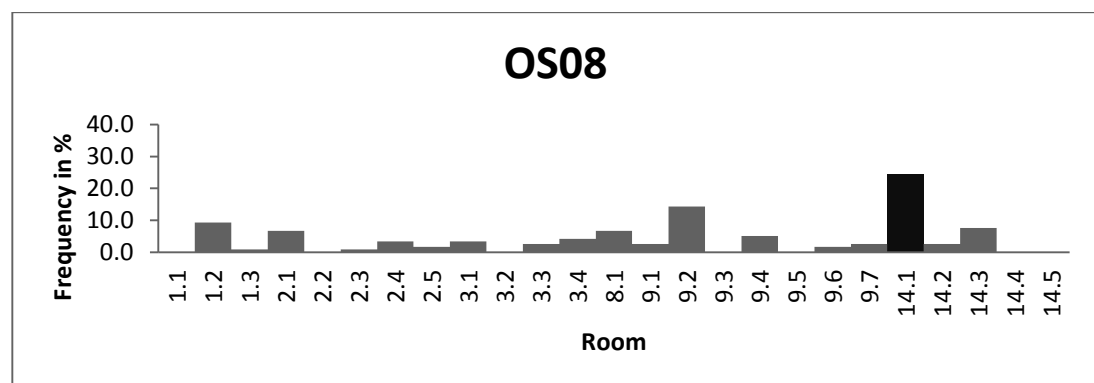


Figure 136. Distribution of OS08 across the excavated rooms.

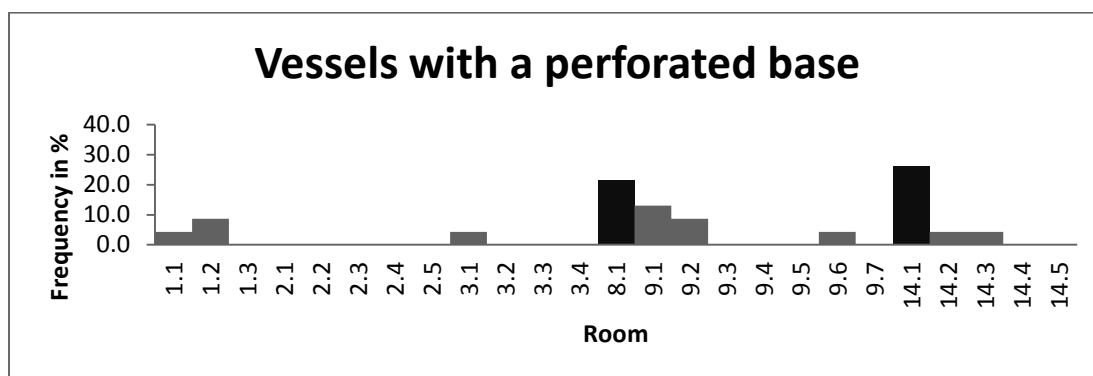


Figure 137. Distribution of vessels with a perforated base across the excavated rooms.

Only limited co-occurrences between vessel shape and activity areas have been observed. However, assuming that the fire occurred suddenly at the site, we should expect to have a more distinct pattern of arrangements of vessel shapes within the rooms. As it has been already discussed in Chapter 4, factors such as post-abandonment disturbances affected only partially the composition of the ceramic assemblage. Although we would have liked the buildings at the site to have been abandoned completely leaving all vessels and other tools in place, this was not the case and the relative uniformity of ceramic distribution discussed in this chapter supports this interpretation. So, how can we explain the pattern of limited co-occurrences of vessel shape and functional activity? Three hypotheses have been formulated to clarify this point:

- a) Immediately after the fire and before the collapse of the room walls, the Tell Ahmar inhabitants entered into the buildings and, attempting to rescue the most valuable objects, disturbed the location of the remaining pottery;
- b) Different activities were undertaken within a room; or
- c) A vessel shape did not always have a specific use, but multi-uses.

Hypothesis a) is only a conjecture, and it cannot be fully verified. We do not know, for example, how fast the destruction affected the buildings (i.e. if it took place already during the fire or immediately after it). However, according to the typology of the material left behind it is likely that it was quite violent since the inhabitants did not manage to gather all their belongings.

Hypothesis b) can be accepted in a way that, although the analysis of the function of the rooms indicates peculiar architectonic features and dimensional specifics for some rooms, these elements cannot exclude that only a single activity was in fact undertaken in a room (see Tab. 48).

Hypothesis c) (i.e. vessel single *versus* multiple-uses) will be investigated in Chapter 10.

- Co-occurrences between different vessel shapes

Co-occurrences between two or more different vessel shapes have been noticed only between CS08/CS09 and OS03. This pattern suggests that these shapes were used together to accomplish the same functions. CS08/CS09 may have been used as a container of goods, while OS03 might either have been a lid for these jars or used in conjunction to contain the material stored in the vessels. This hypothesis will be verified in Chapter 10.

- Co-occurrences between either no-ceramic material (e.g. grinder equipment) or architectonic installation (e.g. *tannur*) and vessel shape

Several grinding equipment sets were found in the rooms at the site (see Tab. 44). It has been noticed that these grinding sets are often in co-occurrence with large dimension vessels with a perforated base. This can suggest a complementary use of these objects. However, one should consider that non-ceramic containers (e.g. baskets) were also used together with grinding activities. On the other hand, co-occurrences between architectonic installation and vessel shapes have not been observed either. Cooking pots, for example, are not necessarily associated with those domestic areas where *tannurs* were found. Moreover, uniformity was also noticed among the vessel shapes that come from the burial context that do not differ from the shapes included in the room assemblage.

Summary

The function of the buildings at the time of the abandonment has been inferred according to room dimension, architectonic features and composition of the no-

ceramic room assemblages. This analysis indicated that Blocks 1-3 and Buildings M8-M9 belong to the same public complex, which was used in association with storage activities. Building M8 and M9 were the living quarters of the personnel in charge of its daily management. In addition, the structure excavated in Area S14 has been associated with a private house (Burnt House).

Given the techno-morphological similarities of the ceramic material that comes from Area M and Area S14, and given that in both buildings traces of fire have been observed, one can assume that the fire that caused the abandonment of the activities' areas occurred in both structures (with some exceptions in Block 2) at the same time.

Relations between ceramic vessel shapes and room activity is summarised in the following table (Tab. 85).

Room	Ceramic shapes recovered	Activity
1.3	A complete CS11 (<i>Pilgrim Flask</i>), a fragmentary tray, sherds associated with CS07b (jug with a trefoil mouth), and three Grey Ware fragments (CS01, OS03 and a foot). CS02 is the most common shape of this room.	Food processing
1.2	Complete OS08, a fragmentary tray, and fragments of a large basin. OS03 is very common in this room.	Storage
1.1	Only little ceramic material has been recovered, but a large jar with a potter's mark underneath the rim (CS04c).	Transport, storage and food processing
2.1	CS09 and OS03 are the most common shapes. In addition, a fragment of a strainer has been found.	Food processing and consumption?
2.2	The ceramic material recovered is scarce.	Casemate or staircase?
2.3	The ceramic material recovered is scarce.	Casemate or staircase?
2.4	CS08, OS01 and OS03 are the most common shapes.	Storage and transport
2.5	The ceramic material recovered is scarce.	Food processing and storage
3.1	Three fragments of Grey Ware, a perforated base, and a red-banded body decorated Khabur Ware. CS04 is the most common shape.	Food processing and storage controlled by an administrator
3.2	The ceramic material recovered is scarce.	Casemate?
3.3	The ceramic material recovered is scarce.	Casemate? Storage?
3.4	A fragment of Grey Ware. CS08/09 and OS03 are the most common shapes. Fine ware is relatively common (6%), as well as open shapes miscellanea (10.6%).	Storage
8.1	A fragment of CS11 (<i>Pilgrim Flask</i>), two bases perforated, two CS04 and a CS10 with a potter's mark. CS08 and OS03 are the most frequent shapes.	Food processing (heating) and storage
9.1	A fragment of Grey Ware, a perforated base, and a fragment of rim sherd Khabur Ware. CS08/CS09 and CS13, and OS07 and OS08 are the most common shapes. In addition, fine ware is relatively common (7.4%), as well as cooking ware (8.4%)	Storage

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Room	Ceramic shapes recovered	Activity
9.2	A fragment of Grey Ware and a fragment of a strainer. CS08 and OS03. OS miscellanea are also very common (11.4%).	Storage controlled by an administrator
9.3	The ceramic material recovered is scarce.	N/A
9.4	CS09 and OS03 OS miscellanea are common (9.5%). Cooking ware forms the 7.3% out of the whole room assemblage.	Storage or living area?
9.5	The ceramic material recovered is scarce.	Food processing
9.6	CS06, CS09, CS13 and OS03 are the most common shapes. In addition, cooking ware and Grey Ware have both been attested (respectively 7.6% and 4.5% out of the whole courtyard assemblage).	N/A
9.7	Three fragments of large basin OS07, two Grey Ware sherds, and a cup with red paint bands (Khabur Ware). The most frequent shapes are CS09 and OS03.	Food processing, (collective) consumption and storage
14.1	A perforated base, a Grey Ware fragment, a large jar CS04 with a potter's mark, and two fragments of Khabur Ware (one as CS01). CS09, OS03, OS08 and cooking ware (6.0%) are the most common shapes.	Food processing
14.2	Two fragments of large dimension basin OS07, two Grey Ware sherds, and a perforated base sunk into the floor. CS09 and OS03 are the most common shapes.	Storage
14.3	Two Grey Ware sherds, a perforated base, and three fragments of Khabur Ware (one rim sherd OS03). OS03 represents 25.3% out of the whole rim assemblage. CS08/CS09 and OS08 are also common. Cooking sheds forms 5.0% out of the whole room assemblage, while fine ware 7.5%.	Food processing (heating)
14.4	The ceramic material recovered is scarce.	N/A
14.5	The ceramic material recovered is scarce.	Staircase?
Upper floor?		Food processing and consumption

Table 85. Associations between vessel shapes and room functional activities.

Assuming that particular vessel shapes were associated with particular contexts, we now have to investigate what pottery was used for in order to refine how the spaces functioned. This analysis is undertaken in Chapter 10.

9. Northern Mesopotamian and Syrian evidence of vessel function

The analysis of the MBA archaeological evidence undertaken in this work (see Chapter 3) includes a ceramic comparative study which focuses on functional information on vessel shapes as provided by the scholars, along with the examination of the documents of vessel function from epigraphic and iconographic sources. However, inferring vessel functions from epigraphic and iconographic sources presents some limitations that need to be taken into consideration:

- a) Both textual and iconographic evidence are almost exclusively associated with the elite, and are seldom related to everyday situations.⁴⁷ The majority of the epigraphic and iconographic evidence discussed in this work is associated with Royalty and Royal Court contexts. Particularly in relation to epigraphic documents, one should bear in mind that the lower class was generally illiterate, so information recorded by scribes was inevitably skewed towards the higher class.
- b) Textual reference to vessels may be misinterpreted by the scholars. Often there is some confusion, for example, whether a term refers to a type of vessel, to its content, or to a unit of measurement (e.g. *karpātu*). In addition, the material used to make the vessel is rarely specified, so it may refer not only to clay, but to stone or metal as well.
- c) Iconographic representations of vessels may refer to a typical shape in common use, but it may also be that such representations refer to atypical vessels, which are of greater interest. For example, a rare vessel used only during a specific ritual, may be more common in iconographic representations than a common jar used for transporting water every day.
- d) In ancient iconographies, vessels are often represented in a stylized way (especially in the seals). Vessel dimension and proportion should also be

⁴⁷ See, however, the Egyptian representations in Pritchard, 1954.

carefully interpreted, since representations would seldom have been shown to scale.

Ceramic evidence of vessel function

As it has been emphasised in Chapter 2 and Chapter 3, ceramic functional approaches are very limited for this particular field of research and interpretations of vessel function address to some shapes in particular (i.e. Ahmar CS04, CS08, CS09, CS11, OS01, OS03 and OS09). This paragraph offers an overview of the vessel functions as interpreted by the scholars. This data will be further examined in Chapter 10.

CS04: at Qara Quzaq archaeologists argued that these shapes were used to store grain (Olávarri & Olmo Lete, 1994). Residue remains collected from similar shapes at Ebla seem to confirm that CS04 were used to contain indeterminate liquid or grain (Pinnock, 2005). In another room of the Northern Palace at Ebla, a CS04 type was found completely sunk into the floor (Pinnock, 2005). Pinnock argued that this characteristic would have helped to maintain the liquid's coolness inside the jar. At Tell Aushariye CS04 were also found completely sunk into the floor of a house. Eidem suggested that they were used to hold water that was kept cool in this way.⁴⁸ At Qala'at Halwanji similar shapes were found embedded in the floor and placed in a row. Eidem argued they were used to contain wine. McMahon suggested that the CS04 found at Chagar Bazar, especially those with a larger rim diameter, were used for water storage with access to it by a small bowl. McMahon argued that CS04 with a more restricted mouth were probably used to contain grain (McMahon, 2009).

CS08: For the CS08 found at Baghouz, Du Mesnil du Buisson argued that they might have been used in relation to beer consumption, given that near the jar a metal strainer used in conjunction with a straw was commonly found, and probably used to drink beer (Du Mesnil Du Buisson, 1948). Pulham argued that at Tell Leilan these jars were used for the delivery and consumption of beer, probably through a metal straw (Pulhan, 2000). At Aushariye and at Ebla similar jars were found in

⁴⁸ <<http://www.aushariye.hum.ku.dk/english/midbronze.htm>>.

association with water cisterns. This specific location suggests that they were used for transporting water, probably from the cistern to the consumption area or to draw water from the well (Baffi-Guardata, 1994). From the functional analysis of the ceramic vessels found in the LBA levels at Tell Bazi, Otto argued that beer was drunk either from bowls or through tubes out of medium-size jars (CS08?) placed on pot stands (Otto, 2012). She also observed that the total number of filters recovered in each domestic unit at Bazi was limited to one sample suggesting that:

Drinking tubes were either kept or used at this place of private cultic rituals, but were not used during daily drinking by the household members. It may as well suggest that only certain persons possessed and used these drinking tubes, perhaps (due to the small number) the father of the family (Otto, 2012, p. 190).

At Tell Ahmar there is no evidence of straws, thus it is more likely that liquids were drunk from cups.

CS09: Mallowan argued that these vessels were used at Chagar Bazar as a wine jar (Mallowan, 1937).

CS11: Di Nocera argued that the Pilgrim Flask found at Zeytinli Bahçe was used for wine transport (Balossi, et al., 2007). Gates argued that CS11 was used to transport wine, which was then transferred to a larger storage jar (Gates, 1988).

OS01: large cooking shape OS01 at Ebla presented burned traces in the inner surface. Pinnock asserted that these shapes might have been used as embers containers for heating the rooms (Pinnock, 2005). Medium dimension OS01 common ware characterised by a slight carination underneath the rim are, according to McMahon, serving vessels “since the carination makes the bowl easier to hold and carry than a straight-sided bowl” (McMahon, 2009).

OS03: OS03 used as a lid has been observed *in situ* at Haradum where this shape was used inverted to close a jar burial (Kepinski, 1992, Pl. XVI/2-3).

OS07: McMahon suggested that these shapes would have had a domestic use perhaps in food preparation (McMahon, 2009).

OS09: McMahon suggested that similar shapes were used at Chagar Bazar to contain a non- liquid commodity, such as grain (McMahon, 2009).

Vessels with a perforated base: several experts have recently agreed that during the Bronze Age large jars characterised by a small hole in the centre of the base should refer to beer production. Marie-Henriette Gates, for instance, argued that “pierced pottery” found in the Tablet House at Tell Hadidi and dated to the LBA I, may have been involved in some specific steps of the beer brewery, which would have allowed the fermenting mash to drip into a collection vessel set underneath (Gates, 1988). Adelheid Otto argued that vessels characterised by technomorphological features very similar to OS07 and OS09 were used at Tell Bazi during the LBA to produce beer (where this production is associated with the domestic context) (Zarnkow, et al., 2011). Interestingly, a ceramic vessel set used for beer production was found in every house at Tell Bazi. This beer production set consisted of two shapes: a large beer vat and a smaller vessel with a hole in the bottom (Zarnkow, et al., 2011). The large vats were half sunk into the floor.

This presupposes that its content was not hygienically vulnerable because the vessel could not be cleaned. On the other hand, contact with the floor ensured that there was a cooling effect (Zarnkow, et al., 2006b, p. 308).

The jars found *in situ* at Tell Bazi were located near the entrance and under the staircase of the house. Otto contends that this position would have been ideal for the effective ventilation that was necessary to conserve the product (Zarnkow, et al., 2011). These characteristics seem to match up with the shape found at Ahmar in Room 14.2. However, here the base is perforated. As for Tell Bazi, perforated bases were also recovered from another LBA site, Tell Sabi Abyad on the Balikh. Kim Duistermaat who dealt with the analysis of the ceramic material argued that the hole in these particular shapes used for brewing was:

Closed with a plug, and a piece of cloth was put inside the pot over the hole. Water was added to the grain and the mixture was left to soak. Dirt and weed seeds would come floating and could be scooped from the top, which is why an open vessel shape is best. When the grain had soaked and germinated enough, the plug was drawn from the hole and the remaining water could drain through the cloth into the bowl (Duistermaat, 2008, p. 252).

A comprehensive analysis of the use of the vessels with perforated base during the MBA is still scarce. Sconzo argued that the perforated base of this type of jar in a MBA II burial context at Tell Shiyukh Tahtani might have served for the drainage of the decomposed body (Sconzo, 2007). However, it is more likely that the broken CS10 were reused to bury people as their dimensions indicate that they would have been big enough to carry a body. The perforated base, therefore, might only have been accidental.

Epigraphic evidence of vessel function

Information about vessel function can be also inferred from epigraphic sources. However, although scholars emphasise how the vessels recorded on the Mesopotamian lists are usually followed by descriptive terms for their contents, only little has been done towards correlations between texts and ceramic evidence (Gates, 1988; Baffi-Guardata, 1994; Sallaberger, 1996; Potts, 1997).

Textual documents are usually associated with three main contexts: letters and contracts (where vessels have been linked to a particular commercial exchange); cuisine receipts (where vessels are listed according to their contents) (see for example Bottéro, 1987); and literary texts (which may be restricted to a religious or other specific context).

Epigraphic sources inform about products such as water, milk, beer, oil, wine and honey, and in some cases about the ceramic size and shape used to contain and process the goods. Finet, for instance, argued that the use of *karpātu* in the Mari texts refers to a container of standardised size, a closed shape jar used to transport wine with a capacity of approximately 10 l (Finet, 1974/1977). According to the analysis of the Tell Ahmar vessel capacity (see Chapter 6), closed shapes which correspond with this term are **CS08** and **CS09** (see also Conclusions). Epigraphic evidence of vessel function is particularly accurate when describing uses of vessels employed in conjunction with beer activities. Beer was a very common drink during the MBA, so it is clear that information is particularly abundant on this aspect. Textual information from Mari indicates that several types of beer were available at that time

(or, at least, several terms were used to describe beer). These mainly differ in the composition of the ingredients (quality) (Lacambre, 2009; Michel, 2009a), filtering processes, and, once traded, on the ceramic jar's capacity (Stol, 1995; Damerow, 2011). Among the epigraphic literature, the most important documents informing us about brewing are the so-called *Hymn to Ninkasi*, goddess of brewery, dated c. 1800 BC ⁴⁹ (Katz & Maytag, 1991; Faivre, 2009c; Damerow, 2011) and the XXIII Tablet of the Series 𒍪AR.ra = 𒍪ubullu (Oppenheim, 1950).⁵⁰ By combining an interpretation of these documents with a modern knowledge of beer chemical composition and brewery, together with the application of retrospective experiments on beer production, several scholars have attempted to reconstruct ancient brewery processes (Katz & Maytag, 1991; Zarnkow, et al., 2006a; Zarnkow, et al., 2006b; Zarnkow, et al., 2008; Zarnkow, et al., 2011).⁵¹

Brewery processes can be summarised into few main steps: from preservation, fermentation, and storage to serving. In the beer malting process, the first stage was to soak the barley to induce germination, and so achieve the conversion of starches into maltose sugars.⁵² Textual information indicates that the containers used during this first step of the beer production (i.e. barley germination) are called *naprahtu* (Oppenheim, 1950; Faivre, 2009a) and *lahtanu* (or *namhāru*) (Gates, 1988; Faivre, 2009c; Damerow, 2011). Given that these terms refer to a particular large vat, according to the ceramic evidence found at Tell Ahmar, this shape may correspond to **OS07** (see Chapter 6).

Subsequently, and in order to stop the process of growth, the malted grain was dried, either by spreading it on reed mats under strong sunlight, or by roasting it

⁴⁹ Please note, however, that the *Hymn to Ninkasi* does not cover all aspects of the manufacture of beer and, in particular, does not refer to malting.

⁵⁰ The words listed in the table, however, are technical terms, which were reserved for the personnel dealing with this activity. Assyriologists have made great efforts to translate this document and, in particular, to preserve its meaning in modern language.

⁵¹ Although these are important sources of information, a complete knowledge of brewery process is still lacking. Scholars disagree on some aspects, especially on the duration of the entire cycle, and on the control of the fermentation process, both of which are directly associated with the length of time beer can be stored.

⁵² Oppenheim noted that this procedure “was not invented as a preparatory process to be utilised at certain stages of the brewing of beer. In fact, malting belongs to an important technological stage in the development of methods for the preparation of vegetable food stuff without the application of fire” (Oppenheim, 1950, p. 13).

in a kiln. The malted grain was then either crushed or stored (in sacks or jars), or converted into dough and baked in an oven to produce small cakes or loaves (Oppenheim, 1950). These dried malted cakes were an ideal food for travellers. It can be seen, therefore, that malted barley (*green malt*) was not necessarily used as a raw material for brewing. It could have been consumed dry (as a sort of bread), or in liquid form by adding water to the malted cakes.

The malted grain, together with water, was then introduced into a special fermenting vat, called *namzītu*, where it was kept for a while. Texts referring to the *namzītu* show that it was characterised by a perforated base (Gates, 1988; Faivre, 2009c; Faivre, 2009a; Damerow, 2011). The perforation on the bottom allowed the fermenting mash to drip into a collecting vessel positioned underneath. The hole was very small and could be clogged up with a cotton stopper when required (Pulhan, 2000). Even in the modern production of beer brewing, a mash-tun, the vessel used to hold the mash during infusion brewing, may be fitted with a perforated false bottom to remove the sweet wort, which is produced during mashing from spent grains.⁵³ Evidence of large vessel with a perforated base at Tell Ahmar is associated with **CS04**, **CS10** and **OS09** (see Chapter 6).

Beer finally was poured from the collecting vat into storage or transport jars (Bottéro, 1985; Damerow, 2011) to be consumed. It is probable that sweeteners, such as honey or date juice, were added to the drink at this stage. It is also likely, once the beer had been packaged into jars and was ready to be shipped, that some beers would have been mixed with others, or with water, in order to regulate their alcohol strength (Oppenheim, 1950).

Beer was imbibed through straws to avoid the intake of gross sediments, or poured into cups or goblets. The presence of metal strainers found in both burial and domestic context at Baghouz (Du Mesnil Du Buisson, 1948), Tell Brak (Oates, et al., 1997), Halawa (Meyer & Pruss, 1994), Emar (Beyer, 1992), Chagar Bazar (Mallowan, 1936; McMahon, 2009), and Tell Leilan (Pulhan, 2000) support that beer was drunk through a straw. Mallowan described the metal strainer as:

⁵³ Wort is the liquid extracted from the mashing process during the brewing of beer. It contains the sugars that are then fermented by the brewing yeast to produce alcohol.

Strips of sheet copper folded over to form a cornet-shaped receptacle. Their lower halves were perforated, and most of the specimens still contained within them the traces of a reed. These objects were invariably found at the bottom of large flat-based vases in graves [...]. They were part of a wine-drinker's outfit, and intended to prevent the lees of alcohol from passing into the reed siphon through which the liquid was imbibed (Mallowan, 1937, p. 99).

Iconographic evidence of vessel function

Iconographic sources of vessel functions can be found on reliefs, statues, plaques, figurines, wall paintings, and seal impressions. Iconographic evidence is investigated to discuss the function of two vessel shapes in particular: CS08 and OS08.

In four terracotta plaques and in two seal impressions, **CS08** appears in association with some drinking activities that required the use of a long straw. In a terracotta plaque from Mari, two people are standing while drinking through a straw from a jar, which is placed on a pot stand on the floor (Fig. 138).



Figure 138. Figurine *Couple se désaltérant* from Mari (drawing adapted from Parrot, 1959, p. 75, fig. 58).

A similar small clay plaque has been found at Tell Hadidi, where a “beer drinking” ceremony is represented, which shows figures facing each other while drinking from

a vessel with straws (Dornemann, 1992) (Fig. 139). Regarding this vessel, Dornemann argued:

The Hadidi drinking vessel seems to be more of a storage jar in size, though only a portion of the top of the rim is preserved. It would seem that two long heads of grain flank the standard shaft at the rim of the storage jar. It is possible that the edge of the garment is represented, rather than ears of grain, but we tentatively favour the interpretation of grain, possibly representing the barley used to brew beer (Dornemann, 1992, p. 86).



Figure 139. Terracotta plaque with representation of “beer drinking” ceremony from Tell Hadidi (Dornemann, 1992, p. 86).

Another example of same composition has been found on a plaque from Haradum (Fig. 140). Two figures standing face to face are drinking from the same jar through a long straw or pipe (Kepinski, 1992).



Figure 140. Terracotta plaque with a *scène de boisson au chalumeau* from Haradum (drawing adapted from Kepinsky, 1992, p. 441, fig. 1).

In a plaque found at Terqa, two figures hold the straw with one hand while with the other one they hold a cultural tool which rests on their shoulders (Rouault & Mora, 2001) (Fig. 141).



Figure 141. Terracotta plaque with representation of beer drinkers from Terqa, Area F (Rouault & Mora, 2001, p. 24, fig. 7).

A cylinder seal from a jar burial at Tell Ahmar present a similar scene (Otto, 1998) (Fig. 142). Otto, who undertaken the analysis of this seal, contends that this seal was

almost certainly the seal of a Royal official who resided in the Carchemish region, interpreting this representation as:

Two people are sitting face to face on two chairs [...]. They are each holding a vessel in one hand, shown with an oval lower and a separate upper part. From each of these vessels curved lines, leading into a larger jar, join together in the middle. The large jar is shown with wider mouth and a large oval body above a smaller circular base or stand. There is a V-shaped element above the mouth of the jar (Otto, 1998, p. 122).

Two different vessel shapes are shown here: two small goblets which were held in the hands of the subjects; and a large jar, probably placed on a pot stand. In the former case, two curved lines are visible and appear to illustrate straws being used to drink from the jar. It is probable, however, that these habits were common only for special ceremonies (as shown in this example) and not for everyday use.

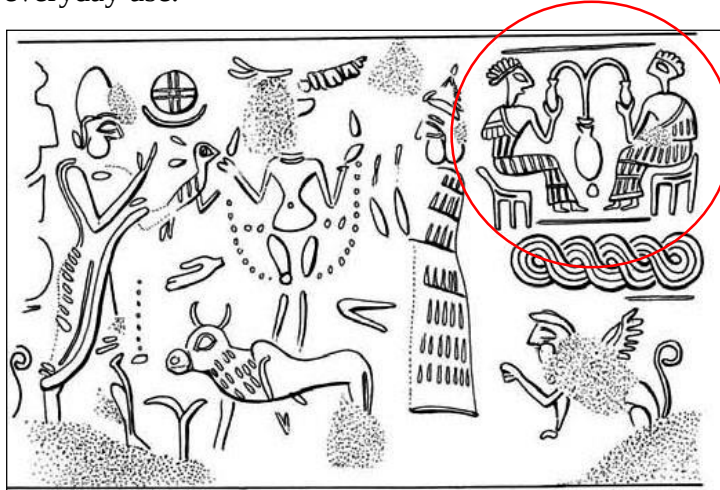


Figure 142. Seal impression from Tell Ahmar (Otto, 1998, p. 132, fig. 7).

A further seal impression offers a similar representation: a figure sitting on a throne (to the left), imbibes the contents of a jar through a pipe (Fig. 143). Other straws are also present in the jar, indicating the sharing of the drink with other people. In this example, the jar is associated with a pot-stand (Larsen, 1977).

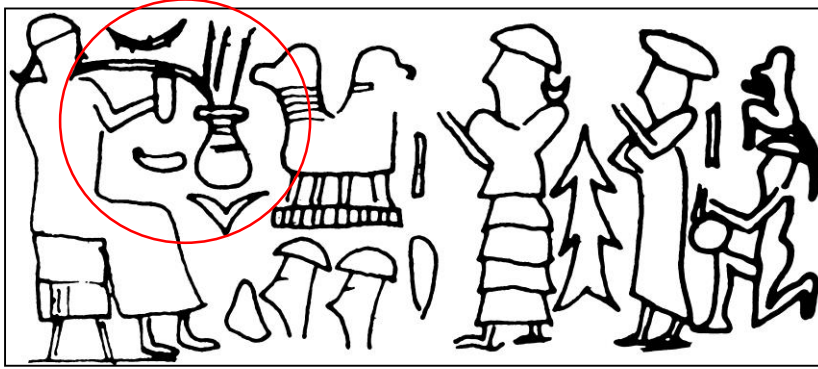


Figure 143. Seal in the Anatolian style from an unpublished tablet (adapted from Larsen, 1977, p. 92, fig. 9).

Moreover, iconographic representations of CS08 can be associated with the vessel held by the “Goddess of the Flowing Vase”. This statue, from the palace at Mari, represents a standing divinity holding a vase by its neck and base in a natural pose (Fig. 144).



Figure 144. Statue of the *Goddess of the Flowing Vase* from Mari (Height 1.42 m). On the right is a drawing showing a close-up of the vessel (drawing adapted from Parrot, 1949, p. 7, figs. 6-8).

The statue was used as a fountain. A channel drilled inside the body of the statue and connected to a tank would have allowed the water to flow from the goddess' vase (Parrot, 1959b). The vessel in her hands is typical of other MBA vessels and seems to resemble a CS08. In this case, the vessel shape was associated with water.

A use of this vessel's water association has also been suggested by two frescos from the MBA palace at Mari, where similar vessel shapes have been illustrated (Gates, 1984). The first panel, in Court 106, entitled the "Investiture" (Fig. 145), consists of two registers, the upper of which depicts a king who is invested with powers by Ishtar.

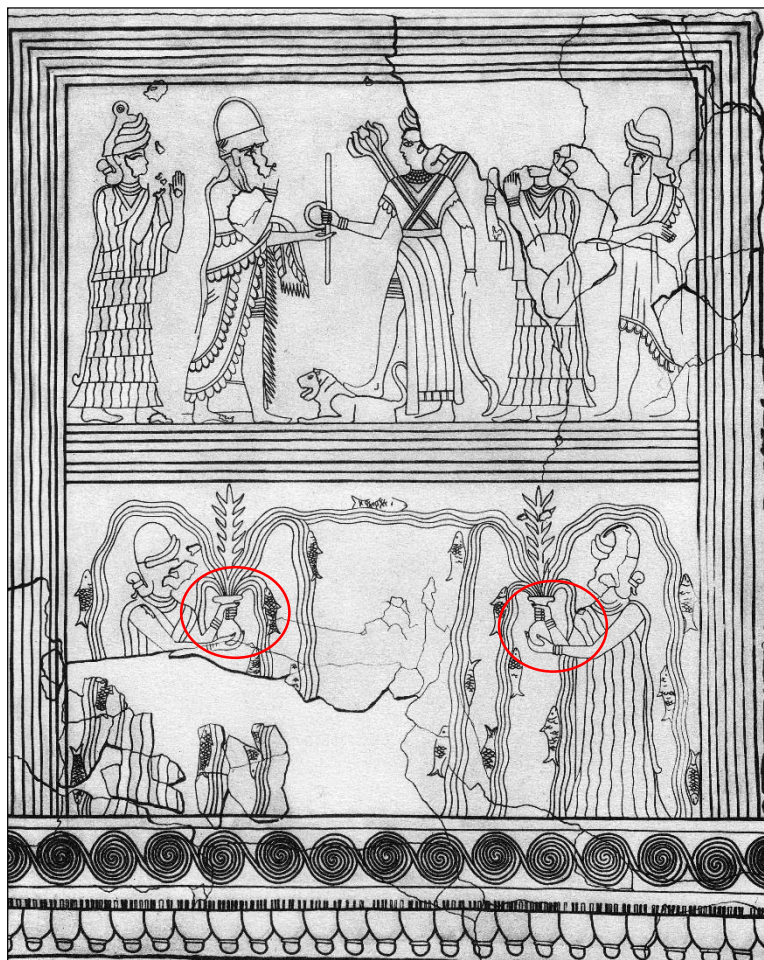


Figure 145. Reconstruction of the central panel of the wall painting of a king's investiture scene, from Court 106 at Mari (Parrot, 1958b, Table XI).

In the lower register, two face-to-face divinities hold a vase containing plant life, from which four channels of water spurt out. The vase is grasped by its neck, whilst another hand supports the container from its bottom. The shape of the vessels, as well as their specific iconographic symbolism, can be associated with the statue of the “Goddess of the Flowing Vase”. Such a common and pervasive theme signifies the importance of water to the inhabitants of Mari, who lived in a desert area that was very dependent on the Euphrates.

Finally, iconographic evidence of **OS08** has been noted on two statues, one from the Ishtar Temple at Ebla (Matthiae, et al., 1995), and the other from the Royal Tomb at Qatna (Maqdissi-Al, et al., 2009) (Figs. 146-147). Both images represent a royal person sitting on a throne, holding a small OS08 in his hand, probably as a sign of food offering. Food was placed in the bowl and probably consumed using hands and fingers.



Figure 146. Royal statue in basalt from the Ishtar Temple at Ebla (Matthiae, et al., 1995, p. 189).



Figure 147. Statues in basalt from the Royal Tomb at Qatna (Maqdisi-Al, et al., 2009, p. 204).

What does archaeological analysis reveal about vessel function?

The implications of vessel function examined in this chapter are summarized in the following table (Tab. 86). This data will be used in Chapter 10 to refine the interpretation of the function of the vessels at Tell Ahmar.

Vessel Shape	Ceramic evidence	Epigraphic evidence	Iconographic evidence
CS04	Qara Quzaq - used to store grain	None	None
	Ebla - used to contain indistinct liquid or grain. Also found sunk into the floor to maintain water cooler		
	Aushariye - hold and keep water cool		
	Qala'at Halwanji - wine container		
	Chagar Bazar -large dimension used for water storage with access to it by a small bowl, while smaller dimension used for contain grain		
CS08	Baghouz - beer consumption	<i>karpatu</i> - wine transport	Vessel used for drinking (beer?) during ceremonial activities. The liquid was drunk through a straw or water container
	Leilan - delivery and consumption of beer		
	Ebla - water transport		
	Aushariye - water transport		
	Bazi (LBA) - beer container		
CS09	Chagar Bazar - wine jar	<i>karpatu</i> - wine transport	None
CS11	Zeytinli Bahçe - wine transport	None	None
	Gate, 1988 - wine transport		
OS01	Ebla - embers	None	None
	Chagar Bazar - serving vessel		

Vessel Shape	Ceramic evidence	Epigraphic evidence	Iconographic evidence
OS03	Haradum - lid	None	None
OS07	Chagar Bazar - food preparation	<i>naprahtu</i> and <i>lahtanu</i> - barley germination	None
OS08		None	Food offering and food consumption
OS09	Chagar Bazar - grain container?	None	None
Vessels with a perforated base	Shiyukh Tahtani - drainage of the decomposed body (reuse?) Hadidi - beer production (LBA) Bazi - beer production (LBA) Sabi Abyad - beer production (LBA)	<i>namzitu</i> - beer fermentation	None

Table 86. Inferences of vessel functions from ceramic, epigraphic and iconographic evidence.

Summary

The function of the vessels was inferred from the analysis of ceramic, epigraphic and iconographic sources available. This investigation shows some correspondences between Tell Ahmar vessel shapes (i.e. CS04, CS08, CS09, CS11, OS01, OS03, OS07, OS08, OS09, and vessel with a perforated base) and epigraphic/iconographic evidence.

The outcomes of this analysis, together with ceramic techno-morphological, residual and distributional investigations of vessel function discussed in Chapters 4-8, are taken into consideration in the following chapter to suggest the function of the vessel shape discovered at Tell Ahmar.

10.Function of vessels and functional activities at Tell Ahmar

This chapter provides an interpretation of the function of the vessel shapes identified at Tell Ahmar according to the multi-disciplinary results achieved so far in this work, namely techno-morphological features (Chapters 5-6), residual and distributional examinations (Chapters 7-8), and information coming from ceramic, epigraphic and iconographic evidence (Chapter 9).

Function of vessels

Small/medium dimension bottles - CS01

The emphasis on aesthetical appearance that is associated with a burnished or painted finish suggests that CS01 was used primarily for short-term storage and serving and that this activity was often undertaken, not only within the family, but with guests as well. In this context, CS01 would have expressed the status of the owner. For similar reason, CS01 was also used as a burial gift to accompany the deceased in the tomb.

CS01 are characterised by different rim and base profiles, as well as by varying rim diameters and vessel dimensions, ranging from small to medium. This variety of morphological features indicates that there was no standardised production of CS01. Small vessels have a largest capacity of approximately 0.30 l, whereas medium dimension vessels have a capacity of about 2 l.

In both small and medium dimension forms, the particularly small opening did not allow any manipulation of the content, which could only be removed by pouring alone.

It is unlikely that small vessels were used to contain water, as this liquid was usually transported and used in large quantities. It is more likely that CS01 vessels were used to contain liquids that were not necessarily used in large quantities, or were those which had to be used in a short period. It is unlikely that semi-liquid material (e.g. honey) was contained in such vessels because the process of filling up

and pouring out would have taken too long without the aid of an external tool. The restricted neck and simple rim orientation that characterises most of these shapes would have enabled liquid to be poured easily and in accurate quantities. The residue analysis undertaken on three CS01 samples (two being associated with a small dimension shape and one with medium dimension) showed no positive reaction to either oxalic acid nor to tartaric acid.

The presence of jar stoppers in several cases of CS01 may indicate the intention of the user to protect the content from outside contamination (i.e. from dust or bacteria), or perhaps just to preserve its aroma in the product. Moreover, a hermetic closure would have reduced the loss of content through evaporation (e.g. oil). The worn out rim and the ragged edge of a CS01 sample may indicate that a stopper was used to seal such shapes, as the stopper itself had contributed to the rim edge damage (Fig. 148).

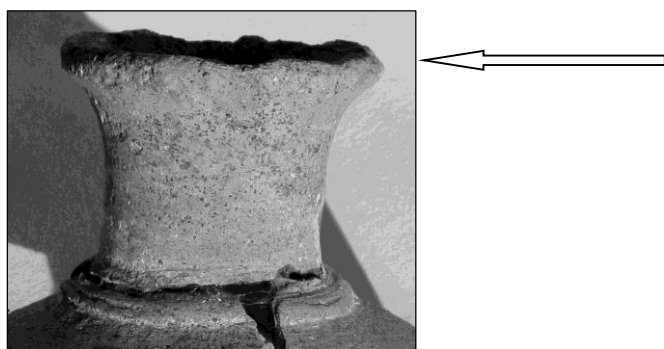


Figure 148. CS01 sample showing a rim edge that has been damaged by the closure system (photo: Silvia Perini).

This particular use of CS01 also seems to be suggested by its distribution which is related primarily to a domestic context, the highest incidence of recovered vessels being concentrated in Room 14.1 (Fig. 149).

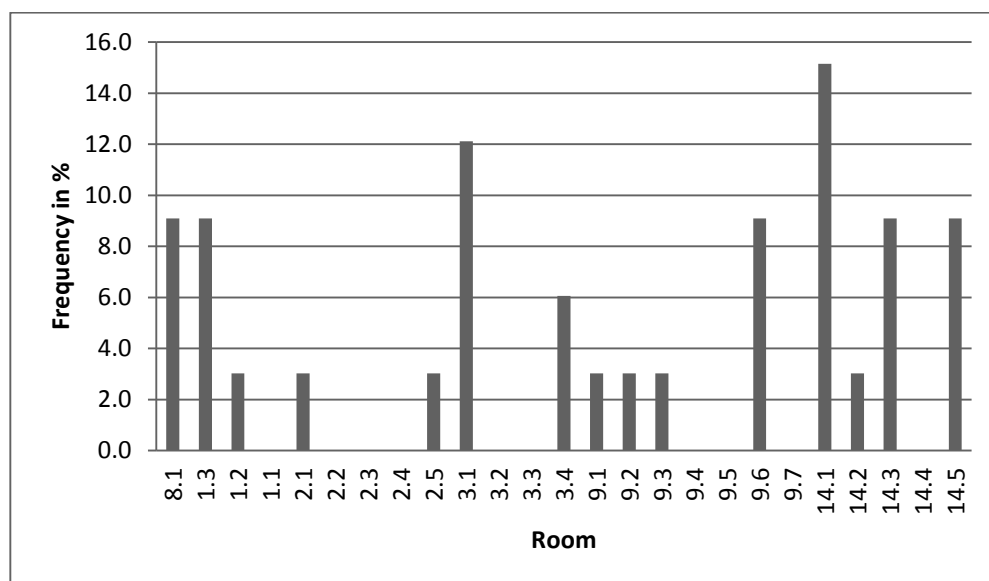


Figure 149. Chart showing the distribution of CS01 within the excavated rooms.

An example of CS01 associated with a Grey Ware was also found in Room 14.3 while a painted example was found in Room 14.1. Due to their particular surface treatments, it is likely that decorated shapes belonged to a particular table set not used every day but for special occasions only (for example when receiving guests). Painted CS01 and particularly fine or decorated shapes could have also been displayed in this room, which was the entrance hall of the house. A complete CS01 common ware example was found in a jar burial in Room 14.3 together with a small bowl with carinated shoulders (see Chapter 8).

Medium/large dimension jars with carinated shoulders - CS02

CS02 can be linked to short-term liquid storage activities. Generally associated with a common ware, although two examples characterised by fine ware were identified (Appendix C, Plate 6 No. 5), no examples of cooking ware have been found, so according to the morphological features, the possibility of vessels being placed over a fire can be excluded. Red-slipped surface treatments were applied to the interior and exterior surface in six examples, which would have aided the jars' permeability. The thick walls of those examples associated with a large dimension would have kept the content fresh for longer. Ridged decorations and incised lines are often a

characteristic of CS02. From a functional perspective, these elements could have been used to make the external surfaces less slippery. Finally, a CS02 example has been identified as Khabur Ware (Appendix C, Plate 6 No. 4).

Although no complete CS02 were found at Tell Ahmar, the capacity of a reconstructed medium dimension shape has been calculated at approximately 10 l (Appendix C, Plate 5 No. 3). It follows that CS02 would not have been easily moved or transported when full. The rounded or flaring rim profile (with a simple orientation) would have allowed liquid to be poured into another container. Nevertheless, if we accept the supposed vessel capacity, the excessive weight would have made this activity difficult. Furthermore, the generous opening suggests that a tool (i.e. a ladle or a small bowl) was used to extract liquid from the vessel rather than the vessel being tipped for this purpose. No closure systems are associated with this shape. However, in order to protect the liquid content, it is possible that a medium/large dimension bowl was used to cover it. In any case, with no evidence of jar stoppers which fit this rim dimension, and with a rim diameter inappropriately large for use with any sealing system (i.e. a piece of cloth or leather bound at the jar opening by string), it is likely that the content of CS02 was in direct contact with the atmosphere which could indicate that it was not particularly perishable (e.g. in the case of milk or wine). From the analysis of the residue of three CS02 samples, the inner surfaces of two of them have shown a positive reaction to oxalic acid (++ and +), whilst the other sample presented a +- reaction to the same acid.

CS02 is distributed rather homogeneously along the settlement, with a particular concentration in the private house and in Room 14.1 (Fig. 150). A similar frequency of CS02 (12.2% out of the total number of CS02) has been determined in Room 1.3, Room 1.2 and Room 9.2.

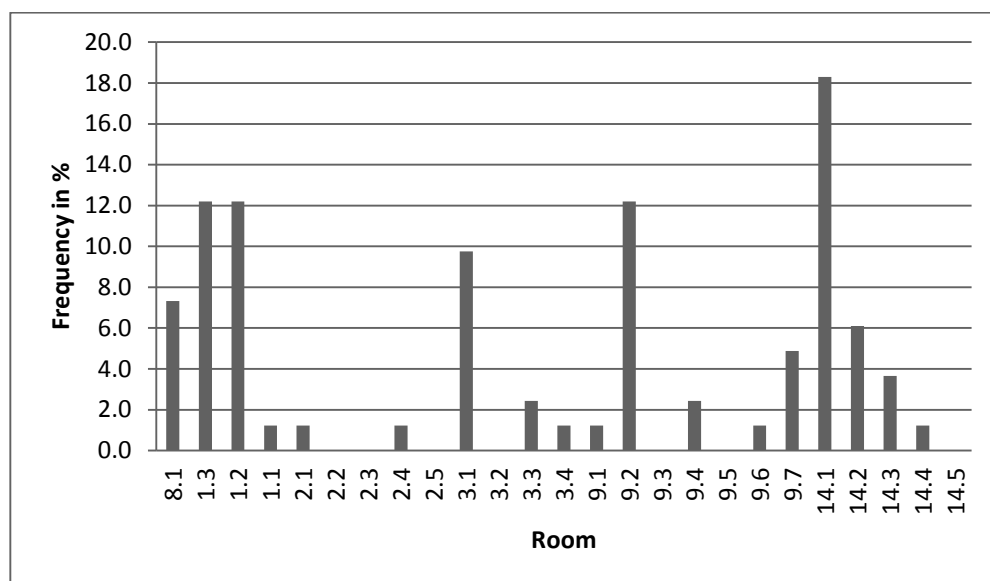


Figure 150. Chart showing the distribution of CS02 within the excavated rooms.

Medium dimension jars - CS03

The presence of CS03 among the ceramic assemblage is particularly scarce (1.9%), and no complete or semi-complete shapes were found that could give more precise information about the vessel dimension and shape, making knowledge of vessel function unclear. CS03 was not used for cooking given that the ware associated with this shape is common, but it may have been used for processing food without heat. This shape indicates a peak in frequency in Room 8.1 (Fig. 151). This element would support the view that it was used for activities connected to food preparation. On the other hand, no CS03 was found in the kitchen of the private house (Room 14.3).

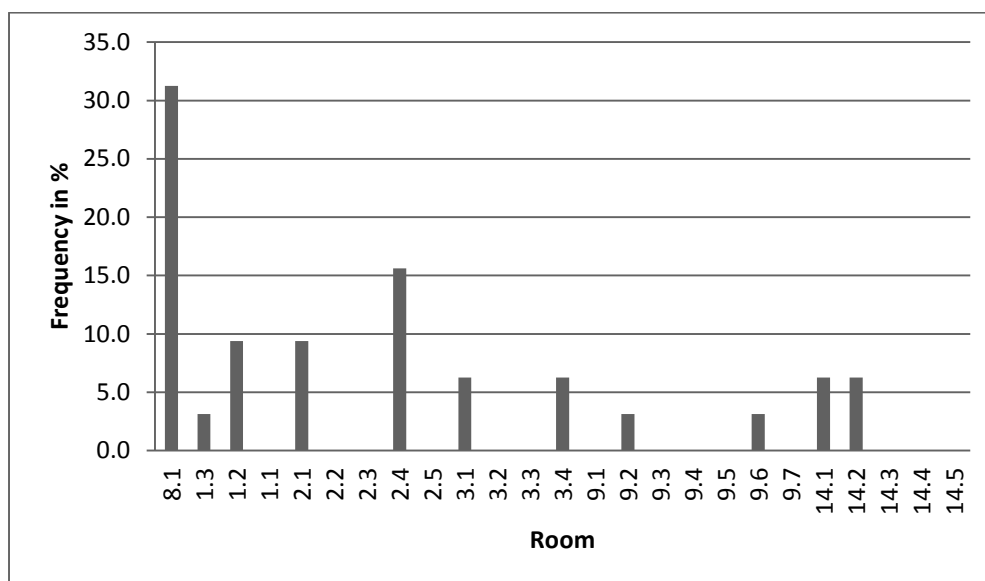


Figure 151. Chart showing the distribution of CS03 within the excavated rooms.

Medium/large dimension jars with a plain or grooved rim - CS04

Residue analysis undertaken on three CS04 examples show a positive relationship to oxalic acid, suggesting that the vessel was used as a container or for processing beer (Appendix C, Plate 13 No. 1).

Although no complete CS04 were found at Tell Ahmar, this vessel type is very abundant among the assemblage. Because of the vessel thickness and the morphological and technological characteristics of the upper parts of the recovered vessels, the lower parts of this vessel shape were easily identified. The base can be either rounded or flat, and often exhibits a small hole in the middle (Appendix C, Plate 8 No. 1 and Plate 13 No. 1). For this particularity, these shapes are described at the end of this chapter. The majority of the examples analysed is associated with a large dimension (rim diameter between 48 and 50 cm) (Fig. 152).

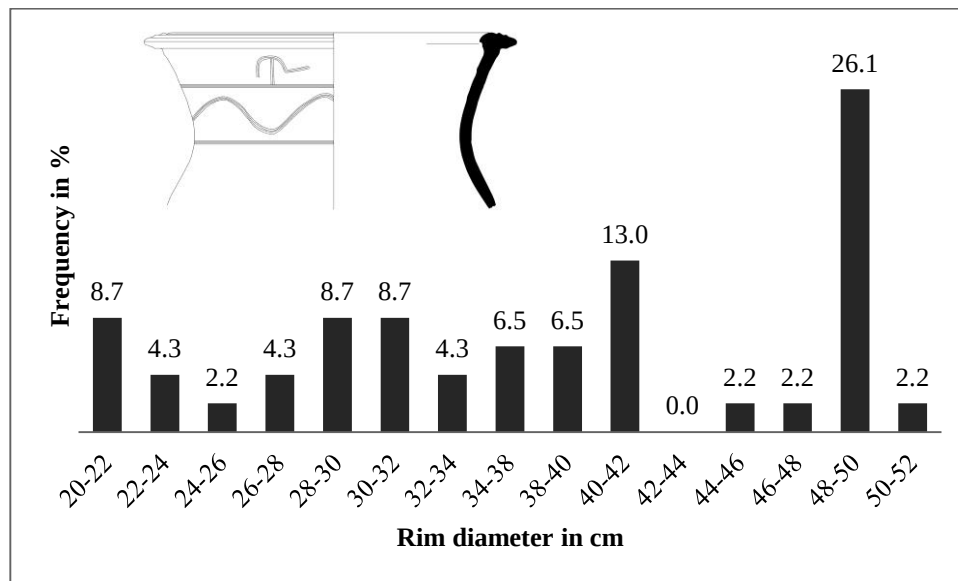


Figure 152. Chart showing the frequency of CS04 rim diameters.

Large dimensions were unsuitable for transport activities given their considerable weight. The content was removed from the vessel using a bowl the rim diameter being sufficiently large as to allow this kind of manipulation. One of the most distinctive features of CS04 is the rim profile, which has been defined as “mushroom shaped” and could have been either plain or adorned with a grooved decoration on the top. No jar stoppers large enough to cover the jar opening have been found at Tell Ahmar, nor could other ceramic shapes have been used to close CS04. The particular rim profile may refer to a different closure system, but this provides no evidence in the archaeological context. The particular shape of the rim profile would have helped in moving the jar. Under the rim of four CS04 shapes, a potter’s mark has been found (Fig. 153).

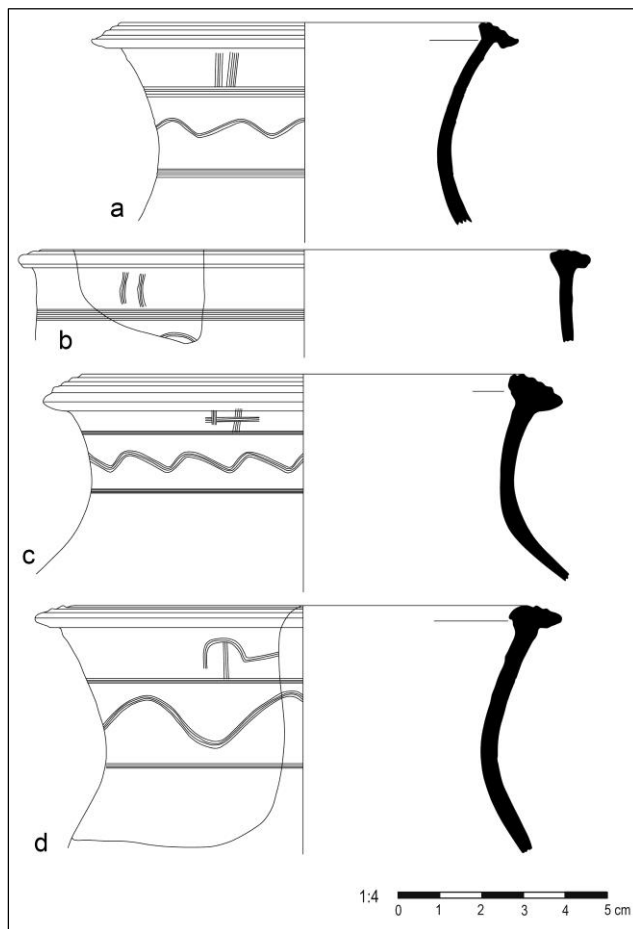


Figure 153. Potters' marks on CS04 shapes at Tell Ahmar (illustration: Silvia Perini).

Potters' marks were made before firing, probably with the same tool used to make the combed decorations that characterised the majority of these shapes. The stylistic characteristics of the potters' marks found at Tell Ahmar can generally be defined as geometrical incised lines. More specifically, the examples (a) and (b) exhibit two vertical bands of incised lines, example c) shows three vertical bands of incised lines forming a crossing pattern, and example d) exhibits a vertical band of incised lines with a curved band (as a horseshoe shape) on the top. Example d), however, is broken so it is unclear if this pattern continued on the right side of the vessel.

From a technological point of view, CS04 are characterised by a common ware and by a smoothed surface. In a few cases, a red slip treatment has been observed on inner surfaces. The vessel walls were significant in terms of thickness

(c. between 1 and 2.5 cm) which would have improved vessel resistance and decreased heat conductivity.

This shape shows a remarkable peak in distribution in Room 3.1, where seal impressions and barley seeds have been also found (see Chapter 8) (Fig. 154). This supports the hypothesis that CS04 were used for storing food grains.

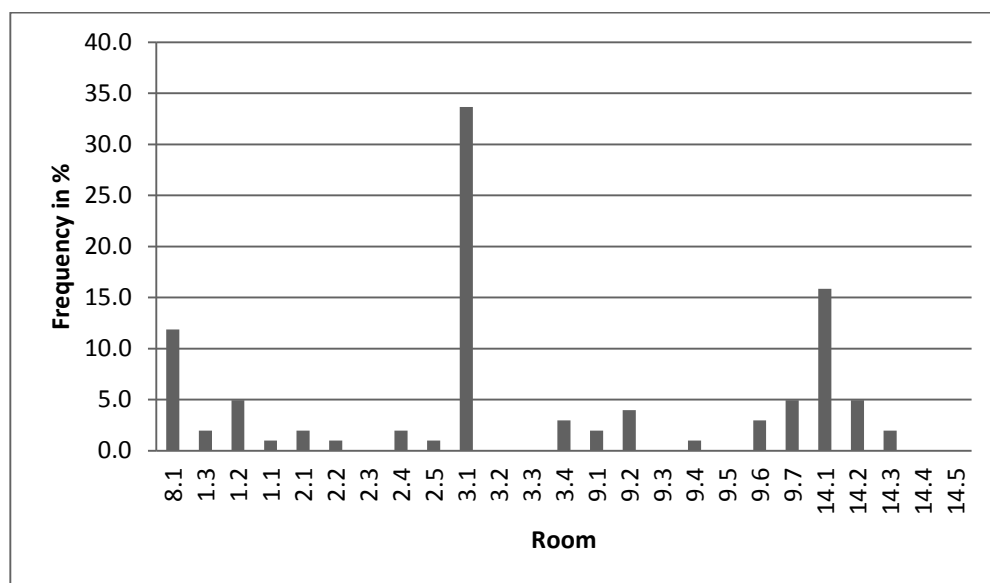


Figure 154. Chart showing the distribution of CS04 across the excavated rooms.

Given that complete CS04 are not commonly found on the Euphrates Valley, it is not easy to understand the complete vessel profile and its real dimension. Nonetheless, the author has calculated the capacity of similar complete jars found at Ebla. These jars could have contained between 250 and 350 l of water, or 150 and 220 kg of barley. Jakobsen has calculated the capacity of one of these complete shapes at Tell Aushariye and it could contain roughly 270-310 l (Jakobsen, 2011). Given their weight, it is unlikely that these shapes were used in long-distance transport. As for Tell Ahmar, comparative analysis indicates that the rim diameter of these shapes can have different sizes (Tab. 87).

Site	Rim diameter (cm)	Reference
Ahmar	20-50	Appendix C, Plates 12-14
Şaraga	ND	Sertok & Kulakoğlu, 2002, p. 366, fig. 6/1-3
Aushariye	32-46	Jakobsen, 2011, pp. 20-23 Appendix 1
Shiyukh Tahtani	50-52	Falsone, 1998, p. 54, fig. 9/23-23
Hadidi	30-40	Dornemann, 2007, p. 52, Plate VI/23-24
Haradum	30-32	Kepinski, 1992, p. 203, fig. 68/4-9
Tilbeshar	ND	Kepinski & Ergeç, 1999, p. 250, fig.4/3

Table 87. CS04c rim diameter comparisons.

Because of the similarities in vessel shapes and in potter's marks, it is likely that medium dimension CS04 with a diameter not larger than 30 cm were used in long-distance transport (see Appendix C, Plate 55). The context of recovery of CS04 among the sites presents some peculiarities (Tab. 88).

CS04	Context
Ahmar	public-administrative, domestic
Lidar Höyük	domestic
Şavi Höyük	domestic
Şaraga Höyük	public-administrative
Shiyukh Tahtani	street
Aushariye	domestic
Qara Quzaq	public
El-Qitar	official residence
Hadidi	domestic
Mumbaqa	domestic
Halawa	domestic
Ashara	domestic
Haradum	domestic
Tilbeshar	domestic
Qala'at Halwanji	palatine? (survey)
Hammam et-Turkman	domestic
Mardikh	palatine
Ansari	funeral
Mishrifeh	palatine
Chagar Bazar	public-administrative

Table 88. CS04 context comparisons.

At Ahmar, they are mainly associated with a storage area, but their presence in a domestic context is also confirmed. At Qara Quzaq, located in the neighbourhood of Tell Ahmar, the ceramic material discovered is mainly associated with a silos area. At Ebla, complete CS04 shapes were found *in situ* aligned on a bench in a room located just behind to the “Sala del Trono”. At Tell Aushariye a CS04 has been found completely sunk into the floor of a house. In a recent discovery from Qala'at

Halwanji, on the Sajur, Eidem and his team have also found jars embedded in the floor and placed in a row (Eidem, 2009) not only in one room, but also in several, as in Ebla.

Medium dimension jars with carinated shoulders - CS05

It is likely that CS05 were used in short-term storage and short-distance transport activities. Given that CS05 were mainly associated with common ware, it is unlikely that these pots were used in cooking activities. As CS05 vessels are deep in shape, it is also improbable that they were used for other processing activities such as mixing, washing and grinding. These forms are generally undecorated, even if some exhibit combed or ridged decorations on their shoulders. One example shows a vertically burnished treatment on the exterior surface (Appendix C, Plate 16 No. 5).

CS05 is characterised by a somewhat standard rim with a diameter measuring between 20 and 30 cm. Among all investigated examples, it can be observed that the rim is always folded-out which would have facilitated the closing of jars during storage or transport. The capacity of one complete jar is approximately 4.20 l (water) and 2.60 kg (barley). Whether the content was in liquid or dry form, a full CS05 vessel could have been easily transported or moved. The content would have been removed from the vessel either by manipulation or by pouring. However, out-folded rims are not particularly suitable for pouring liquid, so it is likely either that the content was removed with a tool, or that the content was not liquid. Residue analyses undertaken for one CS05 sample have shown a negative presence of both oxalic and tartaric acid.

The distribution of CS05 shows a slight concentration within the domestic context and in Room 14.1 in particular (Fig. 155). The example associated with the vertical burnish has been found in the open spaces of Building M9.

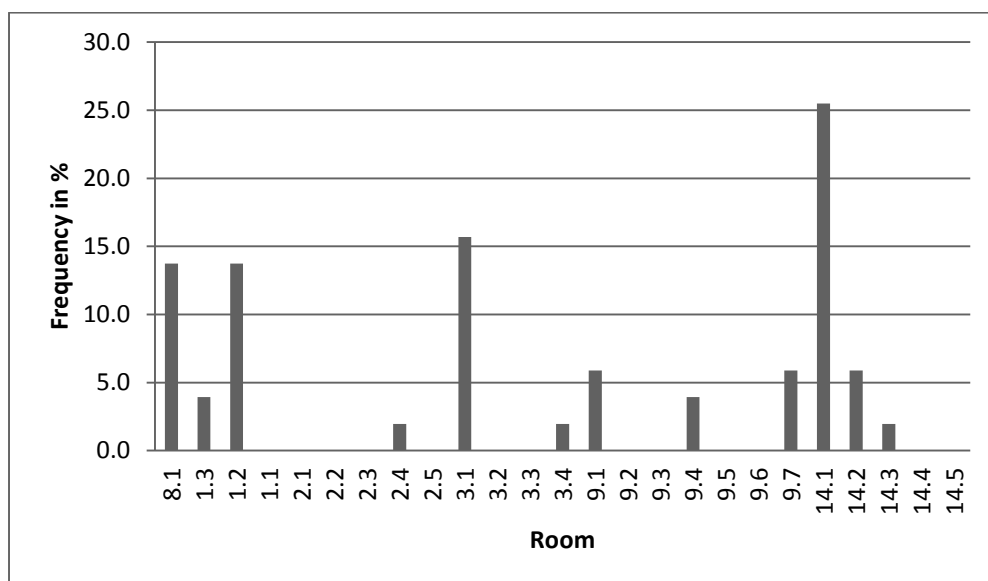


Figure 155. Chart showing the distribution of CS05 across the excavated rooms.

Medium dimension jars - CS06

Technological and morphological analyses suggest that CS06 was probably used for storage. CS06 is associated with an undecorated common ware. It is unlikely that CS06 was used for processing or cooking food. The relatively narrow opening and the type of clay used seem to support this hypothesis.

CS06 shows a peak in distribution in Room 1.2 and Room 2.1, where three rim sherds have been found in each room (Fig. 156). However, the scarcity of CS06 examples found at the site (23 in total) precludes an accurate statistical analysis.

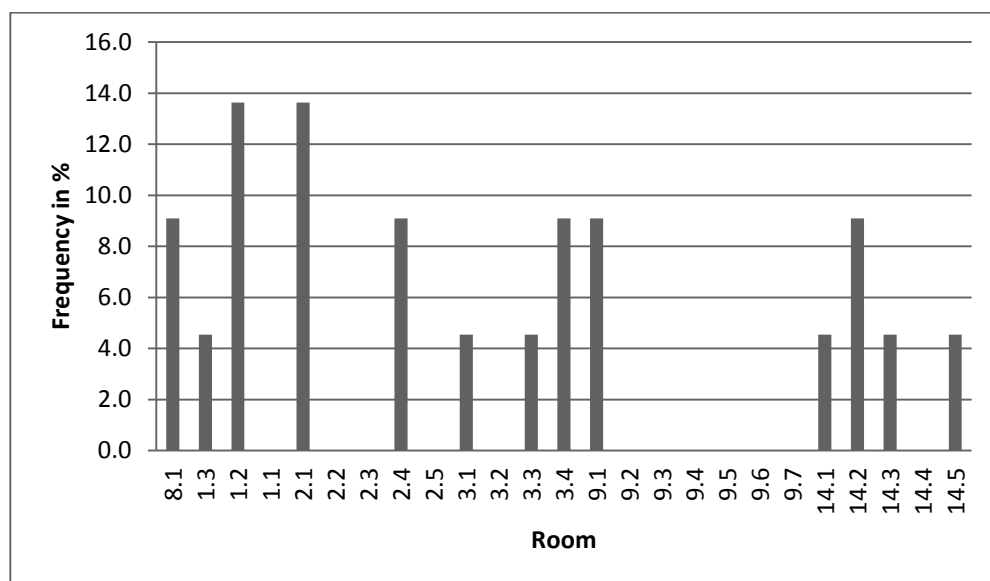


Figure 156. Chart showing the distribution of CS06 across the excavated rooms.

Medium dimension jugs - CS07

CS07 can be associated with short-distance transportation, such as the pouring or serving of liquid content. The two different conformations of the mouth of this jug (CS07a or CS07b) may be associated with a different content, for example, water (a) and wine (b). CS07 are associated with a common ware and no surface treatments such as bitumen or slip are common, with all surfaces appearing smoothed.

In these shapes, the vertical handle on the rim was used for either carrying or transporting the vessel or for pouring out its content. CS07 vessels usually have only one handle, making them particularly suited to short-distance transportation (for example from a kitchen to the consumption area) rather than to long-distance. Regrettably, no complete CS07 examples were recovered from the settlement. However, according to the diagnostic sherds found, it is likely that CS07 vessels were medium in dimension. The trefoil mouth that characterised some jugs is particularly suitable for short-distance transportation. The particular shape of the opening is incompatible with closure systems, which are characteristically associated with storage vessels. It is possible that vessels associated with a circular rim and those associated with a trefoil mouth would have been used as containers for different types of liquid. CS07b are smaller than CS07a and their walls are thinner. They were probably used for serving liquid, whilst CS07a seem more suited to short-

distance transportation. In general, the frequency of CS07 in the assemblage is small. However, only those rim diagnostic sherds that were related to a handle or which exhibit a trefoil mouth profile have been considered as CS07. This restrictive classification criterion has possibly led to an underestimation of the number of CS07 vessel shapes actually present at the settlement.

It is interesting to note that jugs at Tell Ahmar are undecorated, which means that there was no emphasis on the ceramic external appearance of the jugs even of those coming from a private residence (see Conclusions). CS07 were concentrated in Room 1.3 (four rim sherds in total). CS07 are completely absent in Building M9 and in Block 2 (Fig. 157).

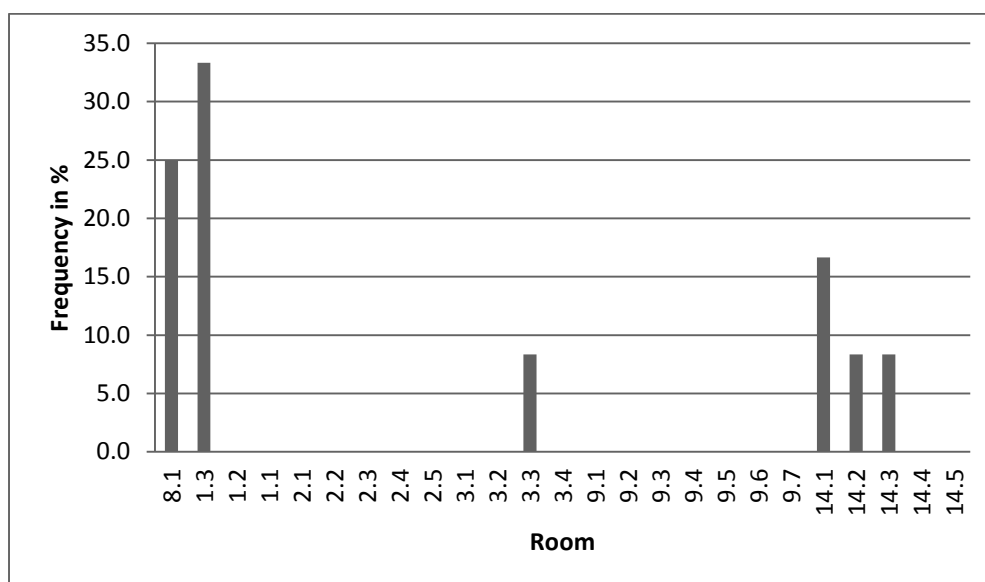


Figure 157. Chart showing the distribution of CS07 across the excavated rooms.

Small/medium dimension jars with a high/medium neck - CS08

CS08 can be associated with multifunction activities such as long-term storage and long-distance transport. Considering the high presence of these types of vessel, it is reasonable to suggest that CS08 was also used in the short-distance transportation of water. Water was very difficult to conserve for a long period, especially in the summertime. Given the particular position of the site near the river, it is unlikely that water was stored in jars; instead, it is more likely that medium dimension jars were used to transport water from the river to the houses. Water is an element that is often

underestimated by the archaeologists, who tend to identify vessels as only containers of beer, wine, or oil. Nevertheless, given that water was not traded as an economic good, information in texts about it is rare (see Chapter 9). Water was used not only to be drunk (pure) or to cook (Bottéro, 1987), but it was added to alcoholic drinks to make them lighter (Powell, 1996).

If we assume that CS08 were generally involved in the inter-regional transportation of wine or beer (see Conclusions), and that those similar shapes were also produced locally for transporting or storing water, then this would justify the high presence of such shapes among the sites. It is possible that CS08 was initially involved in beer, wine or oil transport, and then was reused for transporting water.

Three samples were selected for residue analysis. Two of them showed positive results for oxalic acid, whilst the third (found in a domestic context) resulted negative but did exhibit a +/- reaction to tartaric acid. These results do not necessarily confirm that CS08 vessels were used for storing/transporting beer, but they are consistent with this hypothesis.

The maximum thickness of CS08 is approximately 1 cm and, given their dimension, CS08 were not particularly thick. This supports the hypothesis that CS08 were used to transport liquid over long-distances as thinner-walled vessels would have been lighter to transport, although less robust.

Morphological features also suggest similar function. The narrow medium/high restricted neck and the small rim diameter lead to the hypothesis that this shape was used for storing liquid or dry food such as seeds. It is likely that accessibility to the content would only have been possible through pouring out. The particular depression on the outside edge of the rim which defines all CS08 examples makes it compatible with a closure system that uses a piece of cloth bound by a string.

CS08 is a standardised shape with variations in either rim profile or rim diameter being slight. Only three out of 200 examples are associated with a small dimension, and rim diameter dimensions varied between 10 and 14 cm (Fig. 158).

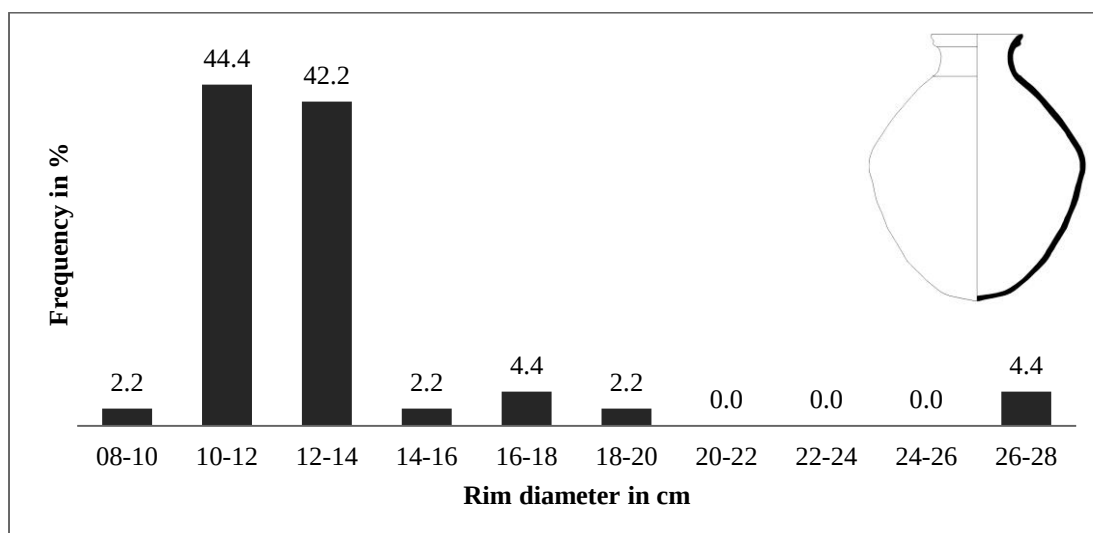


Figure 158. Chart showing the frequency of CS08 rim diameters.

The capacity of the only complete shape found at Tell Ahmar is approximately 16 l (water) or 10 kg (barley) (Appendix C, Plate 20 No. 1).

CS08 is one of the most common shapes at Tell Ahmar. Its presence is well attested in the majority of the excavated rooms. The distribution of CS08 shows a peak in Room 8.1 and Room 14.1 (Fig. 159).

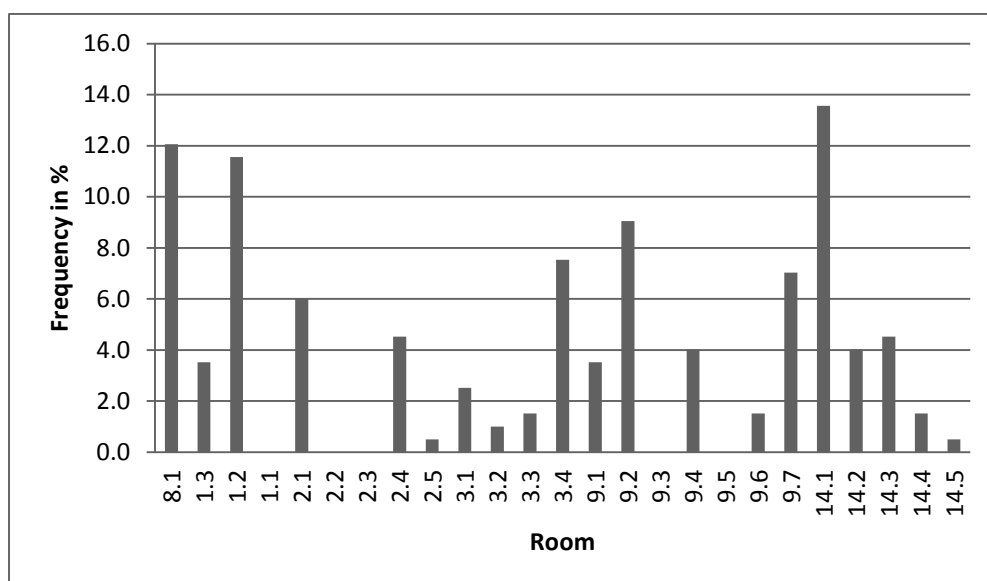


Figure 159. Chart showing the distribution of CS08 across the excavated rooms.

CS08 from sites located on the Euphrates River share similar morphological features, such as the vessel's rim diameter size (between 10 and 14 cm) and the rim

profile. However, when dealing with complete shapes, vessels from the Upper Euphrates sites have a more rounded body than the Middle Euphrates forms (see Appendix C, Plates 51-52). Cooper noticed that CS08, also very common at Hadidi, was very frequent along the sites of the Euphrates Valley. She observed similarities in rim diameter, which varied between 10 and 14 cm among the sites at Tell Hadidi, Habuba Kabira, Halawa, Tell Bi'a, Tell Mohasan, Tell Ashara, Mari, Baghouz and Haradum (Cooper, 1997). At that time, the MBA ceramic material from Ahmar had not yet been discovered, but it can now be seen that it matches this classification perfectly (Tab. 89). However, if the rim diameter for those shapes appears as a standard measure, the vessel capacities of CS08 seem to be different. In some cases, the CS08 show different capacities, even within the same site.

Site	Rim diam. (cm)	Capacity (l)	Reference
Ahmar	14	16.4	Appendix C, Plate 20 No. 1
Hadidi	12	17.6	Dornemann, 1984, pp. 63-87, fig. 3/23
Zeytinli Bahçe	12	13.3	Balossi, et al., 2007, pp. 355-381, fig.10/a
Lidar H.	12	13.6	Kaschau, 1999, p. 47, fig. 24/K/F2a
S. Tahtani	7.5	5.3	Sconzo, 2007, p. 296, fig.23/1
Halawa	13.5	23.9	Hempelmann, 2005, pl. 93/585
Mari	14	10.3	Parrot, 1959a, fig.87 M895
Baghouz	12	6.9	Du Mesnil Du Buisson, 1948, pl. LXVIII/Z68
Haradum	12.5	9.1	Kepinski, 1992, fig. 64/3
Haradum	13	7.3	Kepinski, 1992, fig.64/4
Haradum	15	21	Kepinski, 1992, fig.64/5
Hamam et-T.	12	10	Van Loon, 1988, pl. 140/184
Mardikh	12	3.8	Pinnock, 2005, pl. XXXV/11
Mardikh	10	2.0	Nigro, 1999, pl. XLIX/48
Mardikh	8	1.5	Nigro, 1999, pl. XLIX/49
Mardikh	10	4.8	Nigro, 1999, pl. L/51
Mardikh	12	7.70	Nigro, 1999, pl. L/52
Leilan	11	2.3	Pulhan, 2000, p. 415, fig. 17.1
Leilan	11	2.6	Pulhan, 2000, p. 415, fig. 17.2
Leilan	11	2.4	Pulhan, 2000, p. 415, fig. 17.3

Table 89. Capacities calculated from CS08 complete shapes.

At Mari, several CS08 were found in Room 162, the *cella* of the Zimri-Lim Palace. At Aushariye, a CS08 very similar to those found at Ahmar was found inside the water cistern.⁵⁴ At Zeytinli Bahçe the CS08 found is characterised by a comb-

⁵⁴ <http://www.aushariye.hum.ku.dk/2005/english/oldest_fort.htm>.

incised potter's mark and a small hole in the middle of the base (Balossi, et al., 2007)
(Tab. 90).

CS08	Context
Ahmar	public-administrative, domestic
Lidar Höyük	domestic
Şavi Höyük	domestic
Şaraga Höyük	public-administrative
Zeytinli Bahçe Höyük	public-administrative
Mezraa Höyük	domestic
Shiyukh Tahtani	street
Aushariye	domestic
El-Qitar	official residence
Hadidi	domestic
Mumbaqa	domestic
Halawa	domestic
Ashara	public-administrative
Hariri	palatine
Baghouz	funeral
Haradum	domestic
Qala'at Halwanji	palatine? (survey)
Bi'a	palatine
Hammam et-Turkman	domestic
Mardikh	domestic, palatine, burial
Ansari	funeral
Mishrifeh	palatine
Leilan	palatine

Table 90. CS08 context comparisons.

Small/medium dimension jars with a high/medium neck - CS09

CS09 can be associated with multifunction activities such as long-term storage and long-distance transport. From the analysis of both CS08 and CS09, it appears that a liquid (probably beer according to the residue analysis) would have been contained in these shapes. In addition, given the large frequency of CS09 also associated with a domestic context, it is likely that these shapes were used to transport water.

Common ware characterise CS09 vessels. As for CS08, surface decorations are rare and where they do exist, mainly refer to simple combed decorations that consist of horizontal lines (see Appendix A).

The morphological and technological features of CS09 are similar to those of CS08. CS09 is also a standardised shape and is characterised by a rim diameter, which is normally between 10 and 14 cm (Fig. 160).

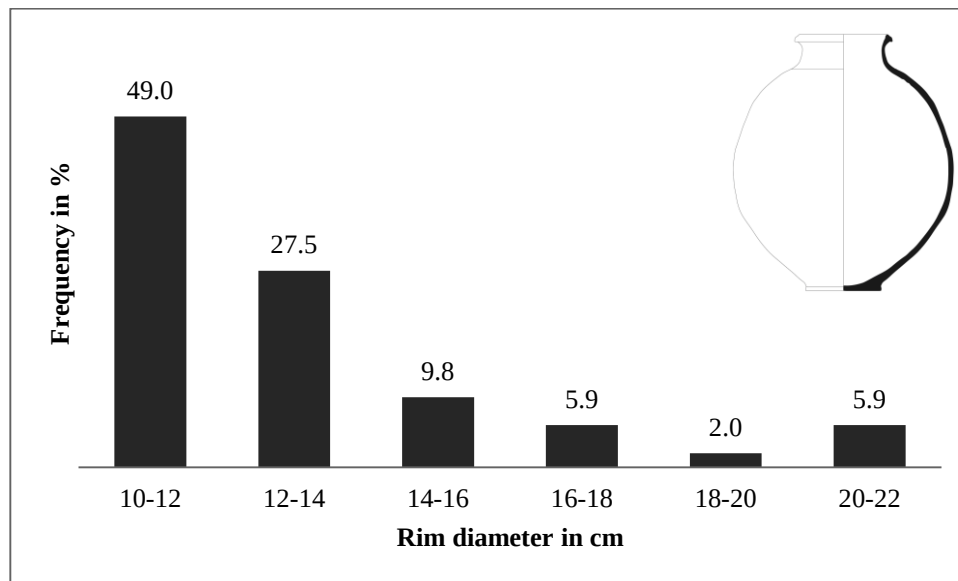


Figure 160. Chart showing the frequency of CS09 rim diameters.

The rim profile, however, is less homogeneous and presents three different sub-types (see Chapter 6), two of which are characterised by a folded-out rim that could have been particularly suitable for closing. The only complete example found is characterised by a flat base, and with a capacity of approximately 20 l (water) or 12.5 kg (barley) (Appendix C, Plate 25 No. 7). This shape in particular is slightly larger than the complete CS08 recovered from the site.

As for CS08, the distribution of CS09 is mainly associated with the domestic context and with Room 14.1. However, unlikely CS08, CS09 are less common in Building M8 (Fig. 161).

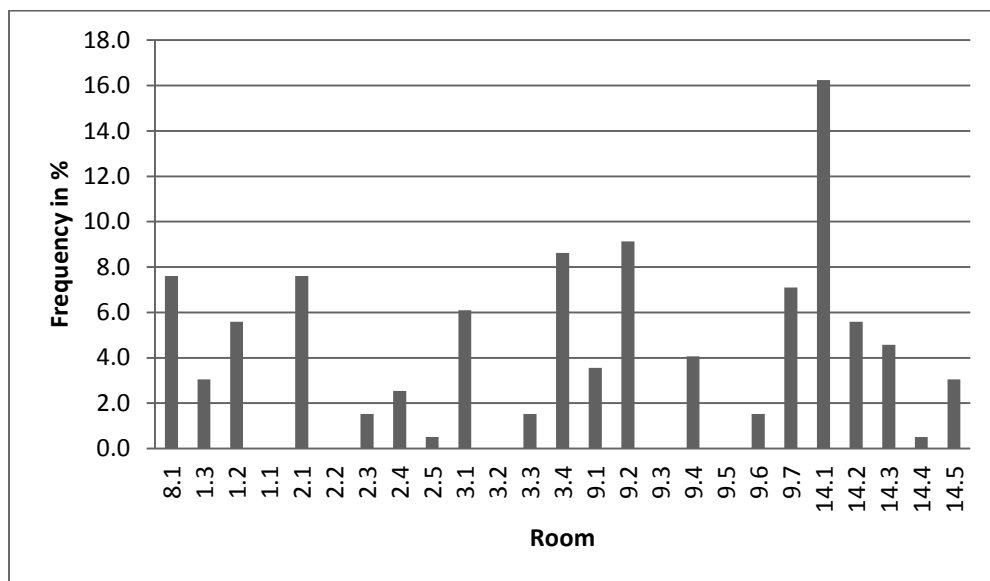


Figure 161. Chart showing the distribution of CS09 across the excavated rooms.

CS09 is also a very common shape among MBA sites, and it shows some homogeneity in rim diameters (Tab. 91).

Site	Rim diam. (cm)	Capacity (l)	Reference
Ahmar	14	20.2	Appendix C, Plate 25 No.7
Bi'a	9	2.5	Einwag, 1998, p. 97, fig. 57/1
Bi'a	11.5	3.3	Einwag, 1998, p. 97, fig. 57/2
Bi'a	11	4.6	Einwag, 1998, p. 97, fig. 57/6
Hadidi	10	2.3	Dornemann, 1977, p. 124, fig. 13/26
Hadidi	10	1.4	Dornemann, 1977, p. 124, fig. 13/27
Hadidi	8	1.3	Dornemann, 1977, p. 124, fig. 13/30
El-Qitar	10	28.8	McClellan, 1986, p. 104, fig. 12/1
El-Qitar	12	30	McClellan, 1986, p. 104, fig. 12/2
El-Qitar	12	29.2	McClellan, 1986, p. 104, fig. 12/3
Lidar Höyük	12	24.1	Kaschau, 1999, p. 48, abb. 25/K/F 2b
Lidar Höyük	12.5	24.4	Kaschau, 1999, p. 48, abb. 25/K/F 2b
Lidar Höyük	12	42.9	Kaschau, 1999, p. 48, abb. 26/K/F 2b
Chagar Bazar	12	4.4	McMahon, 2009, p. 345, plate 51/19
Chagar Bazar	12	7.5	McMahon, 2009, p. 345, plate 51/19

Table 91. Capacities calculated from CS09 complete shapes.

CS09, but characterised by a Khabur Ware, have been found by Mallowan in a burial context at Chagar Bazar. Similar shapes were also found at Tell Brak, where a complete form is characterised by a hole in the middle of the base (Oates, et al., 1997), and at Tell Leilan (Pulhan, 2000) (Tab. 92).

CS09	Context
Ahmar	public-administrative, domestic
Aushariye	domestic
El-Qitar	official residence
Hadidi	domestic
Mumbaqa	domestic
Halawa	domestic
Ashara	public-administrative
Hariri	palatine
Qala'at Halwanji	palatine? (survey)
Bi'a	palatine
Hamam et-Turkman	domestic
Mardikh	palatine
Mishrifeh	palatine
Chagar Bazar	domestic, public-administrative
Leilan	palatine

Table 92. CS09 context comparisons.

Medium/large dimension jars with short or no neck - CS10

CS10 was used at Tell Ahmar for liquid storing activities. In addition, because of some similarities with other sites of the region, CS10 was probably involved in long-distance transport (see Chapter 3 and Conclusions).

Residue analysis indicates a positive presence of oxalic acid, which was concentrated on the external surface of a sample characterised by a potter's mark.

Two CS10 examples are red-slipped on the internal surface. This treatment would have aided the conservation of liquid content. Moreover, the external surfaces are often adorned with complex decorations consisting of combed lines (horizontal and wavy) or cordoned and ridged patterns on the same vessel. Cordoned decorations in particular could be of practical significance as well, as they may have facilitated an easier grip of the vessel. In addition, in the case of high vessel shapes, cordoned decorations would have served to hide the conjunction of two different parts of the same vessel during manufacture (see Chapter 5).

CS10 morphological characteristics are similar to a sub-type of CS04 (CS04a), except that CS10 vessels have much smaller rim diameters and thinner walls. Rim diameters and profiles present some variations that do not allow CS10 to be defined as a standardised shape. However, no complete CS10 shapes were found at the site, so it is necessary to infer the likely appearance of a complete vessel. Despite the rim diameter not being particularly large, it is likely that CS10 was a tall,

substantial jar. It was probably reasonably heavy when full and therefore relatively immobile. As with CS04, CS10 can be associated with a base with a perforation in the middle. Similar to CS04, a potter's mark on a CS10 example was also found (Fig. 162).

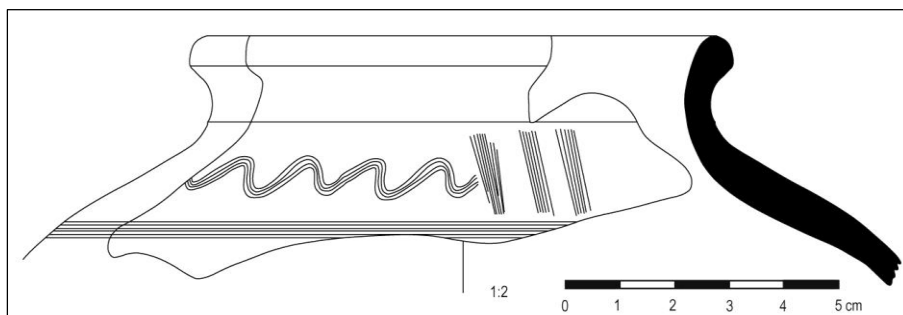


Figure 162. Potter's mark on CS10 (illustration: Silvia Perini).

This potter's mark is similar to the ones found on CS04 (see Fig. 153 a and b). It consists of three vertical bands of incised lines, and was made with the same tool that was used to make the combed decoration.

Contextual analysis has indicated a concentration of CS10 in Courtyard 9.6 (Fig. 163).

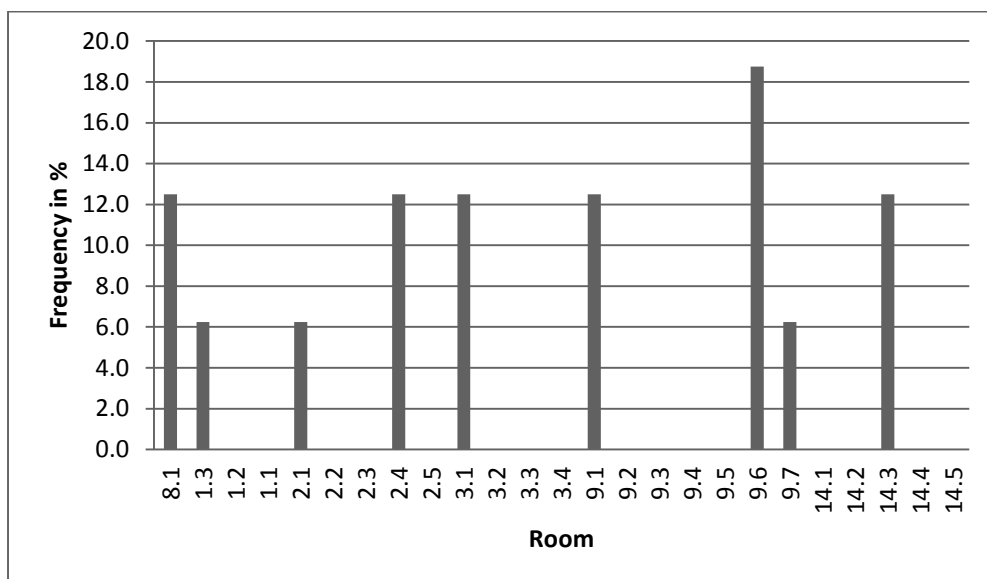


Figure 163. Chart showing the distribution of CS10 across the excavated rooms.

CS10 were also reused as jar burials, having since was found in Room 14.3. Apart from the burial context, CS10 are totally absent from the domestic context.

A complete CS10 example with a perforated base has been found in Palace A at Tell Bi'a. However, this example is characterised by a grooved rim (Einwag, 1998, p. 83, fig. 45/4). Neckless jars were also found at Tell Hadidi (Dornemann, 1984, fig. 4/1-3) and Halawa (Hempelmann, 2005, tafel 91/579-580). As for Tell Ahmar, CS10 were used as jar burials at Hammam et-Turkman (Van Loon, 1988, plate 58/26) and Shiyukh Tahtani (Sconzo, 2007, p. 291, fig. 20/3) (see Chapter 9).

Medium dimension flasks (or *Pilgrim Flask*) - CS11

CS11 can be associated with the long-distance transportation of a liquid product. Given the low frequency of CS11 along the Euphrates, it is likely that such shapes were used for transporting a particular type of fine liquid, probably wine.

The rim diameter measurement, which is associated with either c. 5 or c. 10 cm, would suggest that there were two main sizes of CS11. If we assumed that CS11 were used for wine transport along the Euphrates, from Carchemish down to Mari, as the texts suggest, we would expect to find more specimens on the sites. CS11 is very fragile, but both rim and body sherds are very distinctive, so archaeologists should be able to recognise this shape, even when dealing with body sherds only. At Tell Ahmar, a complete, but broken, and subsequently restored shape was found, along with four more rim fragments. The CS11 published by the other sites (both complete and semi-complete) are also very limited. This suggests that a very refined liquid was traded in these shapes, probably addressed to an elite class.

As for CS01, the very narrow rim opening made this shape particularly suitable for holding liquid content. The capacity of the complete shape is approximately 3.7 l (water). The limited weight and closed neck are features, which are correlated with transport activities. Although no jar stoppers associated with CS11 have been found, it is likely that they were used to seal the content, most likely being attached to a small handle on the body. The presence of a handle supports the hypothesis that CS11 were used for transport, as this made the vessels easy to grasp. Furthermore, the position of the handle on the shoulders would not have made for

easy control of pouring activities, thus it is unlikely that this shape was used for serving. No CS11 were indeed found in the domestic area.

The particularly comfortable rim profile and the narrow neck also suggest that these vessels were employed in direct drinking activities. CS11 vessels possess a relatively unstable base, a characteristic that makes them less suitable for serving liquid, and more suitable for carrying it.

The surface of the complete shape found at Tell Ahmar is characterised by a circular corrugated decoration. This pattern seems to have modelled on the leather bottles used by the merchants to transport water or beer over long-distance (Pilgrim Flask) (Einwag, 2007) (see also Chapter 5).

CS11 was a common shape in Syria and in Levant during the end of the MBA and the beginning of the LBA (Gates, 1988). Differences between CS11 specimens mainly affected the vessel size, but not the vessel morphological features (Tab. 93).

Site	Rim diam. (cm)	H (cm)	Capacity (l)	Reference
Ahmar	5.2	23	3.7	Appendix C, Plate 28 No.1
Ahmar	5.5	-	-	Appendix C, Plate 28 No.4
Bi'a	11.2	37.6	13.0	Einwag, 1998, p. 99, fig. 59/4
Bi'a	10.5	26.1	9.5	Einwag, 1998, p. 100, fig. 60/1
Hadidi	4.5	20	2.1	Dornemann, 1977, p.125, fig.14/32
Mumbaqa	10	11	-	Czichon & Werner, 2008, pl. 65/6000
Terqa	14	50	54.7	Kelly-Buccellati & Shelby, 1977, p. 25, fig. 11/18
Lidar Höyük	6	ND	-	Kaschau, 1999, p. 50, fig. 29/K/F6a
Lidar Höyük	6	27	4.9	Kaschau, 1999, p. 50, fig. 29/K/F6a
Zeytinli Bahçe Höyük	10	40	17.1	Balossi et al. 2007, p. 373, fig. 12 (with a potter's mark)
Tilbeshar	5	ND	-	Kepinski and Ergeç, 1999, p. 250, fig. 4/1
Hariri	5.7?	32.7	ND	Parrot, 1959a, p. 116
Hariri	ND	33.8	8.5	Parrot, 1959a, pp. 116-118, fig. 84/857
Hariri	5.5	34.1	ND	Parrot, 1959a, p. 116
Hariri	9.8?	33.1	ND	Parrot, 1959a, p. 116
Hariri	10.6	40	ND	Parrot, 1959a, p. 116
Hariri	10.5	39.6	ND	Parrot, 1959a, p. 116
Haradum	10	41	18.5	Kepinski, 1992, fig. 76/1
Haradum	8.5	36	7.9	Kepinski, 1992, fig. 76/2
Haradum	10	ND	-	Kepinski, 1992, fig. 76/3
Haradum	9	ND	-	Kepinski, 1992, fig. 76/4
Haradum	10	ND	-	Kepinski, 1992, fig. 76/5
Haradum	10	ND	-	Kepinski, 1992, fig. 76/6

Site	Rim diam. (cm)	H (cm)	Capacity (l)	Reference
Baghouz	10	c. 32	11.2	Du Mesnil Du Buisson, 1948, pl. LXXVIII/203
Baghouz	5	22	3.6	Du Mesnil Du Buisson, 1948, pl. LXXVIII/203

Table 93. Capacities calculated from CS11 complete shapes.

Large dimension CS11 are more common in the Middle Euphrates area (e.g. Mari, Tell Bi'a), while medium dimension in the Upper Euphrates (see Appendix C, Plates 53-54). The examples found at Mari, as with the one found at Zeytinli Bahçe, are characterised by a potter's mark. At Mari, the potter's mark was made with bitumen (Parrot, 1959a) while at Zeytinli it was incised.

Pilgrim Flasks have been found in domestic, funeral and public-administrative contexts (Tab. 94).

CS11	Context
Ahmar	public-administrative, domestic
Lidar Höyük	domestic
Zeytinli Bahçe Höyük	public-administrative
Şaraga Höyük	public-administrative
Aushariye	domestic
Hadidi	domestic
Mumbaqa	domestic
Ashara	public-administrative
Hariri	palatine
Baghouz	funeral
Haradum	domestic
Tilbeshar	domestic
Bi'a	palatine

Table 94. CS11 context comparisons.

Cooking pots with triangular lugs - CS12

Given that CS12 is always associated with a cooking ware (see Appendix B - Temper Type Number 12), it is argued that this shape was used for processing activities. Some examples are characterised by a burnished surface, which would have enhanced heating capability. Given the particular shape and position of the lug, it is likely that at least one other lug was located on the opening, in the opposite location as for a modern pot, but no complete rims were found which could prove

this hypothesis. If we assume that two lugs were present on the opening, it is reasonable to surmise that CS12 would have been suitable for transportation over short-distances.

Medium/large dimension cooking pots with no neck - CS13

As for CS12, CS13 is always associated with cooking ware (see Appendix B - Temper Type Numbers 04, 09 and 12). The high presence of inclusions with large and medium to large dimensions makes CS13 vessels suitable for thermal shock resistance. The restricted shape suggests CS13 would have been used for cooking, possibly boiling activities. Thickness in examples associated with both medium and large dimension vessels is particularly rare. Thinner walls would have increased the thermal conductivity. CS13 is usually undecorated and the surface only smoothed. Due to the high porosity of their walls, it is likely that CS13 vessels were associated with a dry content rather than liquid. In a few examples, simple horizontal, combed lines, or fingernail decorations are present.

The rim diameter dimension varies between 14 and 30 cm in the medium dimension shapes, and between 32 and 40 cm in the large dimension shapes. Large examples, however, are rare so it is likely that CS13 was commonly a medium dimension shape, with a rim diameter between 16 and 22 cm (Fig. 164).

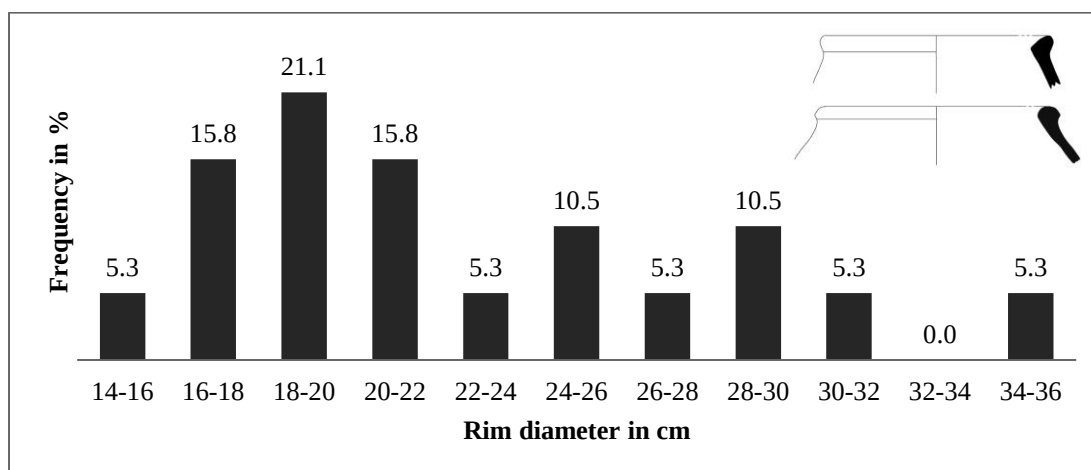


Figure 164. Chart showing the frequency of CS13 rim diameters.

The restricted shape suggests CS13 would have been used for those cooking activities where the content did not need to be stirred (e.g. in boiling). The absence of

a neck and the presence of a rounded and thickened folded-out rim would have precluded the pouring of the content directly from the pot. Instead, it was probably lifted out using other tools. Bases associated with this shape are generally rounded, which make the vessel unstable, but more efficient for heat propagation. Simple/rounded bases, in addition, would have fitted better on the oven. There is an absence of any appendages, such as handles or lugs that could have assisted in removing the shape from the fire. It is likely that other preventive measures would have been used when dealing with the heat.

Contextual analysis indicates that CS13 were mainly associated with the domestic context, with a particular concentration in Room 14.1 (Fig. 165). In Room 14.1, one of the largest examples was also recovered (Appendix C, Plate 31 No. 1). However, their presence is also frequent in the storage building (Room 3.1).

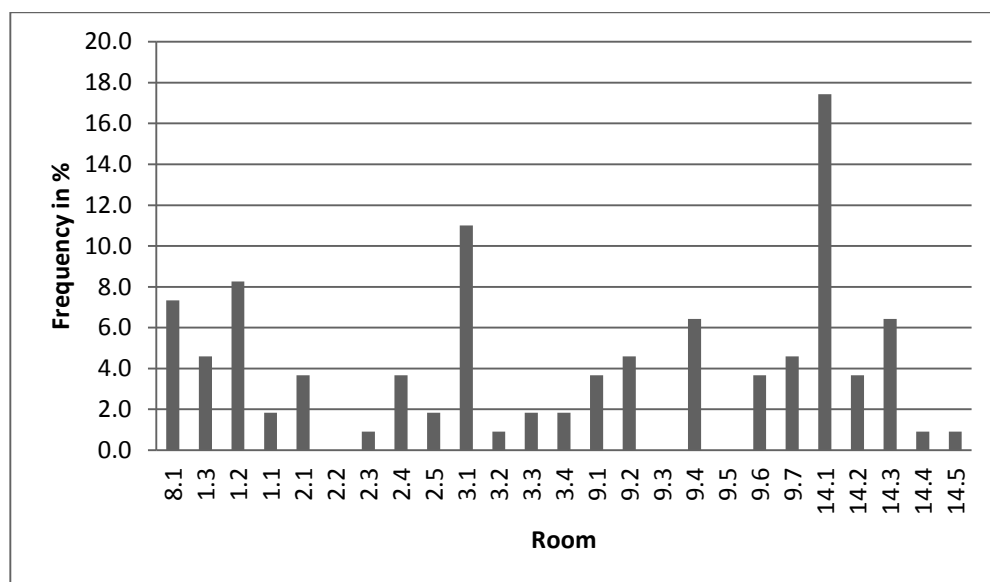


Figure 165. Chart showing the distribution of CS13 across the excavated rooms.

It is important to note that cooking vessels were found at Tell Ahmar not only in association with a domestic content (where ovens were found), but also in a public context where *tannur* were not discovered (see Chapter 8). The high presence of cooking vessels in the public context suggests that they were in some way involved in storage processes (e.g. for storing food or for transporting processed food which needed to be stored). Thus, CS13 was not exclusively used for cooking activities that required heat, but also employed in short-term storage activities.

Medium dimension cooking pots with no neck - CS14

CS14 was used in association with processing with heat activities. These shapes share similar techno-morphological characteristics with CS13, the only difference being related to the rim orientation, which is simple and not folded-out. The rim diameters of CS14 tend to be smaller than CS13 and, although both shapes are made of a similar fabric, CS14 examples are often burnished. The rim orientation and dimension, as well as surface treatments, suggest that CS14 would have been more suitable for liquid than for dry contents. As for CS13, visible burnt evidence on the CS14 examples reinforces their association with cooking activities on a fire.

As at Tell Ahmar, a homogeneous distribution of cooking pots (CS12-14) within the settlement has been observed at Chagar Bazar (McMahon, 2009), where a high presence of cooking pots has been noted in both domestic and administrative contexts, and at Ebla (Pinnock, 2005).

Medium/large dimension bowls with a carination under the rim - OS01

OS01 can be associated with multi-uses relating to dry or semi-liquid food such as processing without heat (i.e. mixing, grinding) and with heat (i.e. frying), and for short-distance transport.

OS01 is characterised by either common or cooking ware (see Appendix B - Temper Type Number 12). This variation in fabric type seems to make this shape particularly adaptable for multi-activities. Cooking shapes (which are characterised by a folded-out rim) may have involved activities such as frying or baking. Grooved decorations on the top of the rim would have allowed for a more secure grip.

The substantial rim opening and the concave wall shape are morphological features that make OS01 vessels particularly suitable for activities involving the manipulation of dry content such as mixing and crushing. The rim profile, whether mushroom shaped, simple-orientated or square folded-out, does not suggest an association with food processing. On the other hand, the open shape of the vessel and absence of a vertical wall indicate that OS01 was used in association with either dry or semi-liquid aliments (e.g. yogurt or dough for baking) rather than liquid. It is

likely that OS01 was also used for serving activities where content was shared among a group. No bases associated with OS01 were found that could engender an understanding of the stability of the shape.

The distribution of OS01 shows a concentration in the public context, particularly in Room 2.4 of Block 2 (Fig. 166).

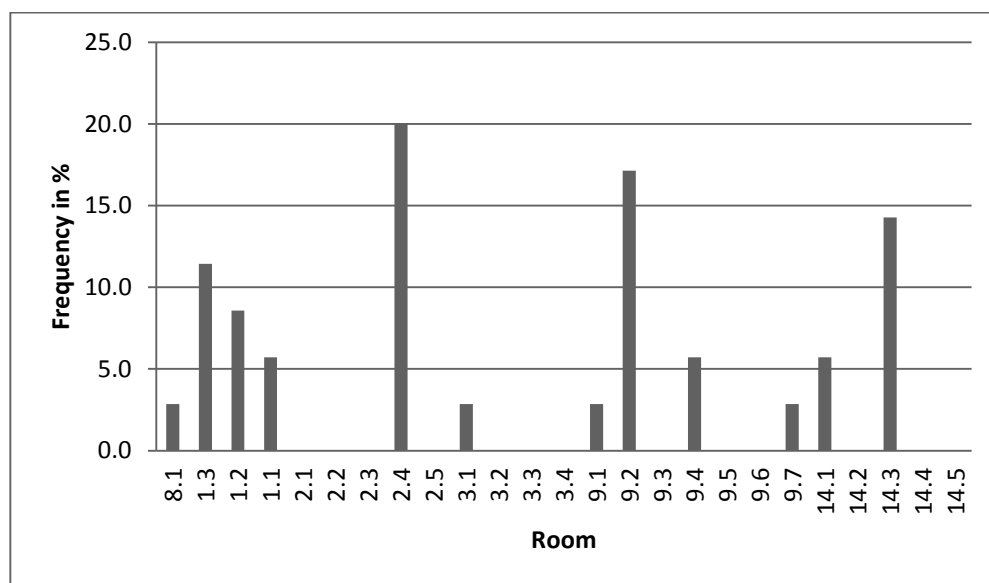


Figure 166. Chart showing the distribution of OS01 across the excavated rooms.

Medium dimension bowls - OS02

OS02 can be associated with processing without heat and short-distance transport (i.e. serving activities). As for OS01, the large opening of OS02 would have allowed a manipulation of the content that was probably processed into the same bowl. The rim diameters of OS02 vary between 22 and 28 cm, suggesting only a small variation in the size of complete shapes among the assemblage. Owing to its considerable size, it is likely that OS02 was used for serving.

Moreover, distributional analysis has shown a concentration of OS02 in the public context and particularly in Room 3.1 of Block 3 (Fig. 167).

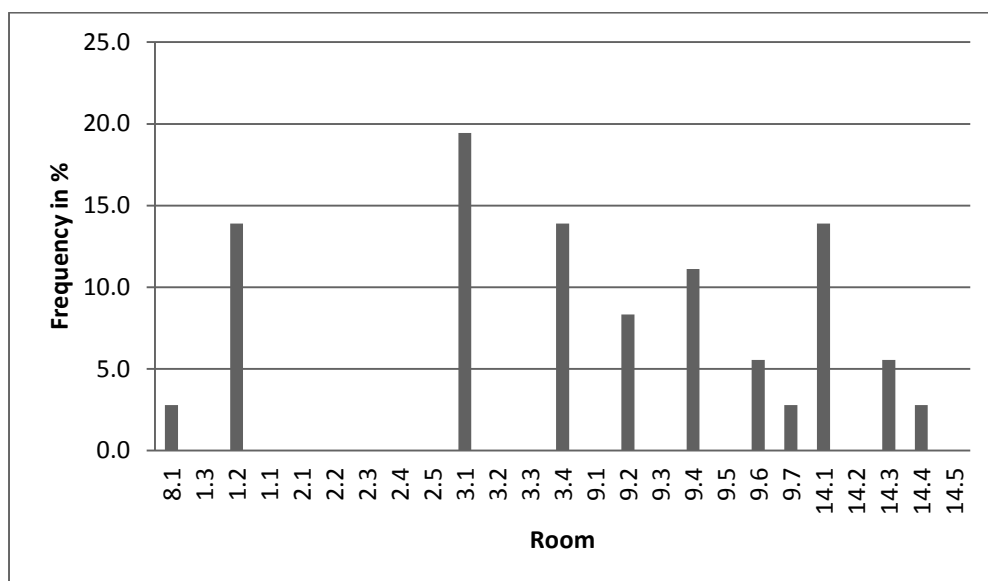


Figure 167. Chart showing the distribution of OS02 across the excavated rooms.

This room is associated with (grain) storage activities. In this room, OS02 may have been used as a lid for medium dimension CS04 jars.

Medium dimension platter bowls - OS03

OS03 were used for short-distance transport activities, such as serving and eating. In addition, because OS03 is one of the most frequent shapes among the rim assemblage, it has been suggested that they may have been used in conjunction with other activities. Given their high frequency in the public context, for example, it is possible that OS03 were used as lids, as for OS02, probably placed in an inverted position (Fig. 168).

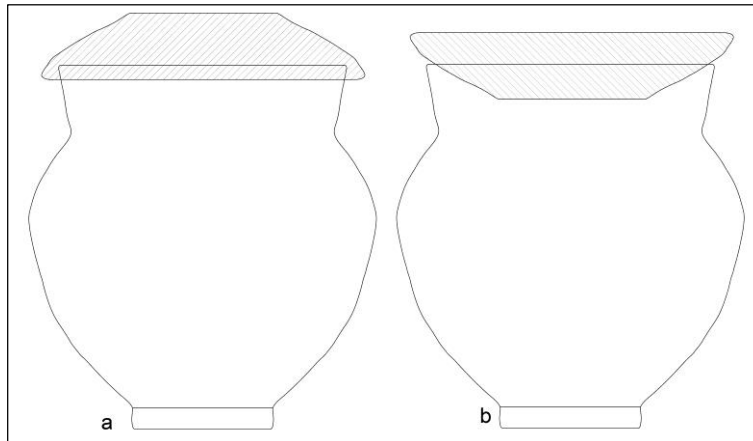


Figure 168. Reconstruction of an OS03 used as a lid (illustration: Silvia Perini).

The measurements of the OS03 vessels' diameter match those of several closed shapes at Tell Ahmar, and thus support this hypothesis.

Versatility can be observed in the technological features. Despite its general association with common ware, OS03 examples can be related to cooking, fine, Grey and Khabur wares. The cooking ware examples were classified as OS03c, which are generally larger and deeper bowls. They may have been used on a fire in association with activities such as frying. Some of the OS03 examples associated with fine ware exhibit a painted decoration on the upper part of the vessel and are usually smaller in dimension (Appendix C, Plate 40 No. 6-8). The Grey Ware example is also smaller.

OS03 is a shallow bowl with a medium dimension. However, a large and a small dimension shape have also been classified as OS03. In medium dimension shapes, the rim diameter can vary widely (between 12 and 38 cm) but peaks in frequency at 26-28 cm (Fig. 169).

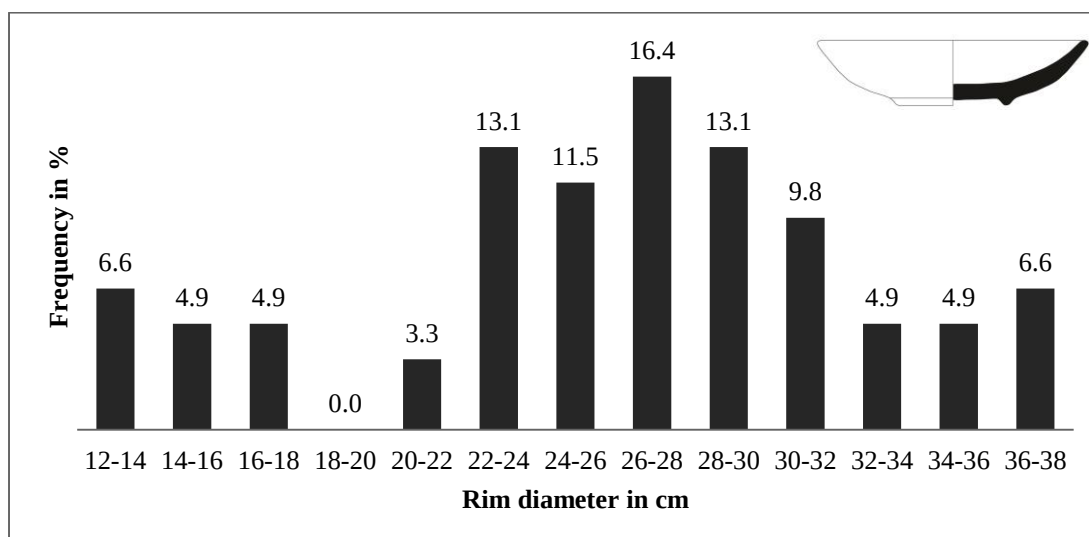


Figure 169. Chart showing the frequency of OS03 rim diameters.

The rim profile of OS03 has been classified further into three sub-types, which emphasise their morphological versatility (OS03a, OS03b, OS03c). The capacity of six complete shapes with different rim diameters has been measured and found to vary between approximately 0.10 to 1.60 kg (barley). Despite having a large rim diameter, OS03 were not very spacious containers, due to their limited height (a maximum of 10 cm has been observed in complete shapes). This characteristic would have been a disadvantage in processing food (i.e. in mixing, washing and grinding), which suggests that these vessels were used for consumption activities instead. OS03 is associated with either a flat or ring base which would have improved vessel stability. The accessibility of the content was possible through manipulation, and the food contained in OS03 was brought to the mouth either by using a tool or directly by hand. One of the OS03 sub-types (OS03b) is characterised by a folded-in rim, which would have made it difficult to pour the content out of the bowl (Appendix C, Plates 39-40). On the other hand, this feature seems to be particularly useful in helping to avoid spillage of the content (particularly with semi-liquid food).

Bowls that are smaller than 20 cm are usually associated with a fine or a Grey Ware. The relatively high presence of fine ware for this shape may emphasise a different use of the same form according to specific occasions, either in daily situations, or during ceremonial or special circumstances. Moreover, this data indicates that bowls

used for everyday eating were considerably larger, and probably used for sharing food. Personal experience of eating with locals in the Syrian villages has shown that bread is often used as a dish, and that large dimension dishes containing food are used to share. Contrarily, during special occasions each person could have had their own dish, which might have been smaller in dimension, but with more emphasis placed on aesthetical appearance.

Contextual analysis has shown that OS03 is particularly frequent in the domestic context, especially in Room 14.1 (Fig. 170). OS03 fine ware examples were found in Room 14.3 while the only Grey Ware example of OS03 was found in Room 1.3.

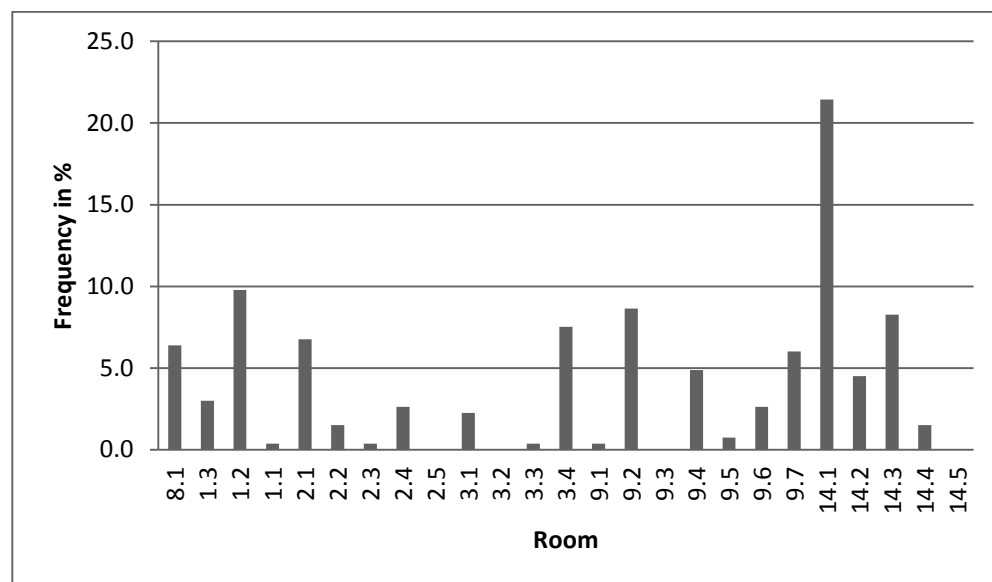


Figure 170. Chart showing the distribution of OS03 across the excavated rooms.

It is important to emphasise, moreover, that OS03 were often placed with the deceased in the burial context, together with CS01 or OS08 that are also associated with consumption activities. The three examples found in jar burials are classified as OS03b.

Medium dimension bowls with out-turned wall - OS04

OS04 is associated with multi-uses such as short-distance transport. In addition, the presence of cooking ware examples suggests a use in connection with heat or hot content.

The dimension, depth and large opening of OS04 make this shape particularly suitable for mixing, washing and grinding activities. The rim dimension can vary considerably, between 12 and 30 cm. This variation in size implies uses associated with different activities. The out-turned rim profile could have reduced the loss of the content by spillage when moved.

Contextual analysis has indicated that the distribution of OS04 is concentrated in the public context, evidence of which can be seen in Block 3, Room 3.4 (Fig. 171). Despite the morphological features of OS04 indicating that this vessel type was not used for storage directly, it is possible that this shape was used in conjunction with storage activities (i.e. short-distance transport).

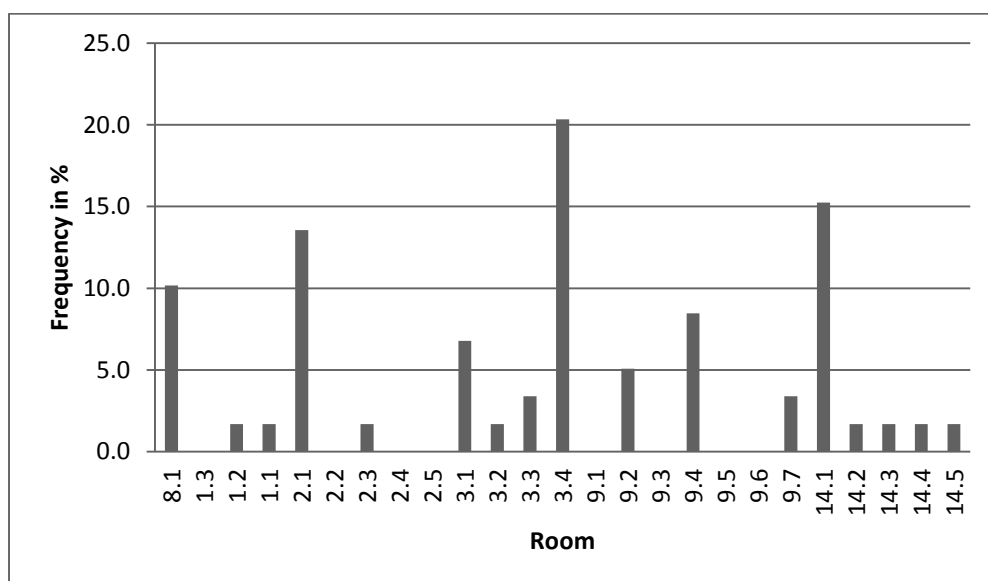


Figure 171. Chart showing the distribution of OS04 across the excavated rooms.

Small/medium dimension strainers - OS05

OS05 are characterised by small holes on the body, allowing them to be defined as strainers. These shapes were used for processing without heat activities. However, only three such examples were found at Tell Ahmar. Owing to the multi-use of such a tool, it is likely that strainers were usually made with other material (i.e. straw).

The three examples found are characterised by different rim profiles and dimensions (small and medium).

Small/medium dimension deep bowls - OS06

The small number of OS06 examples and relative technological and morphological features did not allow inferences on vessel function for this form.

Large dimension basins/vats - OS07

OS07 is associated with long-term storage. If we assume that this container was involved in beer production, then it would have been used either to store the barley, or as a container for the water, which would have served to allow the germination of the barley in the malting process (see Chapter 9). The complete shape found in Room 8.1 related to a food preparation area and its proximate location to the *tannur* may suggest that the content was used in conjunction with processing activities (e.g. bread making).

An OS07 example was found *in situ*. The capacity of this shape is approximately 140 l (water) or 85 kg (barley) (Appendix C, Plate 44 No. 1). Its weight would have precluded the transportation of this shape, which was probably considered as an installation in the room. Storage and processing functions are suggested for this shape, despite its large opening not being particularly suitable for closing. Either dry or liquid material could have been contained within, and then removed from the vessel using a ladle or other small container. However, it is more likely that a semi-liquid content (benefiting from adequate ventilation) would have been kept in this basin, rather than a liquid one, as the basin would have required periodic cleaning. Residual analysis has been undertaken on the complete shape, the result being a positive indication of oxalic acid. However, as only one sample was taken, this data does not allow a rigorous generalisation on its content.

This shape shows a higher concentration in the domestic context (Fig. 172).

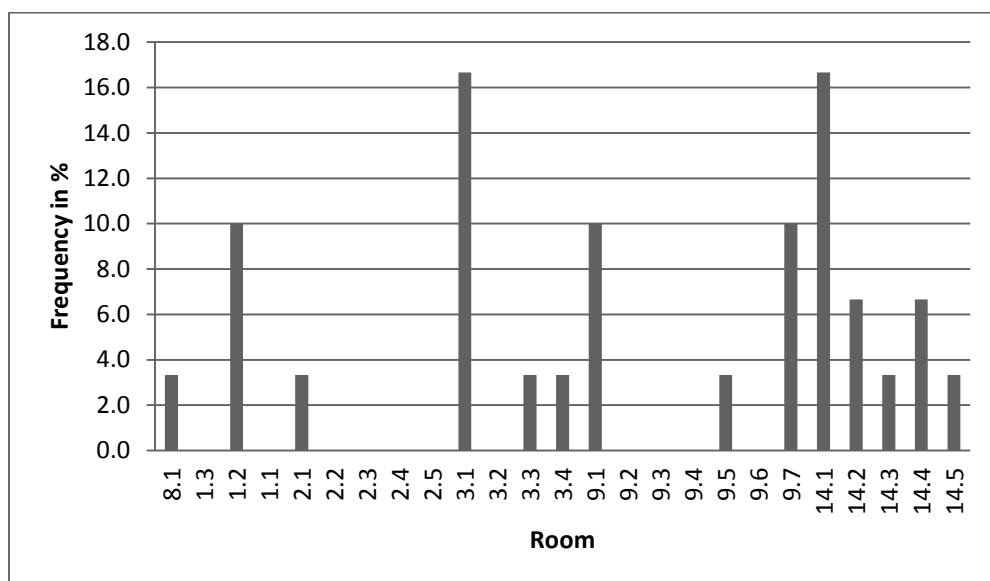


Figure 172. Chart showing the distribution of OS07 across the excavated rooms.

It is not a particularly common shape (only 30 rim sherds were counted), which suggests that only one or two shapes could have been installed in any house.

It is interesting to see that OS07 is one of the few Tell Ahmar shapes that do not find closer parallels among MBA sites (see Chapter 3 and Chapter 9). Although at Terqa and at Mardikh (Marchetti & Nigro, 1999) similar large basins were found, they are all characterised by a cordoned decoration, which is absent at Ahmar. An undecorated OS07 has been recovered at Chagar Bazar, but it is considerably smaller than the specimen at Ahmar.

Small dimension carinated bowl - OS08

OS08 are associated with the consumption of liquid or semi-liquid food. In addition, because of their presence in burial context, it is argued that these shapes were also used for liquid food libations and offering.

OS08 is a common shape at Tell Ahmar and the relatively high number of complete vessels and profiles (25 in total) allows a full analysis of the shape, which can be subdivided according to some specific morphological features (OS08a, OS08b and OS08c). The sub-type variations, however, are unrelated to vessel size and capacity, the latter being calculated as between 0.14 and 0.61 l (water) or 0.08 and 0.38 kg (barley) (Fig. 173). Small shapes represent the peak of frequency with a

liquid capacity between 0.18 and 0.22 l, which can be compared to a small dimension modern glass. Therefore, it is unlikely OS08 were used for sharing, given their small capacity.

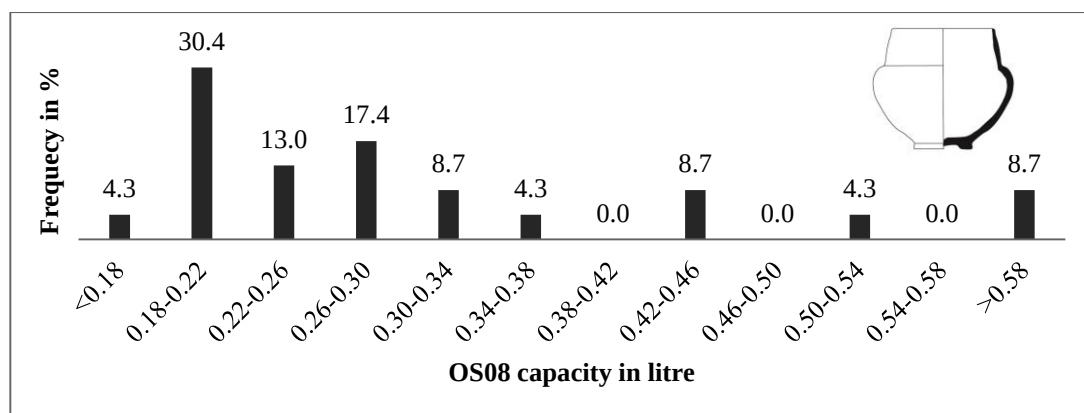


Figure 173. Chart showing the frequency of OS08 capacities.

OS08 shapes are small and would have been easy to hold and transport. A ring base commonly associated with this shape would have increased the vessel stability. The medium neck would have aided in reducing spillage of the content during transportation. Moreover, the comfortable rim profile would have been advantageous for direct drinking activities. These morphological characteristics, and the relatively small opening of the opening, suggest an association with liquid or semi-liquid contents rather than with dry content. According to the analysis of archaeological contexts, four jar stoppers found at Tell Ahmar were associated with these shapes (Fig. 174).

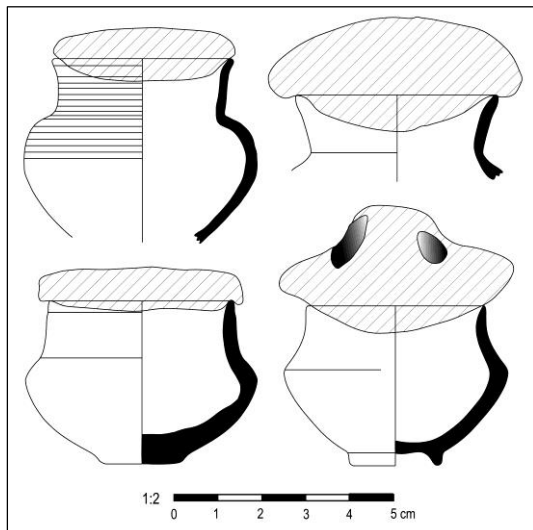


Figure 174. OS08 forms with a jar stopper.

The above reconstruction was based on the diameter of each lid, which, according to the context and feature of recovery, was matched to a ceramic container with a similar diameter derived from the same archaeological feature. It is pertinent to note, however, that these jar stoppers may have had no association with these ceramic shapes. Moreover, their context of recovery does not necessarily mean that they were used in association with a vessel at all (for example, they may have been stored without being used). However, given the limited number of ceramic forms at Tell Ahmar that possess a rim diameter compatible with these lids, it is most likely that they were used in conjunction with OS08 vessels. A jar stopper would have kept the content warm (if we assume the liquid was consumed whilst hot) and protected it from any outside interference. In addition, a jar stopper would have aided transportation of OS08 vessels over a short-distance.

Contextual analysis has demonstrated a concentration of OS08 in the domestic context in Room 14.2 (Fig. 175). In addition, OS08 vessels were often recovered from burial context. In Block 2 and Block 3, the frequency of OS08 is particularly scarce.

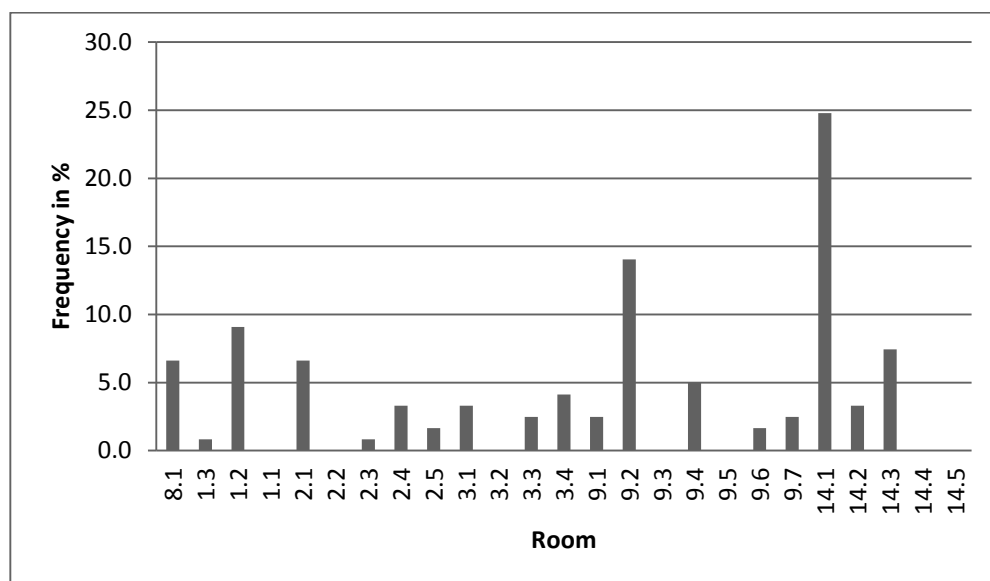


Figure 175. Chart showing the distribution of OS08 across the excavated rooms.

OS08 is a common shape during the period, and it is commonly distributed among MBA sites in Northern Mesopotamia and Syria (see Chapter 3). An OS08 shape discovered at Lidar Höyük is characterised by a potter's mark (see Appendix C, Plate 56 No. 2). These marks, however, were not commonly made on small bowls. At Halawa and at Mumbaqa combed potters' marks characterised small bowls. OS08 are associated with different types of context, such as domestic, funeral and public (Tab. 95).

OS08	Context
Ahmar	public-administrative, domestic, funeral
Lidar Höyük	domestic
Horum Höyük	domestic
Zeytinli Bahçe Höyük	public-administrative
Şavi Höyük	domestic
Şaraga Höyük	public-administrative
Shiyukh Tahtani	domestic, funeral
Aushariye	domestic
Qara Quzaq	silos
Hadidi	domestic
Mumbaqa	domestic
Halawa A	domestic
Ashara	domestic
Baghouz	funeral
Haradum	domestic
Tilbeshar	domestic, funeral
Qala'at Halwanji	palatine? (survey)

OS08	Context
Bi'a	palatine
Hammam et-Turkman	domestic
Mardikh	palatine
Ansari	funeral
Mishrifeh	palatine

Table 95. OS08 context comparisons.

Large dimension deep bowls - OS09

This shape has several techno-morphological characteristics in common with CS04, but the wall orientation of OS09 is open shaped rather than closed. Although no complete shapes were found at the site, an analysis of diagnostic sherds allows the majority of OS09 to be classified as large in dimension. The wide opening seems to be more suitable for processing large quantities of food (dry or liquid) than for storage. OS09 may be associated with long-term storage activities.

OS09 shows a high distributional concentration in the domestic context, especially in Room 14.1, and in Room 3.1 (Fig. 176). In Room 3.1 a large frequency of CS04 has been also attested, suggesting that these two shapes, having been found in a room where a high concentration of grain have been observed, were most likely used together to undertake a complementary activity.

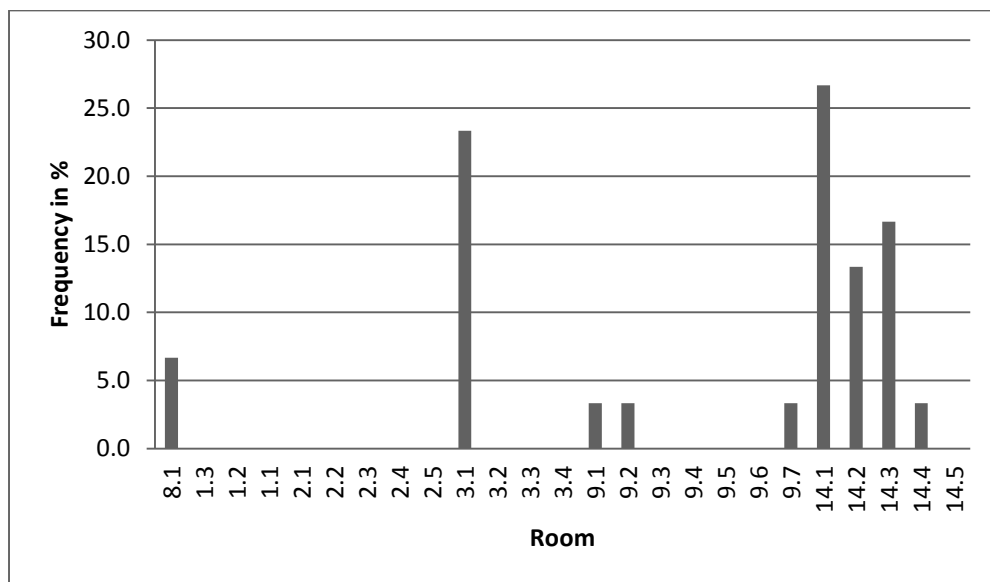


Figure 176. Chart showing the distribution of OS09 across the excavated rooms.

Vessels with a perforated base - CS04, CS10, OS09

Twenty-three perforated specimens were found at Tell Ahmar. Although no complete CS04 or CS10 vessels have been recovered, the respective association of perforated bases, either of CS04 or to CS10, has been based on the vessel thickness, which is smaller in the latter. The perforated base associated with CS04 is generally flat, while with CS10 it is rounded. The two rim examples associated with CS04 refer to medium dimension, while the perforated base associated with CS10 seems to be larger.

Vessels characterised by a perforated base were certainly involved in some filtering activities. The small hole served to leak the content of the vessel. This characteristic, however, does not necessarily mean that the material contained in the jar was liquid. Normally, similar vessels would not have rested directly on the floor, but on some sort of pedestal or other vessel shape placed underneath that would be used to allow the content to ooze out. Considering the large dimension, it is likely that CS04 vessels were placed on a pedestal or over another container when empty before being filled up. At Tell Ahmar, however, one example was found sunk into the floor (see Chapter 8). Given that the hole on the base was realised before the firing of the vessel and it was not made subsequently, this means that the potters constructed the shape with a specific function in mind.

Organic remains from four perforated bases were collected for residue analysis. The results show a +/- presence of oxalic acid in one sample (coming from Room 8.1) and a clearly positive presence of oxalic acid on the other three samples (coming from Room 8.1, Room 1.1 and Room 14.2). The remains of the perforated base sunk into the floor in Room 14.2 are positive to oxalic acid.

Most of the perforated bases were found in Room 14.1 (total number of six) (Fig. 177).

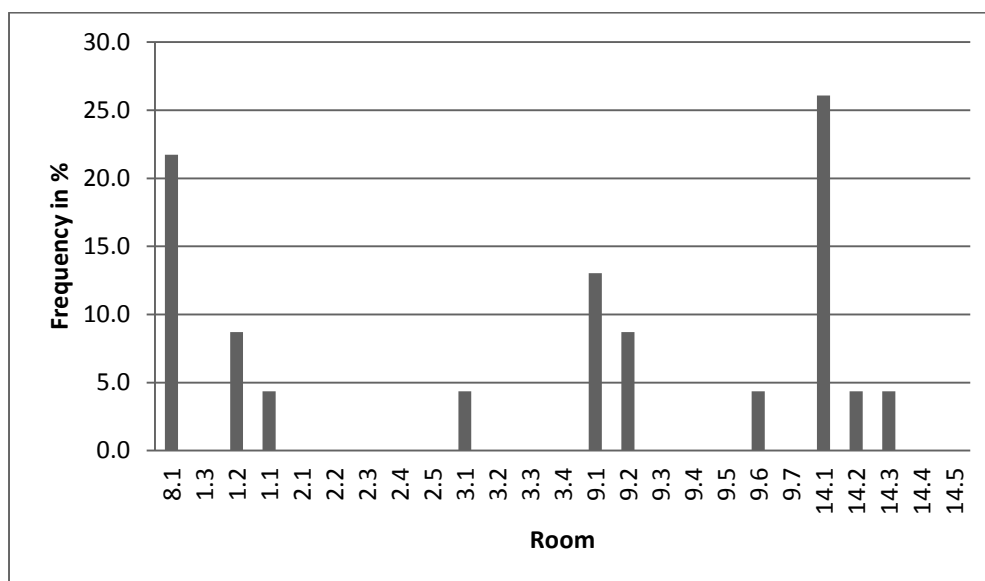


Figure 177. Chart showing the distribution of perforated bases across the excavated rooms.

In Room 8.1, one perforated base recovered is associated with a rim diameter of only 20 cm, so it can be classified as a medium dimension jar (Appendix C, Plate 8 No. 1). It is likely that this shape was used in conjunction with another shape that was placed underneath. In Room 14.2, a perforated base (the upper part of the body was missing) was found sunk into the floor (Fig. 178 and Appendix A, Plate 7 No. 9). This characteristic is particularly intriguing. A perforated base sunk into the floor like in this case would not have allowed the liquid to leak. In addition, even if the hole was closed, it would have been impossible to move the vessel. In this case, it is unlikely that the use of this vessel was connected to filtering activities.

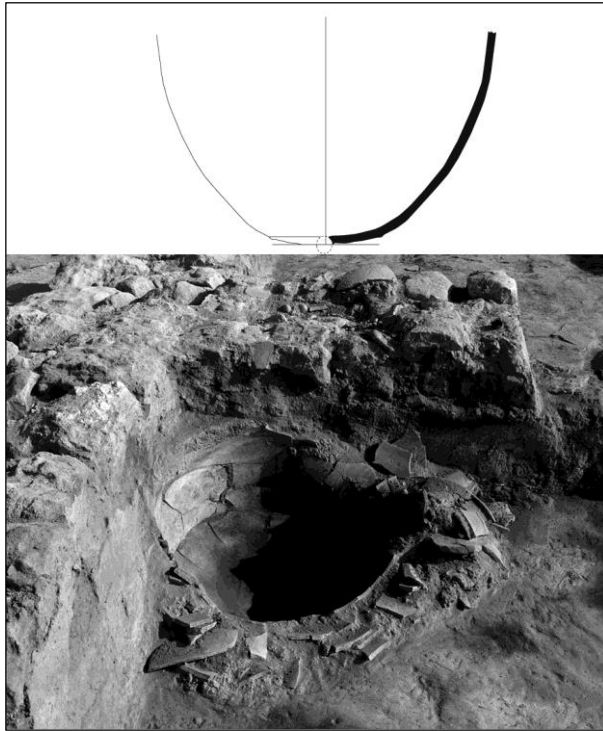


Figure 178. Lower part of a large jar with a perforated base sunk into the floor in Room 14.2 (illustration and photo: Silvia Perini).

Complete vessels associated with a perforated base have been found only in two sites Halawa (Orthmann, 1981, pl. 47/25) and Hadidi (Dornemann, 1992, p. 91, fig. 4/1), while fragments of perforated bases (both flat and simple) associated with large dimension vessels have been found in many sites, and in particular in the Euphrates Valley, such as at Shiyukh Tahtani (Sconzo, 2007, fig. 20/1,3,5), Aushariye (Jakobsen, 2011, appendix 1:42-43), and Mumbaqa (Czichon & Werner, 2008, tafel 79/6253-54, 6276). The perforated shape found at Tell Hadidi corresponds with Tell Ahmar shape type OS09, while the shape at Halawa with Ahmar CS10. OS09 with a perforated base have also been found at Shiyukh Tahtani (Sconzo, 2007, fig. 20/1) and Halawa (Hempelmann, 2005, tafeln 76-80) (see Chapter 3).

Implications of vessel function

From a theoretical viewpoint, one of the major experts on categories of vessel uses is Prudence M. Rice, who argued that vessels could be associated with primary activities, such as storage, processing, and transport (Rice, 1987). Within each primary group, Rice defined sub-categories of vessel use. For example, she distinguished between long-term and short-term storage activities; with heat or without heat processing activities; and long-distance and short-distance transport activities (Fig. 179).

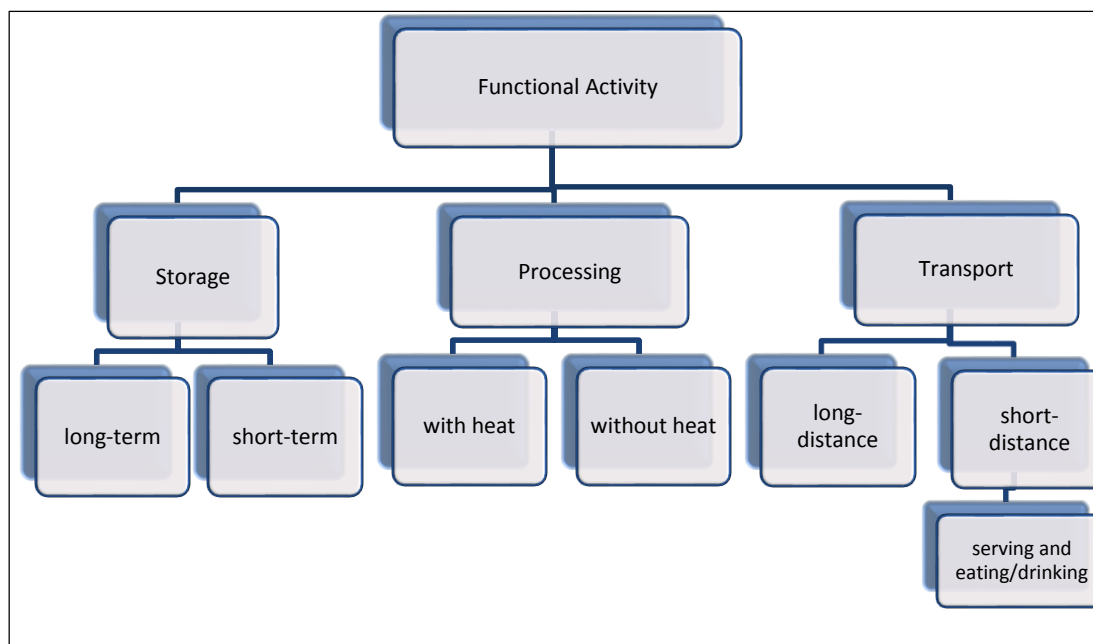


Figure 179. Chart showing relations of the functional activities (adapted from Rice, 1987, p. 209, fig. 7.1).

Storage has always been an indispensable system for conserving, supplying or fermenting food or liquid. Although storage activities can be divided into long and short-term, archaeological evidence could not always indicate the use.

Processing and cooking are general terms which refer to several activities, such as boiling, frying, baking or roasting involving heat, while mixing, washing, fermentation and grinding refer to activities undertaken without the presence of heat.

Short-distance transport activities refer to consumption and serving activities which took place within or near the site (such as eating and drinking, or bringing

water from its source to the house), while long-distance activities to activities that took place within a network of sites.

Functions have been hypothesised for each vessel type at Tell Ahmar. Associations of vessel type forms and functions have been summarised in the following table (Tab. 96).

Vessel shape type	Vessel functional activity	Functional activity (abbr.)
CS01	Short-term storage and short-distance transport (oil?). Also found in burial context	ST+TR
CS02	Short-term liquid storage	ST
CS03	Processing without heat and short-term storage	PR+ST
CS04	Long-term storage (large dimension vessel) (grain?) and long-distance transport (medium dimension) (liquid?)	ST+TR
CS05	Short-term storage and short-distance transport	ST+TR
CS06	Storage? Evidence is poor	ND
CS07	Short-distance transport (liquid pouring and serving)	TR
CS08	Long-term storage and long-distance transport (i.e. wine, beer). Also used for short-distance transport (water)	ST+TR
CS09	Long-term storage and long-distance transport (i.e. wine, beer). Also used for short-distance transport (water)	ST+TR
CS10	Long-term storage (beer?) and long-distance transport. Often reused as jar burial	ST+TR
CS11	Long-distance transport (wine?)	TR
CS12	Processing with heat	PR
CS13	Processing with heat and short-term storage	PR+ST
CS14	Processing with heat (boiling)	PR
OS01	Processing without/with heat (frying) and short-distance transport	PR+TR
OS02	Processing without heat and short-distance transport. Also used as a lid for storage jars	PR+TR + as a lid
OS03	Short-distance transport (eating). Also used as a lid for storage jars and also found in burial context	TR + as a lid
OS04	Processing without heat and short-distance transport	PR+TR

Vessel shape type	Vessel functional activity	Functional activity (abbr.)
OS05	Processing without heat (filtering)	PR
OS06	Storage? Evidence is poor	ND
OS07	Long-term storage (for malting?)	ST
OS08	Short-distance transport (drinking). Also found in burial context	TR
OS09	Long-term storage (grain?)	ST
Vessel with a perforated base (CS04, CS10, OS09)	Processing without heat (beer filtering?)	PR

Table 96. Correlations of vessel shape type and functional category at Tell Ahmar (ST=Storage, TR=Transport, PR=Processing, ND=not determinable).

Taken as a whole, the functional composition of the ceramic assemblages at Tell Ahmar covers all the main categories of basic daily needs such as storage, processing, consumption and transport. For two shapes (i.e. CS06 and OS06), the function was not investigated since evidence is too poor.

Most of the vessel shapes have been associated with long-term storage and transport activities (27.7%), and with processing without heat and short-distance transport activities (24.6%) (Fig. 180).

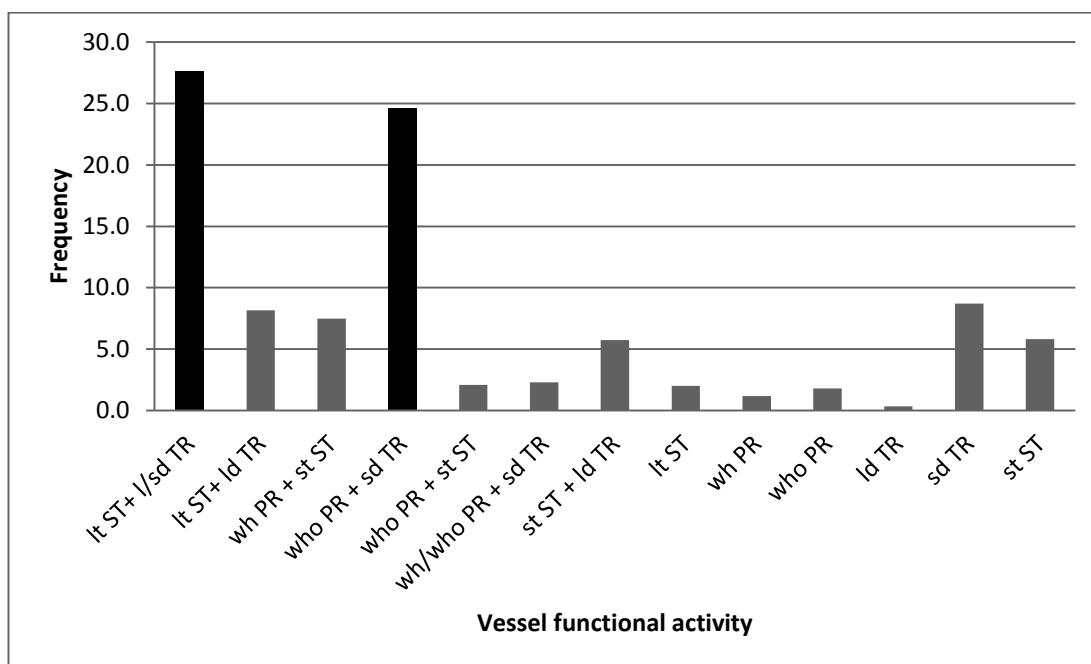


Figure 180. Functional analysis of vessel by frequency of sherd count (ST: storage; TR: transport; PR: processing; lt: long-term; st: short-term; lg: long-distance; sd: short-distance; wh: with heat; who: without heat).

The predominance of these vessel types and their presumed functions is remarkable, and this data will be further discussed in the Conclusions to help in understanding the role of the site during the MBA.

Lastly, it is important to stress that the outcomes of the functional analysis, thus the vessel shape composition, variability and frequency, strongly depend by several variables, which need to be taken into consideration in inferring vessel use. Based upon the analysis of the variables discussed by Rice (Rice, 1987), and adapted to this particular study, the following observations are made:

1. The same functional activity may be performed with different shapes. For example, processing activities with heat were undertaken by both CS12 and CS14;
2. Some shapes fulfilled more than one function. Twelve shapes out of 24 are associated with multi-uses, while ten with a single use.

3. Some pots may be used for functions not originally intended. For instance, OS02/03 were not only used as a dish (intended use), but as a lid as well (actual use);
4. Some pots may be reused for functions not originally intended. That is particularly true for those shapes found in burial context (i.e. CS01, OS03 and OS08);
5. The same vessel shape can occur in several sizes, each with different functions. Medium dimension CS04 were used in long-distance transport, while large dimension CS04 for storage activities.

Summary

Since a vessel function can only be inferred, several elements such as techno-morphological implications of vessel use, contextual analysis, residual analysis and regional comparisons were taken into consideration in this examination. In particular, considering the exceptional site formation process and the later marginal destructive reoccupation of the settlement, information emerging from the archaeological context was particularly effective in investigating vessel functions.

Functional analysis indicates that the majority of the vessel shapes found at Tell Ahmar is associated with multi-uses such as storage and transport activities, and processing without heat and short-distance transport activities. Given the considerable amount of shapes associated with short-distance transport (e.g. CS02/03), it is argued that these shapes were probably in used in conjunction with storage activities, as a closure system for some jars.

CS04, CS08, CS09 and CS11 show an adequate pattern of correlations within similar forms coming from the North Mesopotamian and Syrian sites. In particular, MBA Euphrates Valley shapes such as CS08 and CS04 share distinctive peculiarities, for example rim diameter measurements and potter's mark patterns. These strong similarities suggest that these shapes were involved in long-distance activities in Northern Mesopotamia and Syria during the MBA. According to the

outcomes of the functional analysis, socioeconomic inferences of functional activities are discussed in the next section.

CONCLUSIONS

Ceramic socioeconomic inferences in Northern Mesopotamia and Syria

If we consider ceramics to be a product of human activity and assume that they reflect the cultural choices and the rate of adaptation of people living in a specific cultural context, then an investigation of vessel production, use and distribution may lead us to information about the social, political and economic systems of those ancient times. In the Conclusions, socioeconomic inferences of ceramic multi-disciplinary and comparative analyses are discussed.

Ceramic assemblage composition and social rank

One of the most indicative elements that technological analysis has revealed is the paucity of fine ware within the *de facto* refuse at the site, which corresponds to only 2.6% of the entire assemblage (see Chapter 5). What does this element indicate in terms of the site's social organisation?

Limited evidence of fine ware suggests that either there was no elite at the site, or that the Tell Ahmar society did not express its status through ceramic production. This assumption obviously does not take into consideration the possibility that fine ware might characterise areas of the site that have not yet been excavated, or that the Tell Ahmar inhabitants carried fine ware containers away immediately after the fire. Comparisons of the technological composition of contemporary assemblages are essential in order to understand if the paucity of fine ware is a peculiar feature at Ahmar, or if it is, instead, a general pattern shared by other MBA societies. It is remarkable that in at least two other MBA sites a similar trend has been noticed, these being at Tell Hadidi and Chagar Bazar. Cooper argued that:

The early Middle Bronze Age pottery does not appear to be differentiated according to difference in status or wealth within the Euphrates society (Cooper, 1997, p. 346),
while McMahon observed that:

The fine and Grey Wares vessels do not appear to be “elite wares” restricted to certain individuals or families and indicative of their wealth or status; there is not a strong contextual restriction in evidence in our excavations that would indicate high “exchange value”, which would have put these wares out of reach of some households (McMahon, 2009, p. 169).

The relative scarcity of fine ware and painted vessels suggests that society employed the ceramic material according to their practical use, rather than to illustrate a well-off family's status. However, if this appears to be the pattern at Tell Ahmar, Tell Hadidi and Chagar Bazar, one should keep in mind that this does not necessarily mean that there was no artefact production associated with an elite during the MBA period. Indeed, archaeological material excavated from graves in Northern Mesopotamia and Syria seems to emphasise a certain richness of vessel production that was not only associated with clay (thus pottery), but with other material, such as alabaster and metal. Luxury goods in copper (e.g. toggle pins) and ivory, as well as beads, were recovered in a funerary context, while the archaeological goods from the Royal Tombs at Qatna probably represent one of the best examples of the divergence in material production during this period (Maqdissi-Al, et al., 2009; Pfälzner, 2012).

At Tell Ahmar, the concurrence of OS03 and OS08 in a burial context stresses the importance of those eating and drinking activities that would have taken place before or after the interment of the deceased, implying a ritual banquet for the dead. Alternatively, the presence of ceramic equipment found in the jar burials can be understood as being containers to hold food for the afterlife (Felli, 2012). In addition, meat offerings are attested in graves at several sites, for instance at Chagar Bazar (Cordy et al., 2009), Terqa (Rouault, 2005) and Qatna (Pfälzner, 2012) . However, evidence of animal offerings at Tell Ahmar has not been detected.⁵⁵

In the MBA pit burials from Tell ShiyukhTahtani, Sconzo argued that meat offerings (mainly of sheep and goat) were a common practice. She observed that:

Chunk of meat - a tasty portion, such as the leg or part of the backbone - was placed in a dish above the legs or at the feet of the dead, while the inedible parts of the animal (such as head, mandible or feet) were set aside, more

⁵⁵ More investigation needs to be undertaken in order to verify this aspect of the site.

often in a separate compartment inside the tomb (Falsone & Sconzo, 2012, p. 171).

A common feature of the MBA period was the burial of infants in a domestic context; for example, these infants were buried under the kitchen floor (although some adults were also included). Such occurrences might stress the importance of the family's consanguinity and succession (Nichols & Weber, 2006).

Together with the ceramic technological composition, an analysis of functional shapes can also be used to infer household size and status. Ethnoarchaeological studies, for example, suggest an association between the size of vessels used for consumption and household size (Turner & Lofgren, 1966; Nelson, 1981). Although the dominance of medium dimension dishes (OS03) over small dimension shapes suggests that some people at Tell Ahmar used to share food during the consumption of it, the presence of small dimension bowls (OS08) would indicate individual drinking activities (Fig. 181).



Figure 181. Platter bowls and carinated bowls used at Tell Ahmar during consumption activities (photo: Silvia Perini).

To conclude, the small amount of fine ware, as well as the absence of any painted/decorated vessels associated with consumption activities, suggests that MBA ceramic production did not intend to stress differences in social status. The same can be said for the composition of the ceramic funeral set.

Cooking methods

A *tannur* is a clay bread oven with a slightly conical form, mainly associated with bread making activities. This type of oven was generally built against the wall of a house and had a small opening at the base for loading fuel. Two ovens of the *tannur* type indicate that cooking activities involving heating were undertaken at Tell Ahmar (Figs. 182-183).

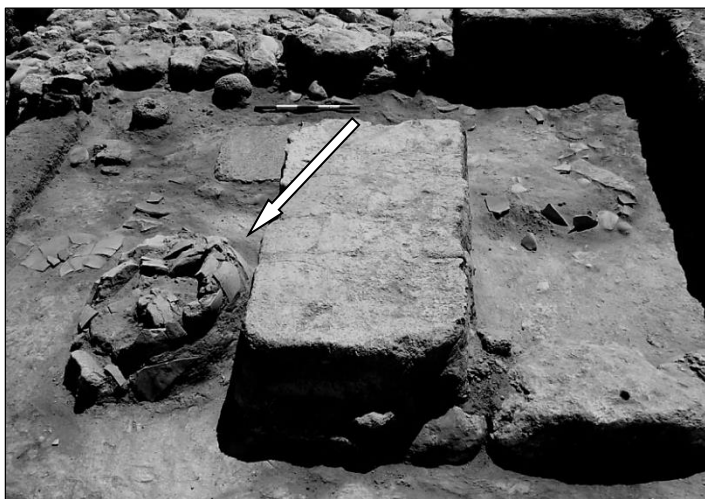


Figure 182. Tannur found in Room 14.3 (photo: Guy Bunnens).

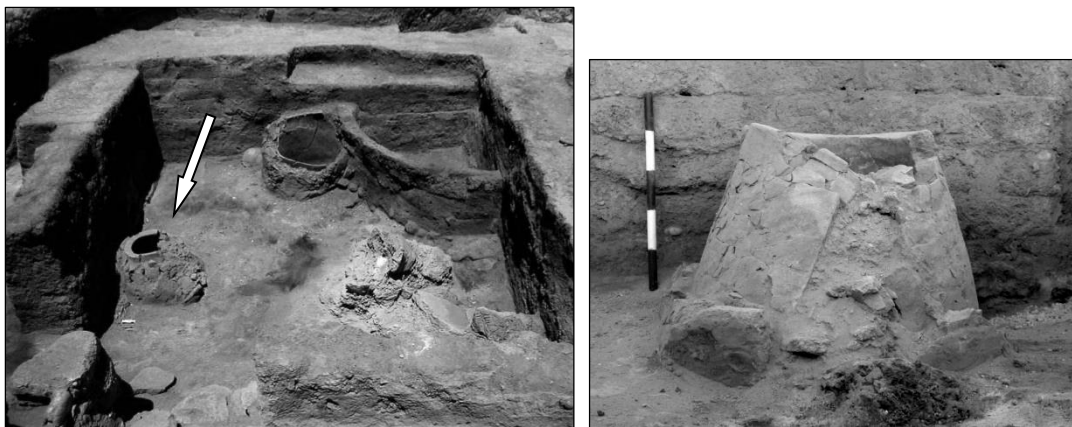


Figure 183. Tannur found in Room 8.1 (photo: Guy Bunnens).

Ethnoarchaeological comparisons of bread baking, both at the modern village of Tell Ahmar and at other Syrian villages, suggest that a large, thin type of bread was baked by placing it on both the inside and outside hot walls of the *tannur*. Moreover, when

bread making was terminated, the top was covered by a clay sheet (a metal one is commonly used today) to allow cooking pots to be placed there to boil water or to cook meals (Mulder-Heymans, 2002). It might also be the case that the embers were used to roast meat, as modern evidence suggests that not only bread, but other kinds of food were also cooked using this type of oven.

The dimensions and type of vessel shapes used in processing activities can tell us about the type of food cooked and the methods of cooking. The cooking pots at the site have mainly rounded bases (i.e. CS12-14), and so are not particularly suitable for standing. Handles are rare and when present no perforations have been observed. These characteristics suggest that cooking pots were placed into the oven and were not suspended over the fire. As non-ceramic containers would also have been employed to undertake cooking activities, the high presence among cooking pots of closed shapes suggests that boiling was a major activity, rather than frying or baking. In addition, the high presence of cooking vessel CS13 in public contexts (see Chapter 8) suggests that they were involved in the storage process. However, it is not known if the goods that were cooked were the same that were subsequently stored inside this shape. No complete cooking shapes were recovered at the site, so it is difficult to identify which portions were required for the preparation of food, and whether the food was prepared for only a few, or for several people. According to rim diameter measurement, however, medium-sized cooking pots were particularly common, while small pots were very scarce. This suggests that a considerable quantity of the food cooked was intended either for the community or for long-term storage.

Grain storage

The relatively scarce presence of cooking pots (only 5% of the entire assemblage, see Chapter 5) suggests that other systems of processing food were also used at Tell Ahmar, such as preserving food with salt, smoking or pickling. In order to make alcoholic beverages, cereals such as wheat and barley, and fruits (i.e. dates, raisins and dried figs) were fermented (Bottéro, 1985). Archaeological evidence for the

processing of food without heat is supported by the discovery of several basalt crushing tools such as a grindstone, pestles, pounders, mortars and tripod bowls found *in situ* (Fig. 184 and Fig. 185).

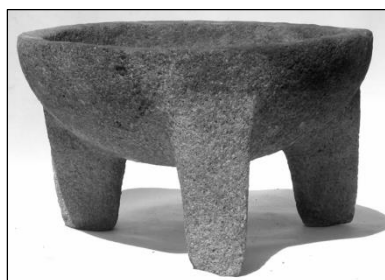


Figure 184. Basalt tripod bowl found in Room 14.1 (photo: Guy Bunnens).



Figure 185. Basalt grinding stone and two basalt rings found *in situ* in Room 14.3 (photo: Guy Bunnens).

Cereals such as grain, barley and wheat constituted people's main daily sustenance. Cereals were crushed on a grindstone to prepare various types of meal and flours (Bottéro, 2004). They could be roasted and eaten whole, or boiled and eaten as gruel and porridge, or ground into flour to make bread (Ellison, 1984b). Porridge was also commonly made by boiling cereals such as barley or grain.

The archaeological evidence at Tell Ahmar suggests that grain was processed and stored at the site. Due to the low moisture content of cereal, it was possible to

store it easily. The large basins recovered at the site (OS07) and the large storage jars (CS04) may have been used as containers for malted barley or grain (Fig. 186).



Figure 186. Large dimension CS04 used in storage activities at Tell Ahmar (photo: Silvia Perini).

The administrators, who lived at the site possibly beside the storage area (Buildings M8-M9), controlled and managed the cereal storage. The door seals and jar seals associated with large dimension jars, and the grain seeds found there would support this hypothesis. Evidence of storage activities has been found at Tell Shiyukh Tahtani (Gilligan, 2010). Chemical analyses were undertaken on the grain seeds found in two MBA storage rooms at the site, and they indicated that:

Storage 1 consists of a fully cleaned crop, with no chaff or contaminants, showing the aim to create a store of fully clean grain. The labour and time invested in this practise, especially if the barley was hulled, suggests that the store was either for consumption or trade, but not for animal feed [...] Storage 2 contains a more mixed array of species [...] This storage container then was probably ready for final hand-sorting, showing perhaps differential storage patterns [...] It is not clear why the grain was stored in different stages of processing. The processing may have been done piecemeal and stored accordingly in different vessels (Gilligan, 2010, p. 49).

As was the case at Shiyukh Tahtani,⁵⁶ it is possible that different stages of grain production were also undertaken at Tell Ahmar. Archaeological evidence (e.g. grain seeds, vessels with a perforated base, basalt crushing equipment and seal

⁵⁶ Gilligan has differentiated two main types of barley seeds: sprouted barley grains and malted barley grains.

impressions) found in some of the excavated rooms suggests that grain storage, flour processing and grain fermentation were carried out in some specific rooms.

Was beer produced at Tell Ahmar?

Ceramic evidence of processing without heat at the site is confirmed by the presence of large vessels (CS04, CS10 and OS09) associated with a perforated base (Fig. 187).



Figure 187. Large dimension bases characterised by a hole in the middle (photo: Silvia Perini).

These shapes were employed in filtering activities, probably associated with grain or beer production (see Chapter 10). However, the presence of perforated bases cannot be used independently to assume that beer making took place at the site. Several activities, in fact, may have required a similar filtering system, such as oil, wine or cheese production. The occurrence of several elements is needed to infer with a high degree of certainty that beer brewing was carried out at Tell Ahmar. At the settlement, carbonized grain (barley) and grinding stones were recovered in association with perforated bases (see Chapter 8). In addition, the evidence of residue analysis indicates a positive reaction of some vessel remains to beer components (see Chapter 7). Thus, it is reasonable to suggest that beer production was undertaken at the site. The limited number of ovens at Ahmar suggests that barley would have been

laid in the sun to dry, and then taken to fermentation through a system that did not require direct contact with fire. At Tell Bazi, where experimental beer making was undertaken, malting was achieved through a cold-mashing process (Zarnkow, et al., 2006b). Assuming that beer-making activities were undertaken at Tell Ahmar, then such cold-mashing processes would support the scarce evidence of ovens.

To summarise, processing activities associated with heat have been supported by *tannur* type ovens and cooking pots. The medium size of the cooking pots suggests that processing activities were undertaken for only a few people, for example for the administrators of the public building in Area M. Moreover, large vessels with a perforated base were used in some filtering activities, and probably involved grain seeds. The archaeological evidence of large jars associated with grain seeds suggest that grain storage was an important activity at the site. According to the analysis of the organic remains, it appears that cereals (and beer) were stored and processed in the public complex.

Trade and exchange in Northern Mesopotamia and Syria during the Middle Bronze Age: textual and ceramic evidence

Although political powers were often in competition (see Chapter 1), trade and exchanges were conspicuously carried out in Northern Mesopotamia and Syria during the MBA (Sasson, 1966). Amorite rulers such as Yakhdun-Lim of Mari, Yarim-Lim of Yamkhad, Shamshi-Adad of Shubat-Enlil, Ishkhi-Adad of Qatna and Yibbit-Lim of Ebla were not only in contact with each other through commerce and trade, but also by marriage alliances and use-rights of pastureland (Nichols & Weber, 2006).

Commodities were bought, sold and exchanged by travelling in two main ways: by land (i.e. animal caravans), and by water (boat) (Michel, 1996). Moving by water was the fastest and the safest way to travel (although it was probably the most expensive), while the presence of water assured a constant supply for the travellers. Textual documents inform us about the dimension and capacity of the boats, which enabled liquid to be carried in jars, in addition to other commodities (Michel, 2009a).

Checking up on the commodities between borders was very common, while there was also a tax on the passage imposed by those important cities located along the rivers and which controlled the naval traffic (Charpin, 2004). As the texts from Mari indicate, travel and the movement of people took place for three main reasons: diplomatic, commercial and military (Sasson, 1984b). The route of the Euphrates connected the sites from Carchemish in the North to South Mesopotamia.⁵⁷ It was essentially navigable for all its extension. Along with Carchemish, the other centres located on the route were (from north to south): DûrSumuEpuh (Tell Aushariye), Emar (Tell Meskene), Halabit (Halabiye), DûrYahdun Lim (Tell Mohasan - Deirez-Zor), Terqa (Tell Ashara), Mari (Tell Hariri) and Harradum (Khirbet-edDinye). Along the left bank, there was also a route but only on the section between Yakaltum (Tell Mumbaqa) and Tuttul (Tell Bi'a) (see Figs. 2-3, Chapter 1). Yamkhad (Aleppo) was linked to the north to Alalakh (Tell Atchana), to the southeast to Ugarit (Ram Shamra) on the Mediterranean Sea, and to the south, along the Orontes River, to Qatna. Emar represented the connecting point of Aleppo to the Euphrates (Joannès, 1996). Which kind of commodities circulated on these routes?

Beer was certainly one of the most frequent. It appears on the ration list in the Chagar Bazar texts as a daily dietary staple (Lacambre, 2009). Texts from Mari state that several types of beer were available at that time, and they mainly differed in their composition of ingredients and quality (Lacambre, 2009; Michel, 2009b), in filtering processes, and, once traded, on each jar's capacity (Stol, 1995; Damerow, 2011). Although old societies referred to beer either as a liquid or a semi-powdered barley drink (Baffi-Guardata, 1994), the exact characteristics of this beverage are, however, still debatable. Scholars are investigating whether the popular brew contained any alcohol at all (Braidwood, et al., 1953; Powell, 1996; Damerow, 2011).⁵⁸ In fact, what ancient societies called beer may be very different from the

⁵⁷ The north Babylonian town of Sippar was the main entrepôt for wine entering into Babylonia. The wine could have come down the Tigris via a canal to Sippar. The evidence from Northern Mesopotamia suggests that there was very little wine along the Tigris during this era, and what there was most probably came down the Euphrates (McGovern, et al., 1996; Veenhof, 1991). The Old Babylonian trade route system has been thoroughly analysed by Francis Joannès (Joannès, 1996).

⁵⁸ See also <<http://phys.org/news/2012-01-fermented-cereal-beverage-sumerians-beer.html>>.

modern consideration of the term. Disregarding its alcoholic composition, beer was commonly diffused among all the social classes.

Wine, on the contrary, was a luxury good mainly associated with the royal sphere (Finet, 2001; Powell, 1996). Carchemish was one of the most important river ports of the northern area, while Emar was predominant in the western area (Baffi-Guardata, 1994). From these areas, wine was traded in jars and transported via the Euphrates to Mari, then through Sippar and down to Babylonia in Southern Mesopotamia. Importing wine from Carchemish was a periodic activity carried out by the sovereigns of Mari. Textual evidence tells us that wine was traded between the king of Carchemish, Aplahanda, and the king of Mari (Durand, 1983; Lafont, 1991). Large shipments of wine (as many as 600 jars per boat) came from Carchemish (Michel, 2009b). Textual documents state that during wine transportation from the northern regions to the Mari palaces, and especially during the storage period, many activities were implemented to control wine conservation (Finet, 2001). Once at their destination in Mari, wine jars were brought to specific storerooms or to wine cellars (Milano, 1994). In the storeroom, jars were stored as shipped, and were probably placed in wooden racks intended to hold them and keep them separate (Finet, 2001). In the cellar, jars were emptied and treated before their contents were poured into other containers (Finet, 1974/1977). Wine was treated by adding various components (such as water, honey, or some wood essences) intended to alter their taste or density (Finet, 2001). Activities such as the filling up and emptying of jars were also carried out to mix, dispense, decant, and drop sediment. Different types of wine were traded, and these may have depended on colour (red or white)⁵⁹ and strength (Finet, 1974/1977; Bottéro, 1985; Powell, 1996).

The administrative texts also state that oil was shipped from Yamkhad, and perhaps also from Carchemish to Mari, although in more modest proportions, usually in quantities of less than 100 litres (Chambon, 2008).

According to the textual evidence just investigated, this following section undertakes an analysis on whether the ceramic vessel shapes support what is known

⁵⁹ However, please note that the Mari texts do not directly refer to white wine.

of the MBA long-distance transport and trade activities in Northern Mesopotamia and Syria. Tell Ahmar is located on the Euphrates' route that connected sites from Carchemish to South Mesopotamia. It is reasonable, therefore, to assume that the site played a dynamic role in the MBA commercial traffic on the Euphrates. This analysis is based on the similarities of ware and vessel shapes, which are likely to have been used to transport commodities (see Chapter 3 and Chapter 10). From the analysis of their occurrence and distribution, inferences of such activity and its extension are proposed.

Medium/large dimension jars characterised by a combed decoration (CS04) are very representative among MBA sites, and particularly in the Euphrates Valley. At Tell Ahmar these shapes have been associated with long-term storing (large dimension vessel) (grain?) and long-distance transport (medium dimension) (liquid?). CS04c (medium dimension), a sub-type of CS04, shows some peculiarities which have been recognised in a few sites, namely Aushariye, Şaraga, Shiyukh Tahtani, Hadidi, Haradum, and Tilbeshar. The distribution of CS04c is almost exclusively limited to the Euphrates River sites (Fig. 188).

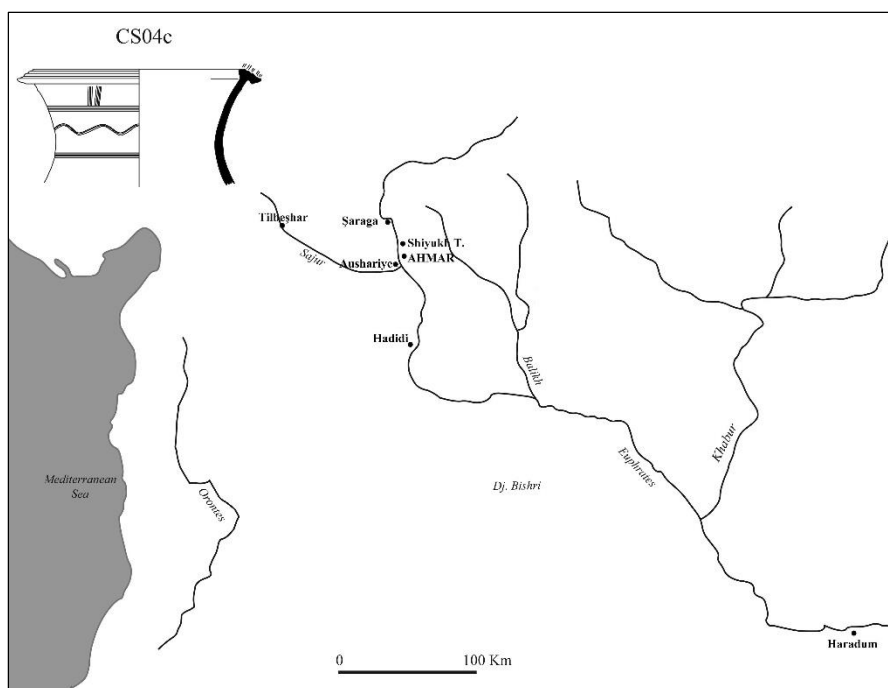


Figure 188. Distributional map of CS04c (map: Silvia Perini).

As for the example coming from Tell Ahmar, a potter's mark on the neck has been observed on CS04 coming from three other sites: Şaraga Höyük, Aushariye, and Haradum (see Appendix C, Plate 55). Similarities refer to both the position of the potter's mark on the vessel (on the neck), to the mark's manufacturing technique (incised), and, in some cases, to the type of mark.

Medium dimension jars with a medium/high neck (CS08 and CS09) are the most representative shapes during the MBA period at Tell Ahmar and in Northern Mesopotamia and Syria (see Chapter 10). These shapes have been associated with long-term storage and transport activities. CS08 and CS09 show similar distributional patterns (Figs. 189-190).

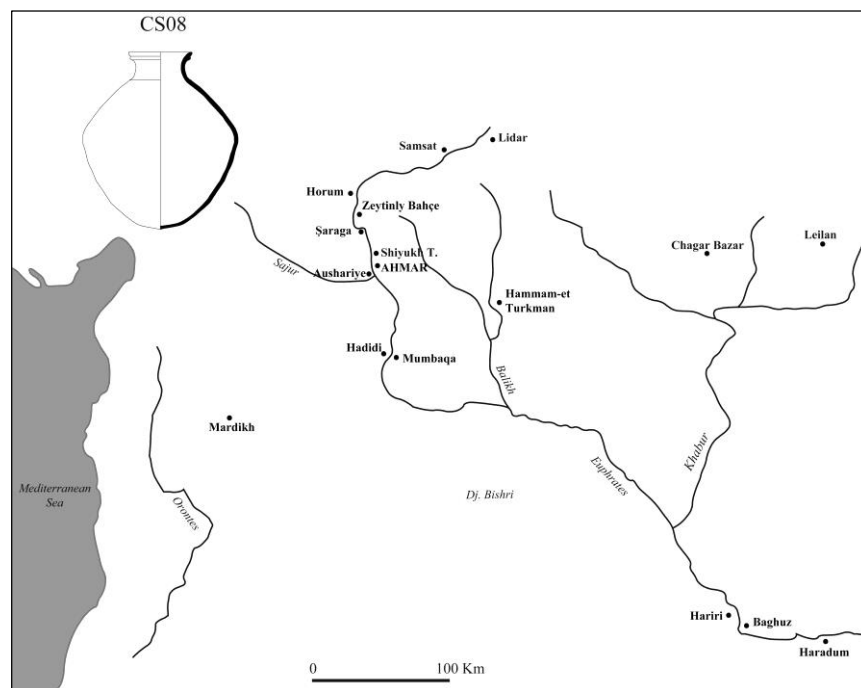


Figure 189. Distributional map of CS08 (map: Silvia Perini).

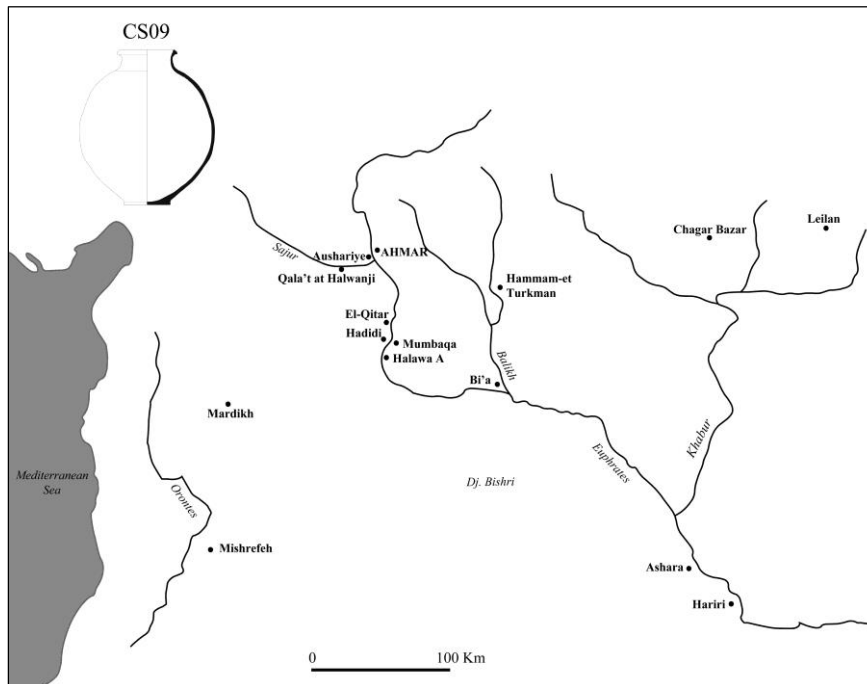


Figure 190. Distributional map of CS09 (map: Silvia Perini).

Pilgrim jars CS11 (long-distance transportation, probably of wine) show a peak in distribution on the section of the Euphrates River that stretches from Lidar Höyük to Haradum, while it is absent in both the Khabur Region and Inner Syria sites (Fig. 191). This distribution would suggest that the trade of the liquid contained in these shapes was limited to the Euphrates Valley.

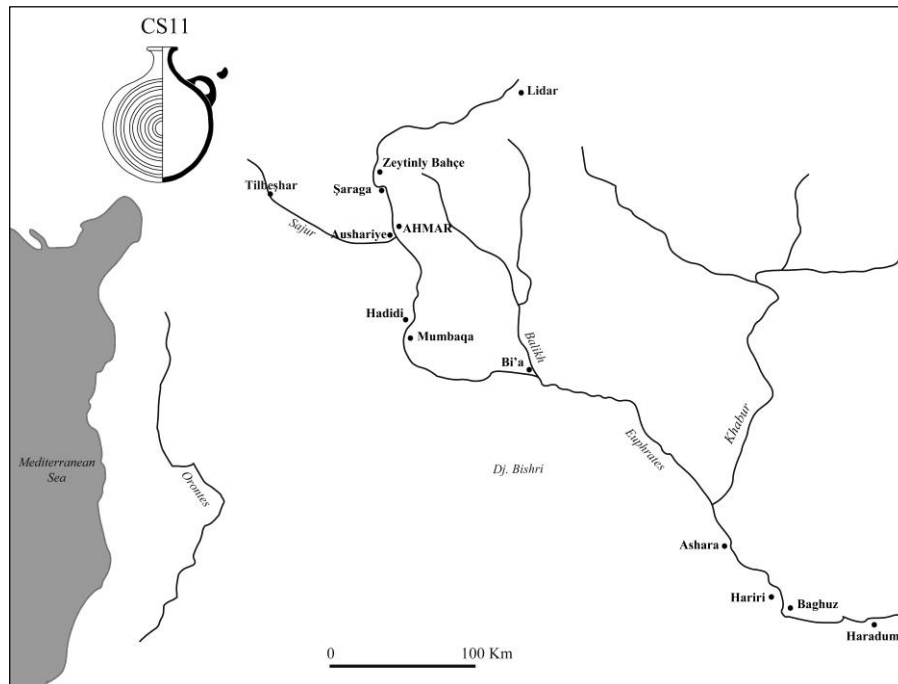


Figure 191. Distributional map of CS11 (map: Silvia Perini).

Together with these shapes, the diffusion of Khabur Ware can also be used to investigate economic exchange and social contacts during the MBA. The distribution of this particular type of ware does not only refer to the sites located in the Khabur Region, such as at Chagar Bazar, Tell Brak, Tell Barri (Oguchi, 2006), Tell Leilan (Weiss, 1985; Oguchi, 2006) and Tell Mohammed Diyab (Faivre, 1992; Faivre & Nicolle, 2007), but to other samples that have been found in some Euphrates Valley sites, such as at Tell Ahmar (see Chapter 5, fig. 51 and Appendix A, Plate 4 No. 6-9), Lidar Höyük (Oguchi, 1997), Aushariye (Jakobsen, 2011), Hadidi (Dornemann, 1988), Bi'a (Einwag, 1998), Ashara (Oguchi, 1997), Hariri (Parrot, 1959) and Haradum (Kepinski, 1992). In addition, Khabur ware has been also detected at Hammam-et Turkman on the Balikh (Oguchi, 1997) and at Ebla (Matthiae, 1989a) (Fig. 192).

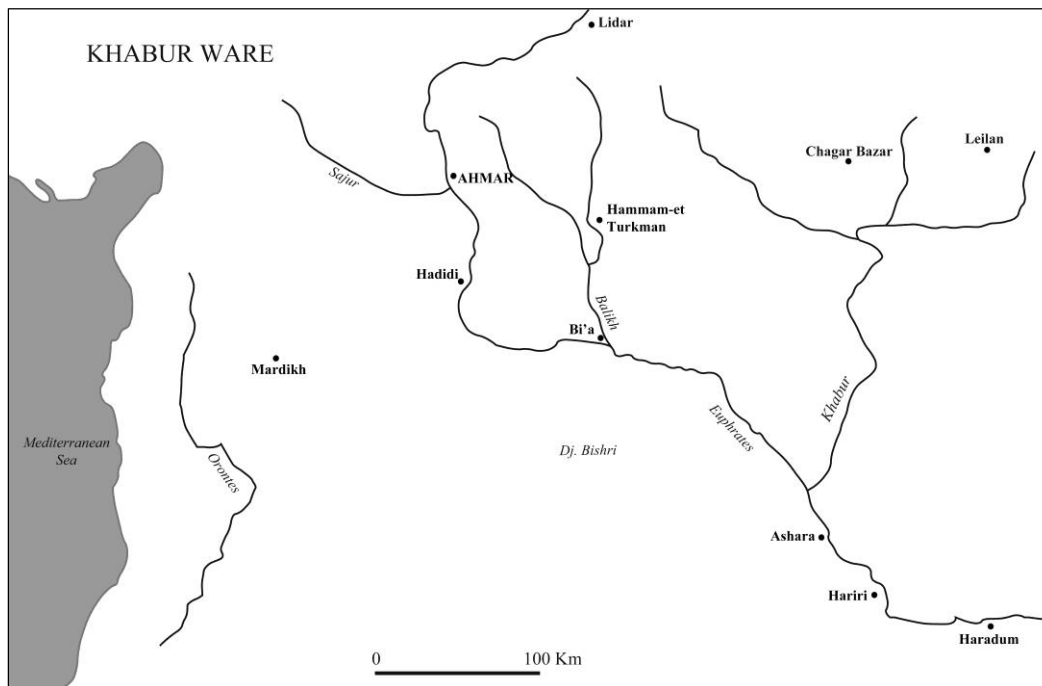


Figure 192. Distributional map of Khabur Ware in Northern Mesopotamia and Syria during the MBA (map: Silvia Perini).

Considering the high visibility of Khabur Ware vessels, it is likely that the containers themselves, rather than the contents, were the object of trade. However, no functional analysis of Khabur Ware vessels has been carried out and the samples recovered from the Euphrates sites, despite being characterised by a red (or dark brown) banded painted decoration, are too fragmentary to be investigated for possible uses.⁶⁰ Although Khabur Ware may have assumed a non-functional role, these occurrences in the Euphrates Valley suggest that contacts between these two cultural areas were undertaken during the MBA. Commenting on this, McMahon legitimately observed that the primary objective of recent investigations on Khabur Ware has focused on:

Internal diachronic variation: the presence or absence of forms within any site's assemblage has been approached from the basis of chronological change, rather than functional variation among loci or site (McMahon, 2009, p. 163).

⁶⁰ McMahon suggested that Khabur Ware vessels characterised by horizontal painted bands "subtly emphasise volume and width and can make a vessel appear larger than it actually is, potentially important for both seller and buyer" (McMahon, 2009, p. 172).

Finally, similar potters' marks have also been observed on vessels from Euphrates Valley sites such as Lidar Höyük (Kaschau, 1999, p. 48, fig. 23), Zeytinli Bahçe (Balossi et al., 2007, fig. 10/a), Tell Aushariye (Jakobsen, 2011, p. 52), Tell Shiyukh Tahtani (only fragments) (Falsone & Sconzo, 2012, p. 185, fig. 7), Qara Quzaq (only fragments) (Olávarri & Olmo Lete, 1994, p. 75, fig. 4/1-2; - p. 79, fig. 6/3), Mumbaqa (Czichon & Werner, 2008, tafel 293) and Khirbited-Diniye (Kepinski, 1992, p. 203, fig. 68/6, 8), all of which are associated with Ahmar CS04, CS08 and CS10 (Fig. 193).

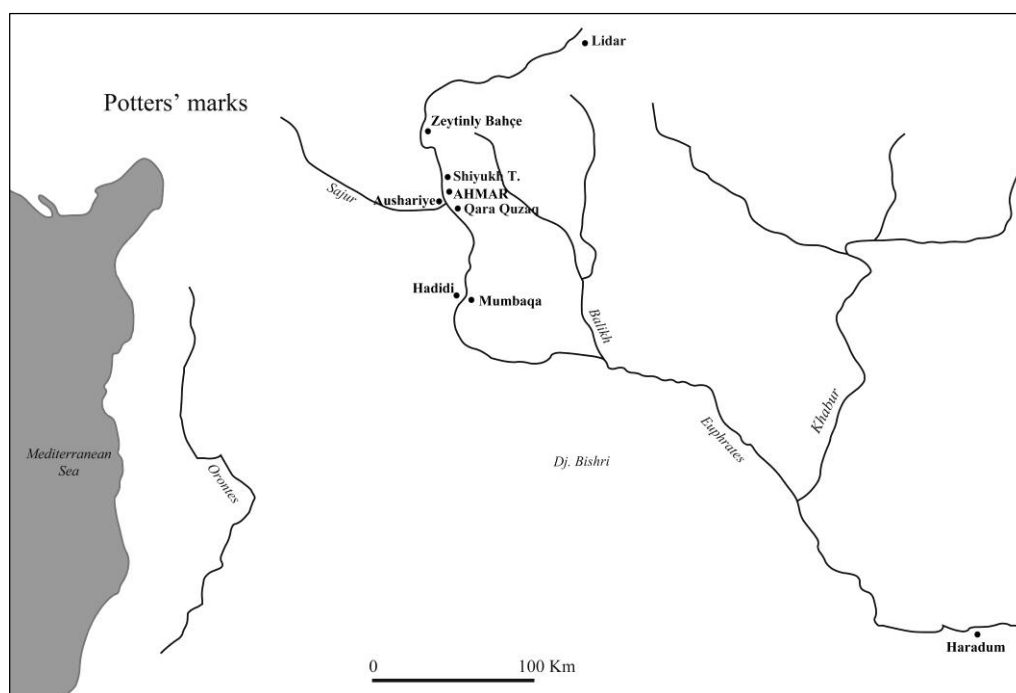


Figure 193. Distributional map of incised potters' marks in Northern Mesopotamia and Syria during the MBA (map: Silvia Perini).

At Zeytinli Bahçe a mark was observed on a *Pilgrim Flask* (CS11 type) (Balossi et al., 2007, fig. 12). At Qara Quzaq, potters' marks were also made on the inside part of the vessel, or under the base (Olávarri & Olmo Lete, 1994, pp. 15-91, fig. 3/1 and fig. 4/1-2.), which is not a common characteristic of this period. A potter's mark with a more elaborate shape (i.e. a scorpion) has been recorded on a large-sized jar found at Tell el-Qitar (Culican & McClellan, 1983-84, p. 47/A) (see Appendix C, Plates 55-56). Moving away from the Upper Euphrates Valley, more local peculiarities have been observed. On the Idibl Valley (e.g. Ebla, Afis and Tucan), potters' marks are

rather scarce, whereas in sites such as Terqa (Kelly-Buccellati & Shelby, 1977, p. 7), Mari (Parrot, 1959, p. 117), Qatna (Du Mesnil Du Buisson, 1927, p. 18), Baghouz (Du Mesnil Du Buisson, 1948, pp. 48-51) and Haradum (Kepinski, 1992, p. 251 fig. 92/1, 6, 8), potters' marks made with bitumen seem to be very common, even if the combed marks are not excluded.

MBA textual evidence informs us that some ceramic shapes were involved in beer and wine exchange activities. Considering their similarities among the sites and their spatial distribution, one can argue that shapes CS04, CS08, CS09, CS10 and CS11 may have been used as containers to transport these commodities.

Ceramic distribution shows that beer exchange (CS04) was mainly undertaken in the Euphrates Valley, from the Carchemish region in the north to Haradum in the south. The distribution of CS11 is associated only with the Euphrates Valley. However, assuming that this shape was used to trade wine, it is surprising that only a scarce number of these vessels were found among the sites. This could suggest that the content of the *Pilgrim Flasks* was particularly precious, thus addressed to an exclusive part of the population. On the other hand, CS08 and CS09 are more widely distributed throughout the Khabur region. These shapes, along with the presence of some Khabur Ware specimens at Tell Ahmar, suggest that the site was involved in extra-regional relationships outside the Euphrates Valley. However, despite similarities in vessel shapes exist, the differences in volume observed for CS08 and CS11 may indicate that they were used to carry different liquids, wine or beer for instance, to different sites. Alternatively, they may have been associated with a similar content (e.g. wine), but the difference in size may be related to a different manufacturing area or to a different quality of the wine trade. Differences in capacities can also be interpreted as a distinctive mark that can help us to recognise the origins of the jars. Given that CS04 are associated with vessels used for long-distance transport, it is possible that the potter's mark was indented as a modern logo which might tell us about the vessel's area of production (e.g. a special workshop), or about the location of a specific shipment along the Euphrates.

Tell Ahmar and its significance during the Middle Bronze Age

Ceramic functional analysis (Chapter 10) and ceramic socioeconomic inferences are essential if we are to understand the role of Tell Ahmar during the MBA period. This paragraph offers some interpretations of the meaning of the site and its significance within the Euphrates Valley cultural background.

In terms of Tell Ahmar as a pottery production site, this study has indicated that:

- a) No evidence of traces of pottery manufacture, such as kilns, or of materials associated with fired areas, such as over-fired vessels or ceramic wasters, which would suggest a local production of pottery, were found at the site. The ceramic slags that were found at Tell Ahmar may be the result of the violent fire, rather than being associated with a pottery workshop.⁶¹
- b) This does not necessarily mean that ceramic was not made at the site. It is likely that handmade large dimension basins and vats (OS07), for instance, were manufactured locally. Other shapes such as handmade cooking pots may also have been locally produced.

In terms of the involvement of Tell Ahmar in MBA economic exchanges, the functional composition of the ceramic assemblage suggests that the site was involved in a large-scale exchange system. Two main elements can support this hypothesis.

- a) The first refers to the manufacturing technique. Most of the ceramic shapes at the site were made on a fast-wheel (see Chapter 5). Contrary to handmade pottery, a wheel-thrown technique allowed potters to produce many more containers per hour, which represented an important first step towards industrialization. Moreover, combed decorations on long-distance vessels (i.e. CS04) were made while the vessel was still on the wheel, without any particular care. These two elements combined together indicate that the aim of production was to manufacture as many vessels as possible over a short period. The considerable

⁶¹ Slag is a partially vitrified waste material that is discarded by the potter. It is created as the result of an erroneous process of pottery making which produces an excessively fired ceramic material, which is then immediately discarded by the potter.

degree of standardisation, namely, the homogeneity or reduction in variability among long-distance transport shapes in Northern Mesopotamian and Syrian assemblages (see Chapter 10), can also be seen as a result of the mass production system that characterised the production and distribution of these shapes during the MBA. Although several scholars have associated standard measurements with a more intensive level of specialisation, as a consequence, for example, of an elite control over ceramic production (Rice, 1981), others have shared the possible correlation between these two aspects. Arnold P.J. III, for example, argued that design uniformity could be understood as an indicator of tool versatility (Arnold, 1999). Arnold D.E., moreover, suggests that factors such as the availability of raw material, procurement variables (i.e. “the potters’ perceptions of their raw materials; their concern for quality control; their settlement pattern; the energy required to obtain raw materials; land tenure patterns; religious beliefs; the need for different raw materials for different vessel uses, shapes, and sizes; procurement specialists; and change in sources over time”, Arnold, 2000, p. 341) and paste preparation variables (i.e. “the potter’s physical alteration of the raw materials, the mixing of these materials to form the paste, the use of different pastes with different forming technologies, changes in paste recipes over time, and use of different pastes with different wares”, Arnold, 2000, p. 351) might also influence assemblage variability. In an ethnoarchaeological study on standardised jars that were manufactured in a village in the Philippines, William A. Longacre argued that the skill of each single potter is the main element that influenced standardised shapes. When interviewed, the potters affirmed that, although the jars seem very similar, there are always some small differences, which allow them to recognise the makers of the pots (Longacre, 1999).

- b) The second element that would indicate that Ahmar was involved in a large-scale production system is supported by the distribution of similar vessel shapes in the Euphrates Valley. Although the evidence at hand does not allow a clear-cut answer to questions regarding whether the pottery was imported or exported, it is

clear that shapes such as CS04, CS08, CS11 and the Khabur Ware do stress the strong relationship between the MBA sites. Functional activities such as transport, storage and processing were undertaken to fulfil both a local socioeconomic demand and to take part in a wider regional exchange system. Where similarities are particularly close (i.e. Ahmar, Aushariye, Haradum), one could argue that these vessels were made and marked by the same potter who had perhaps travelled from site to site. This consistency of functional shapes indicates that the Euphrates River played an essential role in linking traffic among the MBA societies. The similarity in the potter's marks found on both the Aushariye and Haradum vessels suggests that long-distance transportation activities were also carried out among those sites, even though they did not come under the same political and administrative kingdom (see Chapter 1). Moreover, the Khabur specimens at Tell Ahmar seem to indicate the desire of the kings of Upper Mesopotamia to play a role in the exchange connections of the sites located along the riverine transport routes of the Euphrates. Similarities in ceramic shapes, decorations and potters' marks, as well as in funeral customs, emphasise a common cultural background. These elements indicate that long-distance economic relationships were one of the major activities upon which the subsistence system of the MBA sites was built, and that this system generated the ambition to both emulate and compete among these societies. However, the variations in capacity among similar vessel shapes would suggest that a ceramic production idiosyncrasy might have been preferred to manifest the role and need of local identities to emerge within the regional framework of developed economic relationships. Distinctiveness in the ceramic shape type production can be understood not only as being associated with a differentiation in the products exchanged, but also as a need to emphasise the role of each single identity and each person's specific involvement within the broader MBA regional economic network.

In terms of the role of Tell Ahmar during the MBA II, the presence of Khabur Ware is important not only to stress relationships between the Euphrates and Khabur

valleys, but also to understand the political affiliations of the site during this period. After the destruction of Mari by Hammurabi of Babylon (c. 1761 BC), it is not clear if the kingdom of Carchemish was governed by Yamkhad, or if it was an independent kingdom. Consequently, the political affiliation of Tell Ahmar is not yet clear: either under the administration of the kingdom of Yamkhad (king Hammurabi I) or of the kingdom of Carchemish (king Yahdul-Lim). Unfortunately, the paucity of archaeological evidence from Carchemish does not help in establishing the role of Carchemish, thus the Ahmar political affiliation. However, the ceramic analysis undertaken in this study can bring some light on this issue. Given that Khabur Ware distribution was not only limited to the political extension of Shamshi-Adad I's empire (Oguchi, 1997; Oguchi, 1998; Faivre & Nicolle 2007), and that textual evidence from Tell Leilan informs us that after the destruction of Mari the powerful influence of the kingdom of Yamkhad was also dominant in the Khabur Region (Eidem, 2011), on the one hand the Khabur specimens at Tell Ahmar would suggest that during the MBA II the site was a subordinate market-town under the influence of the kingdom of Yamkhad (ruled by Hammurabi I). On the other hand, from the iconographic and stylistic analyses of a seal found in a jar burial in a trench at Tell Ahmar in 1998, Adelheid Otto argued that the seal could have belonged to a royal official resident in Carchemish or in its vicinity (Otto, 1998). The seal was carved at Carchemish during the third quarter of the 18th century BC, after the destruction of Mari. This last evidence suggests an administrative relationship between Carchemish and Ahmar.

Considering the strategic location of the site, one could argue that Ahmar was a sort of commercial outpost (of either Carchemish or Yamkhad) and a sorting station along the Euphrates. Its strategic position, probably on the boundary between these political administrations, would certainly have given a particular importance to the site, for example as the controller and guard of traffic in this area of the Euphrates. The functional composition of the ceramic assemblage, in addition to the door and jar sealings and the seal impressions found in association with vessel shapes, suggests that during the MBA II period Tell Ahmar was not only an

important beer/grain trade station, but also a second tier centre managed by officials who lived close to the public building on the acropolis of the tell.

Significance of this study and suggestions for further studies

The contribution of this work is original in terms of the archaeological data it uses and the methodological approach it employs in this specific cultural area.

The new data from the technological and morphological typologies (see Chapters 5-6) is essential for future MBA studies as it provides material that can be used for functional and chronological investigations and comparisons, and helps to fill a gap in this specific period.

Since ceramic functional approaches involve an inferential reasoning, this study has demonstrated how effective research into ceramic vessel functions requires a multi-disciplinary methodology which considers a full range of archaeological data that comes from different but complementary fields of study (see Chapters 5-9). This multi-disciplinary approach was essential to achieve realistic interpretations of past vessel functions (see Chapter 10).

In addition, this work has offered an insight into the socioeconomic organizational system that characterised the Tell Ahmar community during the MBA II, and indicates how an understanding of ceramic functional studies can increase our knowledge of past societies.

Finally, by evaluating the degree to which the present study has succeeded in answering the research questions, the potential for further research has also been identified. For instance, a more detailed analysis of ceramic distributions involving petrographic analyses would be extremely helpful in future studies in order to fully understand the identification of the source of vessel production and the mechanisms by which they have been circulated. In particular, petrographic analyses should be applied to those shapes at Tell Ahmar that have been identified as being used to undertake long-distance activities. The cooperation of different disciplines and an examination of comparable petrographic data from different sites are significant elements worthy of further study.

EPILOGUE

The analysis discussed in this work began before the Syrian uprising of March 2011, and it ended during Syria's current period of political instability.

The last time I was in Syria was in the autumn of 2010. At the time, I could not possibly imagine that I would not be able to return the following year. However, since 2011 all the international teams working in Syria have been forced to abandon their field research.

Although I managed to collect the essential information for my research prior to the uprising, I was hoping to continue work there for a subsequent period. Regrettably, some of the observations I made from 2010 to the submission date of this work could not find their practical explanation.

Together with some personal queries that still need to be answered, the present situation of instability has obviously created a general stagnancy in fresh Syrian studies. Indeed, publications on recent excavations and the regularity of conference debates have both dramatically decreased since 2010. However, there is much more to know about the period considered in this work, as well as about the many other historical ages that characterised the Syrian past.

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APPENDICES A-C

Notes to Appendices A-C

Appendix A and C

Not all the sherds analysed in this research have been reproduced in these appendices, only those most representative.

The drawings in Appendix C, Plate 51-56 were adopted from other publications. References are given in the related tables. Permissions to reproduce unpublished drawings from Tell Leilan (Plate 51, No. 6) and Tell Aushariye (Plate 55 No. 4-5) have been given by the project directors.

Appendix B

The photos have been taken with a DinoLite digital microscope (1280 x 1024 pixel resolution), with a magnification of 50x. The original dimensions of each photo are 320 x 240 pixels.

List of Abbreviations

Type of diagnostic sherds

RM = rim
BS = base
HN = handle
BDec = body decorated

Type of ware

CMW = Common Ware
FNW = Fine Ware
CKW = Cooking Ware
GRW = Grey-Burnished Ware
KHW = Khabur Ware

Colour

(When the Munsell Chart code has not been used)

v. = very
p. = pale
d. = dark
yell. = yellow

Inclusion Type

M = mineral
V = vegetal

Inclusion Frequency

L = low
M = medium
H = high

Inclusion size

L = large
M = medium
S = small

Firing atmosphere

H = homogeneous
R = reduced
OX = oxidising

Firing temperature

L = low (c. < 750° C)
M = medium (c. 750-950° C)
H = high (c. > 950° C)

Surface treatment

SM = smoothed
REDS = red slip
S = slip
SS = self-slip
BT = bitumen
FP = fingerprint

Surface decoration

CM = combed
CD = cordoned
FN = fingernails
BR = burnished
PN = punctuated
GR = grooved
RD = ridged
CR = corrugated
IN = incised
PT = painted
NDEC = no decorated

Dimension and capacity

R Ø = rim diameter
B Ø = base diameter
H = height
V = volume
ND = not determinable

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