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Keywords: cooking practices; pottery use; Arslantepe (Turkey); Late Chalcolithic; Early Bronze Age

Schlüsselwörter: Kochpraxis; Keramiknutzung; Arslantepe (Türkei); Spätchalkolithikum; Frühbronzezeit

Anahtar sözlükler: pişirme pratiği; çanak çömlek kullanımı; Arslantepe (Türkiye); Geç Kalkolitik; İlk Tunç Çağı

Introduction

Cooking along with other modes of food preparation is a relevant venue to approach ancient cultures, societies and economic systems. Growing attention has been granted to cooking, cooking pots and fire installations[1]. Cooking in all possible ways, as well as fermenting, brewing, pickling, smoking are all modes of transforming raw ingredients into tastier and storable food. They create socially accepted flavors and not simple nourishment. Daily cooking might be a more or less segregated activity within families and sectors of the society, whilst large scale cooking can mark special commensal occasions. Food related practices altogether are an important arena in which social relations and identities are played out, reproduced and challenged; cooking is one of the venues to inquire about the everyday as well as the out-of-the-ordinary.

We are truly grateful to Paolo Guarino: without his work we would still be half way through the analysis of the LC 3–4 data. Giulio Palumbi provided ideas concerning the VI B1 period and we also profited of Roberta Crisarà's work on period VI C–D cooking pots. The article was written jointly by the three authors, whilst the study of the pottery from which this study derives is divided as follows: Francesca Balossi Restelli periods VIII and VII; Maria Bianca D'Anna period VI A; Paola Piccione period VI B2. Marcella Frangipane warmly encouraged us during this work and, together with Susan Pollock and Pamela Fragnoli, read a first draft of this paper giving precious suggestions. Thanks to Mehmet Karauçak for the Turkish translation and Anja Fügert for the German. Inaccuracies and mistakes remain, however, our own responsibilities.

Sources of illustrations: *Figs. 1–9* = MAIAO (Missione Archeologica Italiana in Anatolia Orientale)

[1] Mee – Renard 2007; Graf – Rodrígues-Alegría 2012.

Arslantepe sequence	Archaeological chronology	Absolute chronology (B.C. cal. ca.)
Period VIII	Late Chalcolithic 1–2	4200–3900
Period VII	Late Chalcolithic 3–4	3800–3450
Period VI A	Late Chalcolithic 5	3350–3100
Period VI B1	Early Bronze Age Ia	3100–2900
Period VI B2	Early Bronze Age Ib	2900–2750
Period VI C	Early Bronze Age II	2750–2500
Period VI D	Early Bronze Age III	2500–2000

Table 1 Arslantepe Late Chalcolithic and Early Bronze Age chronological sequence

Our study is built upon a rich literature that sees human actions as intertwined and sustained by materiality, not necessarily concerned in this instance with the functionalist approaches to human societies as systems. The archaeology of practice also problematized the dichotomy between material and non-material culture to go beyond an understanding of ancient things as artifacts to be simply categorized as chrono-cultural indicators or media encoding messages and symbolism to be deciphered[2]. For these reasons, the practice turn boosted research and narrative focusing on the small and local scale as the place of human agency. However, as suggested by Robb, Pauketat and colleagues, archaeology may approach *big histories* as large-scale and/or long-term phenomena that relate the local to the global[3], extending »relationalities into deep time« through »genealogies of material practices«[4]. In this study we analyze a single case study by combining a diachronic perspective that situates research in the large-scale dimension of inquiring into cultural change and continuity with a practice approach aiming at analyzing cooking practices as processes. This approach might bridge the gap between the small and local scale of analysis on one side and the large scale, bringing us a more complete picture of the daily life of the communities under study.

This paper investigates cooking practices at Arslantepe during the Late Chalcolithic and Early Bronze Age (*table 1*). In particular, we focus on cooking with pots. Along this long time span, cooking pots almost always form a sizable part of the ceramic assemblage making a large amount of data available. We also bring in fire installations and other kinds of food processing, with or without the exposure of ingredients to heat[5].

After 55 years of extensive excavation, the site of Arslantepe in the eastern Anatolian Malatya province offers a great deal of published data on a long-lasting occupational sequence that extended from the end of the fourth to the first millennium B.C. Concerning in particular the Late Chalcolithic and Bronze Age, numerous studies deal with specific research questions and well-defined time periods and/or similar evidence[6], not to mention more interpretative works that use or take their cue from Arslantepe as a case study to investigate, for example, the forma-

2 Hahn 2005.
3 Robb – Pauketat 2013a.
4 Robb – Pauketat 2013b, 20.
5 Balossi Restelli 2015.
6 E.g. Frangipane 2007.

tion of social and political complexity[7]. In a few works, a strong diachronic perspective has been adopted also to highlight phenomena of continuity and breaks that not always harmonize with the acknowledged archaeological phases established on the basis of stratigraphy and changes in the main characteristics of material culture, pottery above all[8].

The Site

Arslantepe lies in the fertile Malatya Plain, not far from the upper course of the Euphrates River. The site has a long, uninterrupted and well-documented occupational sequence[9], starting at least with the beginning of the Late Chalcolithic (4500 B.C.) and testifying to the phases of increasing social and political complexity (Late Chalcolithic – hence LC – 1–4); the origin of state (LC 5); the arrival of and interaction with foreign peoples (Early Bronze Age – hence EBA – 1), both from the middle Euphrates Valley and southern Caucasus; and the formation of sedentary kin-based groups (EBA 2–3). Arslantepe is mostly known for the LC 5 period, when a monumental palatial complex occupies most of the settlement and represents the center of power of a primary state system, contemporary to the Late Uruk developments in Mesopotamia. This lasts only a couple of hundred years and collapses towards the end of the fourth millennium. During the EBA, the groups occupying Arslantepe were characterized by a highly mobile organization (VI B1, VI C) alternating with more sedentary ones (VI B2, VI D) that have been amply described in the above-cited articles. Such organizational, cultural, social and political transformations and length of occupation represent an excellent case for the analysis of diachronic changes in cooking pots, practices and habits.

Throughout the investigated 2000 years of the Arslantepe sequence, there are multiple types of buildings in which cooking and food consumption took place: private dwellings, elite residences, public structures, and ceremonial buildings. The analysis of these contexts and their sets of kitchen vessels is used to explore the diachronic variability of food quantity and quality in households and in communal or public cooking areas.

Methodology

The axiom this study is based on is the idea that cooking pots are instruments of social practices through which culturally promoted/influenced culinary recipes are prepared. Shapes and dimensions of cooking pots and their affordability, together with other technological solutions used in their manufacture, indicate a compromise between desired performance, technical ability and manufacturing traditions. The identification of cooking pots and the analysis of the way they were made and used is thus a key to the interpretation of such practices. The data we have collected in order to tackle this problem thus relate to cooking pots and to their contexts of use.

Cooking pots have been identified by a combination of macroscopic observations of ware type, shape and use wear[10]. Pastes and shapes of cooking pots obviously vary through time,

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7 Frangipane 2010.

8 E. g. Balossi Restelli 2015; Fragnoli – Palmieri 2017.

9 Frangipane 2012a; Frangipane 2012b; Frangipane 2014; Frangipane 2016.

10 Residue analyses will in the near future hopefully add an important data set to be integrated with morphological and use wear analyses (see Kimpe et al. 2004 as a case study on different kinds of containers of the 1st to 6th century A.D.

but, as described further, mostly stand out in comparison to other classes of pottery. For each investigated period cooking pots have been functionally analyzed according to shapes, capacity and use wear traces, i. e. mainly soot, carbon deposit and/or abrasion due to stirring[11].

In some of the investigated periods, we registered the presence of numerous vessels manufactured technically and morphologically as similar to cooking pots that did not, however, have surface alterations of any type ascribable to use over fire. Even though beyond the scope of the present article, it is interesting to note that their abundance might suggest that other types of food and drink manipulation without direct exposure to fire were much more common than frequently thought, such as short term conservation of water, manipulation of milk (processes of yogurt or butter production, for example), fermenting, brewing, leaching, but possibly also warming or cooking with the use of stones[12]. At the present state of work there are 77 cooking pots that either do not have soot or need to be further investigated. Since their ware type, dimensions and morphology is exactly within the range of the rest of the assemblage, we have included them in the general observations concerning dimensional variability, but further analysis and samples are needed to evaluate in detail the use of these pots.

For those pots that were sufficiently preserved, the size was measured (rim, minimum and maximum diameter, height and volume)[13]. In the present work there are 347 well preserved pots, technologically and morphologically categorized as cooking ware, for which we were able to calculate the volume. Approximately another 200 are the vessels identified as cooking pots that were not preserved enough for us to measure their capacity, but will be considered when analyzing the kitchen contexts and the distribution of pots. Measurements have been taken from the 1 : 1 scale drawings of the vessels using the Pot Utility software created by the ARCANE project[14]. Volume was measured as the vessel's capacity up to the rim. Instead, maximum diameter and height are external measurements (including the thickness of the pot walls), as we are also interested in evaluating the space occupied by the vessels, their movability/portability and ease of use.

For the investigation into the ease of manipulation of the contents and the degree of evaporation that could occur in cooking pots, we measured the restriction ratio of vessels, calculated as the ratio between the area at the point of maximum body expansion and that of the narrowest opening point[15]. The relationship between height and volume of the pots was also evaluated as a factor indicating access to the pots' contents.

The presence of handles and lugs was recorded in order to evaluate how pots could have been handled.

The relationship between shape and dimensions of fire installations throughout the investigated periods and that of cooking pots (specifically the shape of the base and the maximum diameter) as well as of the position of soot deposits on them have been considered in order to reconstruct the position of the pots over the fire. Finally, the position of the fire installations inside rooms or

site of Salagassos). So far a few Early Bronze Age samples have been preliminary analysed (Di Nocera 2016) and others for periods VIII and VII are underway (starch grain, chemical analysis of organic residues and phytolith analysis; Garcia et al. 2015; Barton – Torrence 2015). General reference to these will be made along this work.

11 Henrickson – McDonald 1983; Smith 1983; Schiffer 1989; Kobayashi 1994.

12 Atalay – Hastorf 2006.

13 D'Anna – Jauss 2015, 69 fig. 6, 3.

14 Associated Regional Chronologies for the Ancient Near East and the Eastern Mediterranean <http://www.arcane.uni-tuebingen.de/> (12.07.2018).

15 Smith 1983.

their presence outdoors was recorded to suggest the contexts and social implications of cooking activities in different periods. Places of food preparation have been identified by the presence of fire installations, but ceramic containers used in food preparation might not all be stored in the same room with fire installations and in fact they have been also found in contexts without hearths. Kitchen sets of vessels have thus been recorded to include the whole variability of containers possibly used by a household or in a kitchen context. Previous works have shown that kitchen pots might be stored (full or empty), apart from being kept in rooms with fire installations and in places of consumption or in small storage areas[16]. In the public building complex of period VI A too, cooking pots have been found in situ in stocking areas[17]. Kitchen vessels found in situ in storage or consumption areas or in any other space of a structure were thus added to the same ›set of kitchen facilities‹ of the home or building in which they were found.

The Arslantepe Cooking Pots: Presentation of the Data and Discussion

Ware, shape, use wear and the manipulation of vessels

With the exception of EBA 1a (period VI B1), when pots are all made essentially in one ware, kitchen ware is mostly manufactured in specific fabrics; this aids in distinguishing them immediately from all other functional categories. Fabrics are always medium to coarse, mixed tempered, and often with more mineral than organic inclusions. In some cases use wear traces (black soot on the exterior of the vessel or carbon deposits on the internal base and walls) have, however, indicated that pots of other, apparently non-cooking ware were also used on the fire. This happens in a few cases during the LC 5 (period VI A) and during the LC 3–4 (period VII), when 25 % of the pots with traces of fire are of a chaff-tempered ware, in general used for serving and storage vessels. As anticipated above, the reverse is also attested, with some vessels made with the paste and shape of cooking pots, but lacking traces of fire on their body. This appears to happen mostly in the LC 3–4 and EBA 1b periods and we suggested that these might have been used for types of manipulation of food that did not require fire and thus deserve a separate scrutiny.

Cooking pots are hand-made throughout nearly the whole sequence, again with the exception of the LC 3–4 when some cooking pots seem to have been finished on a rotating device, while others are completely hand-made. This is not surprising because in the course of period VII, a more specialized and mass produced pottery is for the first time strongly attested at the site and two parallel circuits of ceramic productions seem to supply vessels to the community[18].

Surface treatment is the element that most differs through time: vessels have been first scraped (period VIII), then smoothed (VII and VI A, when rough burnishing also occurs), and finally burnished (VI B, VI C and VI D). This different surface porosity possibly affected cooking times and temperatures; this but is very difficult to evaluate, as hearths and types of fuel that would also have an influence on these changed too, throughout the investigated 2000-year sequence.

During the LC (periods VIII to VI A), cooking pots have a more or less globular profile and a short everted rim; bases are mostly rounded (*fig. 1*)[19]. Although very rare, ceramic lids have

16 Piccione et al. 2015, 12–13 figs. 4. 5.
17 D'Anna 2010.
18 Frangipane 1993.
19 Balossi Restelli – Guarino 2010; Balossi Restelli 2012; D'Anna – Guarino 2012; D'Anna – Jauss 2015.

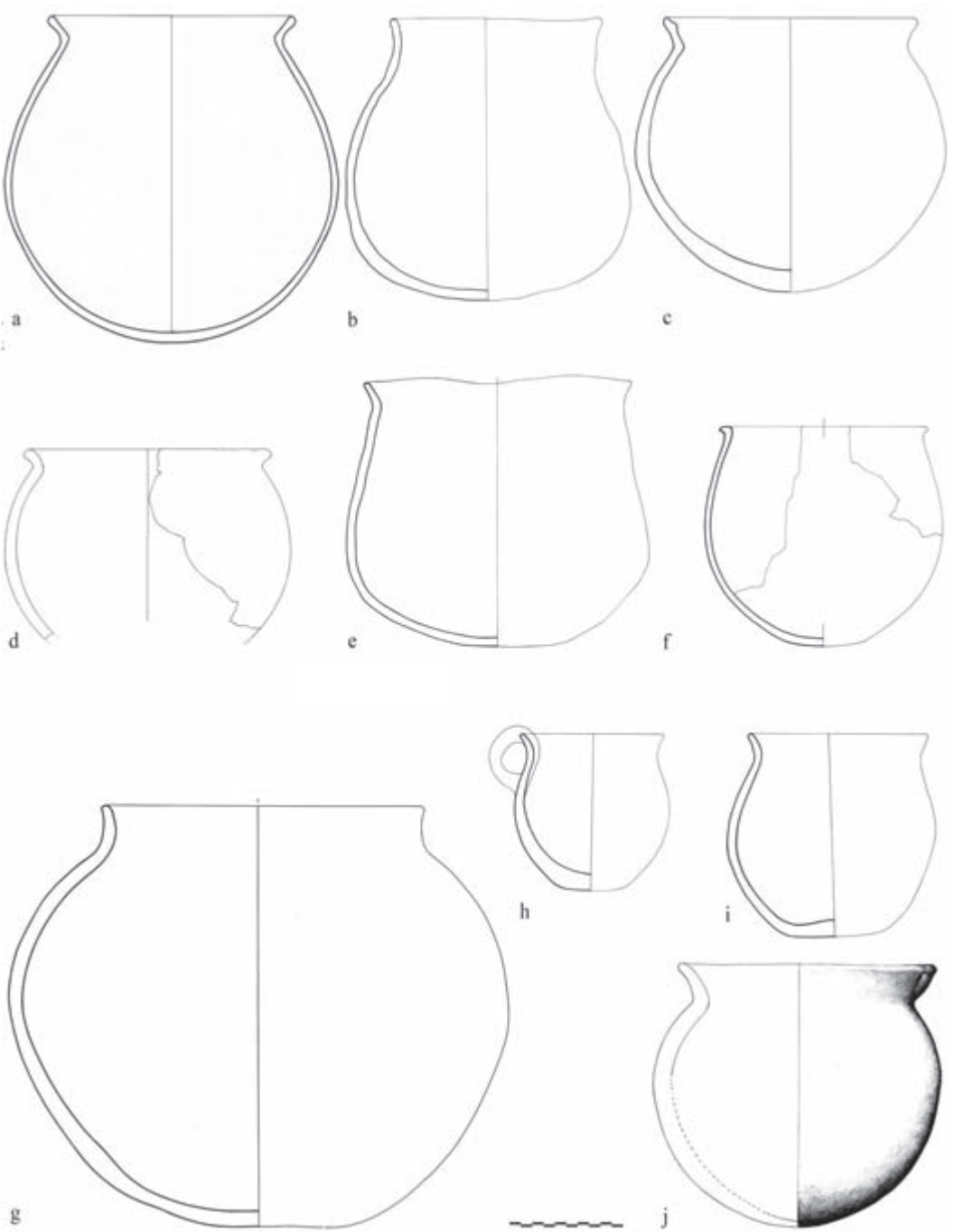


Fig. 1 Most common cooking pot types from the Late Chalcolithic levels of Arslantepe: a. b = LC 1–2 (period VIII). – c. d. e. f = LC 3–4 (period VII). – g. h. i. j. k. = l LC 5 (period VI A: *g* and *h* uncommon).

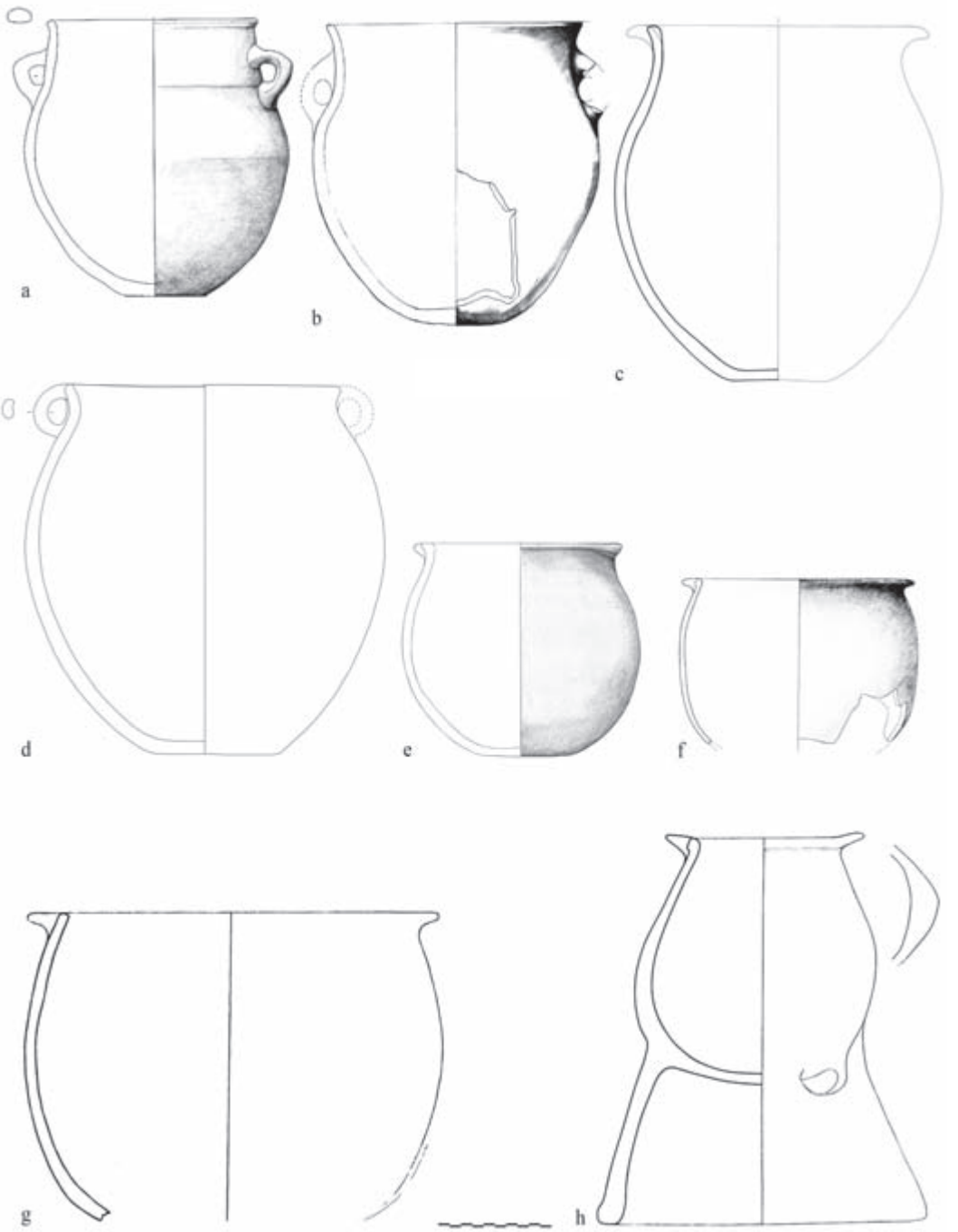


Fig. 2 Most common cooking pot types from the Early Bronze Age levels of Arslantepe: a. b = EBA 1a (period VI B1). – c. d. e. f = EBA 1b (period VI B2: *d* uncommon). – g. h. i. j = EBA 3 (period VI D: *h* uncommon).

been discovered in these phases: no lugs or handles are present. In the LC 5 period (VI A) a few cooking pots of small dimensions have one strap handle (*fig. 1 h*), and some pots technologically and morphologically definable as storage vessels were used on fire.

The ceramic assemblage of EBA 1a (period VI B1) is rather peculiar. This is the period in which Arslantepe sees a profound break in interregional relations as well as settlement and social organization: contacts with southern Caucasian communities are attested, amongst others, by the spreading of the typical Red-Black Burnished Ware[20]. A limited range of shapes in general characterizes this ceramic tradition, suggesting a multifunctional use of most pots[21]. The repertoire of closed shapes is basically composed by cylindrical-necked jars with elongated and more or less carinated profiles, often equipped with two handles. Surface alterations due to the exposure to fire are difficult to assess on such pots because of their dark burnished external color. This, together with their non-specific shape, has been a major bias of the present work and we are still working on the identification of cooking pots within the assemblage. In the present work we have based the identification on the recognition of re-oxidized patches and have been able to recognize only 7 such pots, all characterized by a short neck (*fig. 2 a. b*). To those, an exceptional find can be added: it is a 32 liter capacity basin with flat base, convex side and two opposite small lugs under the rim, found in one room of the imposing Building XXXVI[22]. The base presents a large re-oxidized patch that clearly shows that this large bowl was (at least also) used on the fire. The low number of vessels does present a major bias and we thus decided to exclude them from the detailed analysis that follows. Only general comments will be made on the cooking pots of this period. In phase VI B1 some ceramic lids also occur, at times perforated. The finding of in situ unbaked clay lids possibly to close storage vessels furthermore suggests that their number might have been much higher[23].

In EBA 1b (period VI B2) globular and elongated cooking pots with slightly flattened bases often have a couple of opposite triangular lugs at the rim (*fig. 2 c–f*). From this period onwards, cooking pots no longer present a distinct collar or rim. Vertical handles are uncommon and, when present, they are placed immediately under the rim[24]. In this period too, a single large burnished bowl has carbon deposits on its base, suggesting use over fire.

During EBA 2 and 3 (periods VI C and D) the shape of kitchen ware shows strong continuity with the previous period, even though all other archaeological data indicate a strong cultural break between EBA 1 and 2 at the site[25]. The general outline of the cooking pots continues to present no abrupt carination and the surfaces are again burnished (*fig. 2 g. h*). Triangular lugs are present and become bigger in time. In EBA 3 (VI D), a number of cooking pots have an incorporated hearth (*fig. 2 h*). In period VI C the identified cooking pots (i. e. with attested soot deposit) are only 10 and, as with VI B1, are too few to be statistically reliable. As in the previous case, we shall thus use this period only for general comments but not in detailed analyses.

With the exception of the two above mentioned bowls from periods VI B1 and VI B2, during both LC and EBA neither cooking bowls nor trays are attested at Arslantepe. However, in

20 Frangipane 2012b.
21 Palumbi 2003; Palumbi 2008.
22 Frangipane 2014; Palumbi et al. 2017.
23 Frangipane 2014, 176; Palumbi et al. 2017.
24 Piccione 2010.
25 Conti – Persiani 1993.

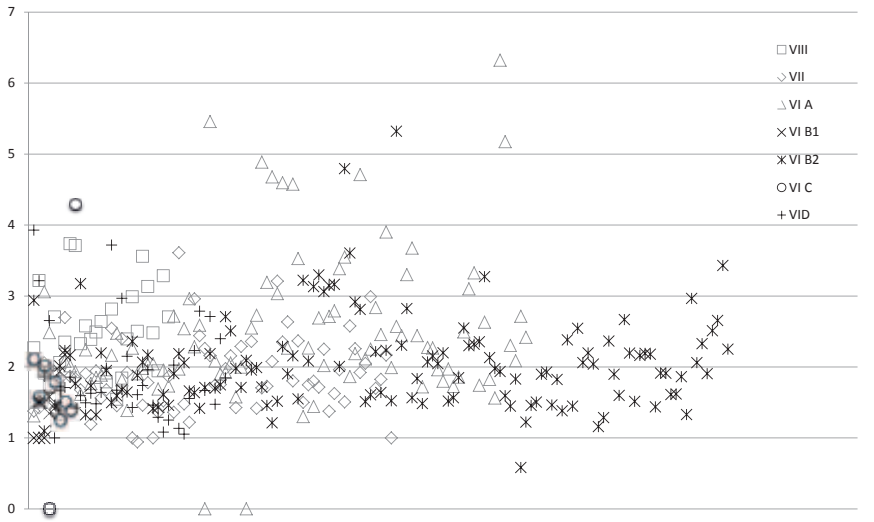
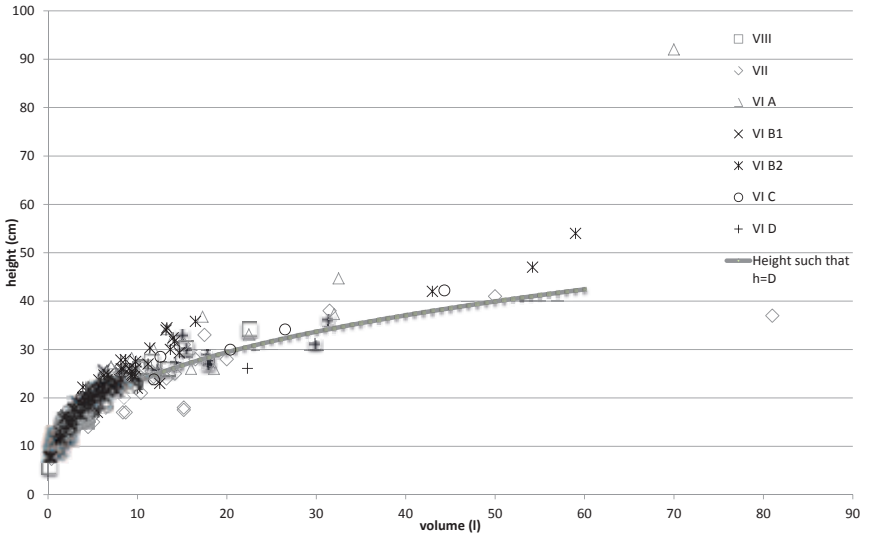


Fig. 3
Restriction ratio of all measurable cooking pots divided by Arslantepe periods. The number is obtained by dividing the area of widest pot section parallel to the rim by the orifice area.

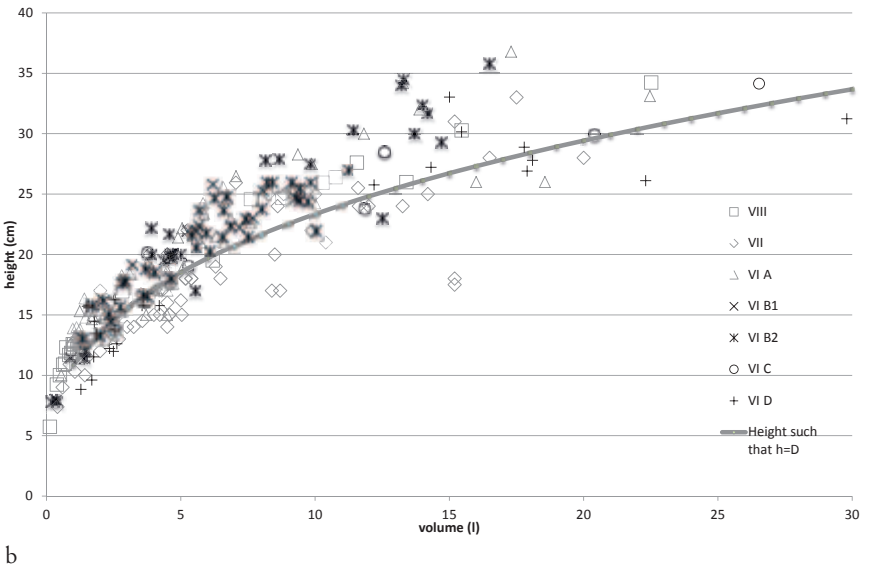
Period VII, out of 118 pots with surface alterations due to fire, two are bowls, which seem to have been accidentally or extemporaneously used for cooking. Trays too, even though present in the EBA 1 period, do not seem to have been used on the fire.

Shapes have typically closed profiles but pot restriction is throughout the sequence rather small. This allows ease of manipulation (as stirring) but protects contents, reduces spill, and minimizes evaporation when cooking over fire. Interesting in this sense are the use wear traces on a pot from a domestic context (A946) in period VI A, with a capacity of approximately 14 liters and a restriction ratio of 2.18; this pot has no internal carbon deposits but shows traces of stirring on the bottom, confirming that contents needed to be stirred during processing. The majority of kitchen vessels have a restriction index between 1 and 3, calculated as the ratio between the area at the point of maximum body expansion and that of the opening (*fig. 3*). In pots with a restriction ratio 2 the maximum body diameter is double that of the mouth, whilst those with a value 1 have equal opening and maximum expansion point. Values of under 1 (i.e. wide mouthed pots) are practically absent, whilst a restriction ratio above 3 is not rare. The assemblage of LC 3–4 (period VII) is the most homogeneous in terms of restriction factor, but this might be due to the specialized and serial pottery production in this period and not necessarily to cooking habits[26]. A few pots from the other periods have a slightly higher restriction ratio. The LC 5 period appears to be the period with the most pots with the highest restriction ratio. These vessels are morphologically either unique or belong to the group of storage vessels and not to the morphologically and technologically well-delimited category of cooking pots; the evident soot and/or carbon deposits betray their use over fire. Their presence in the LC 5 period is also, but not only, linked to particular cooking that was taking place in specific public contexts: food preparation in one of the buildings interpreted as a temple was both for greater quantities of people and for particular foods and/or drinks, a reason for which larger, extemporaneous vessels were possibly needed[27].

[26] Frangipane 1993; Trufelli 1994; Guarino 2013; D'Anna – Guarino 2012.
[27] D'Anna – Jauss 2015.



a



b

Fig. 4 a. b Relation between cooking pot capacity (liters) and height (cm) of cooking pots according to investigated periods of occupation at Arslantepe:
a. all cooking pots;
b. enlargement of the plot for cooking pots with volume up to 30 liters. The continuous line indicates where pots would fall if their height and maximum diameter were equal.

Cooking pots are always moderately tall globular vessels, as visible from the relationship between height and volume plotted in *figure 4*. Most pots fall above the continuous line which represents the ideal distribution of pots with height equal to the maximum diameter. Arslantepe cooking pots mostly have a height similar to or greater than the largest diameter, suggesting that they were overall more suitable for the slow cooking of semi-liquid foods, boiled or simmered, but certainly not fried. If all cooking pots suggest the boiling or simmering of food over the fire, those pots that have the highest restriction ratio (i. e. above three) and thus have a smaller mouth in relation to their maximum diameter, even more so, must have been used for the processing of liquids, such as soups or drinks. Interestingly, as cooking pots get larger (above 30 liters), their general proportions move away from the continuous line along which smaller cooking pots

cluster. The uncommon larger pots are those used in special preparations, be they communal cooking or pre-cooking of cereals to be consumed throughout the year by a single family.

Fire installations and cooking

Fire installations on which cooking pots could have been used are of different types and include extemporary fires made on the ground[28]. As opposed to the latter, built hearths are always located inside constructed spaces and domestic cooking spaces were in general very small. Whilst pots were used over hearths, we have no evidence at all of their use in ovens.

The most common type of open hearth from LC 3 to EBA 1B (4200–2750 B.C.: periods VII, VI A and VI B) is a flat round surface with or without a slightly raised rim and often with a central depression, sometimes with a bowl set inside it. The diameter of this surface varies from 35 to 120 cm, with a weighted average of 68.4 cm (the majority of hearths are 60–70 cm wide). There is an evident correlation between the dimensions of the hearths and that of the rooms they are in (the biggest hearths in the biggest rooms) that might be linked to their use also for heating. In the LC 2 to 4 periods andirons are often associated with these hearths. These fireplaces are located more or less in the center of the room which again suggests a multifunctional use also for heating and possibly sitting around them[29]. The largest rooms, though, are at times also those with a special function, as is the case of the communal building in period VI B1 (Building XXXVI); the hearth at the center of the main room (A1000) is one of the largest in the settlement, with a diameter of 120 cm. The extraordinary character of the activities taking place in this building is further suggested by the presence of the 32 liter-capacity cooking bowl that was mentioned above. Different from the common round hearths were also those in temples of periods VII and VI A: a raised rectangular platform in the earlier case and a shallow rectangular plastered depression in the floor in the second. The large hearth located in the main room (A450) of the period VI A Temple B, the large cooking pots, abundant utensils for food preparation and large containers for storing drinks and dry foodstuffs found in the same building, all indicate special food related activities taking place there.

An unusual double horseshoe shaped hearth was found in a kitchen of LC 2 (period VIII), the internal diameter of which (27–29 cm) nearly matches the maximum diameter of the cooking pots from the same room (24–27 cm). Suggesting that these were set on the fire and possibly held straight by the shoulders of the hearth are the soot traces that cover only the upper part of the external body: the tips of the flames, which leave the black soot, run up along the body of the vessel, the base of which was in direct contact with the fire. They do not reach, though, the narrower neck (*fig. 5 a*).

The distribution of soot and carbon deposits on cooking pots of these periods, and as a matter of fact of the later EBA, confirms their use over such hearths too. External dark soot is rarely found on the pots' bases, which present a light-colored re-oxidized patch (as in *fig. 5 a. d. e*): the pot must have been sitting in the fire or just slightly over it and sometimes stabilized with the aid of andirons or stones. The majority of the body is covered with black soot except the higher area of the shoulder which was not reached by the flames. Flames appear to reach higher up in some pots from LC 3–5 (periods VII and VI A), as black soot covers also the pots' rim though

[28] Balossi Restelli 2015.

[29] Balossi Restelli 2015.

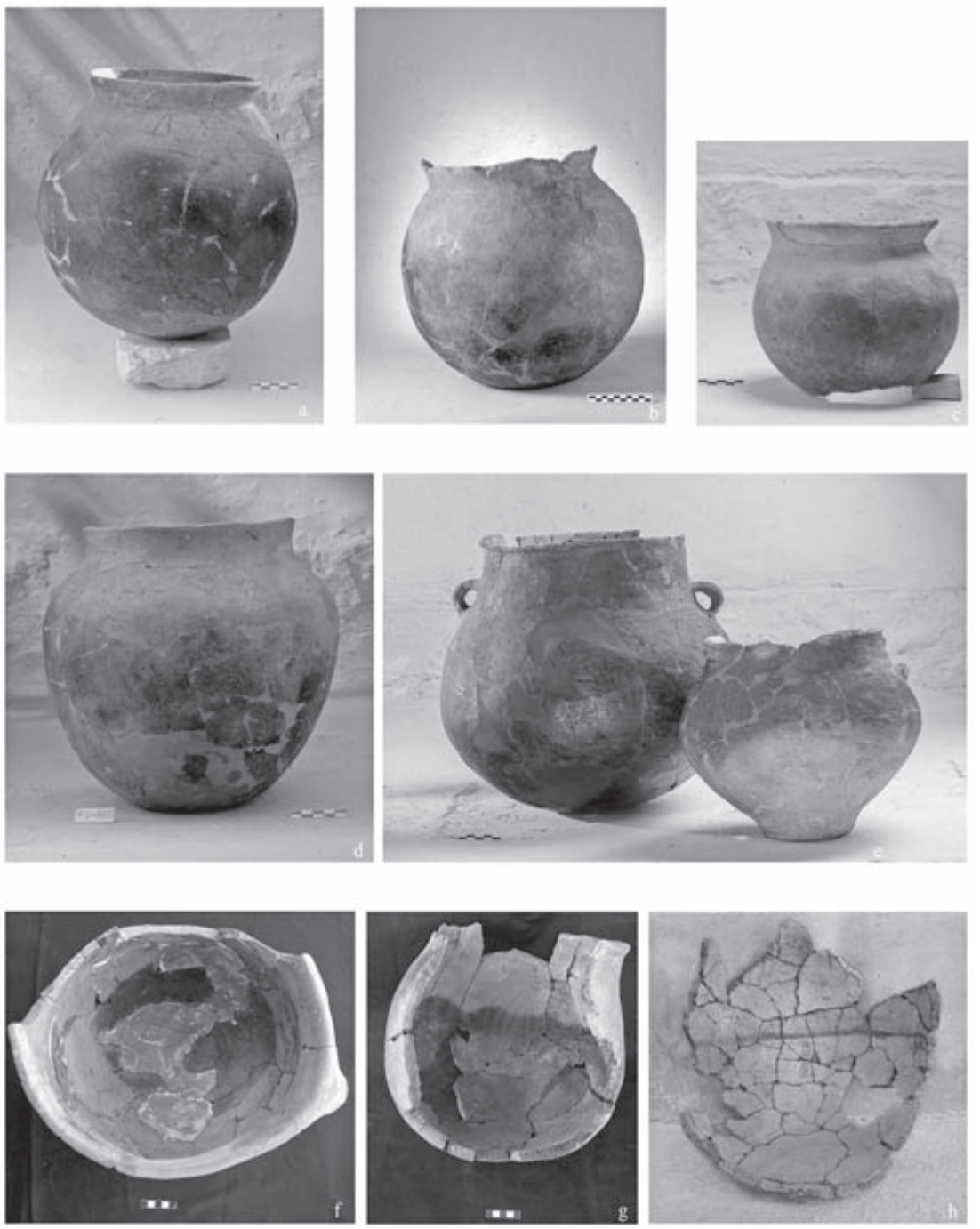


Fig. 5 Examples of soot and carbon deposits on the Arslantepe cooking pots: a = LC 2. – b = LC 3–4. – c. d = LC 5. – e = VI B1. – f. g. h = VI B2.

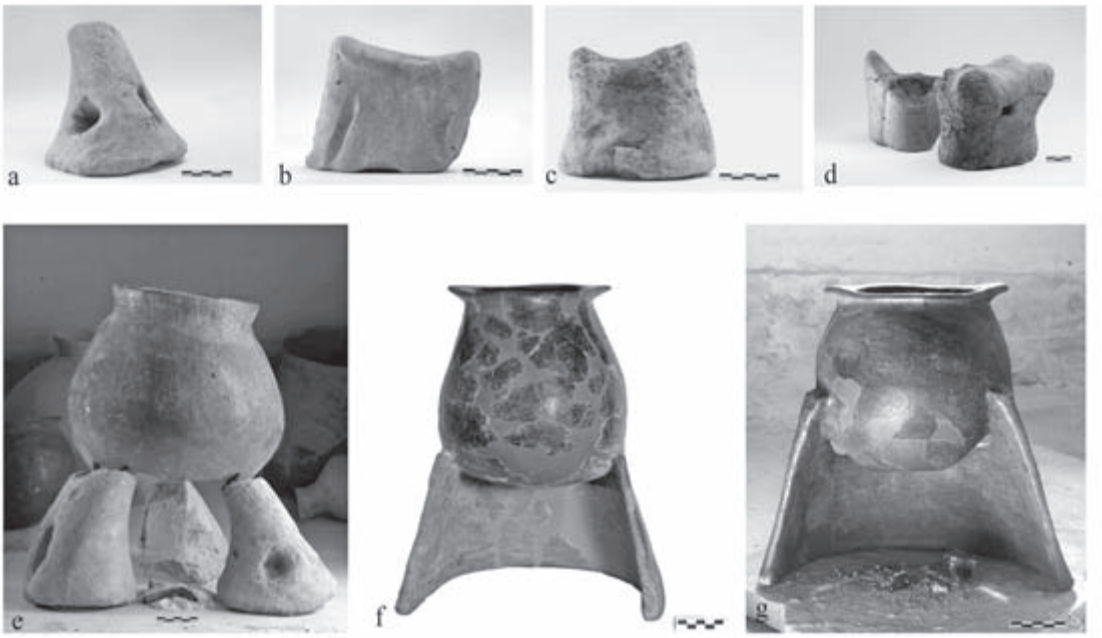


Fig. 6 a–c andirons of the Late Chalcolithic periods and d Early Bronze Age; e period VIII cooking pot sitting on andirons from the same context; f. g two portable cooking pots with incorporated burner from period VI D.

the shoulder is always unaltered[30]. Interesting is the fact that andirons rarely have soot deposits, suggesting they were either used to hold pots near the fire but out of its reach or that they were completely immersed in it (*fig. 6 a–d*). Since several andirons have been found in couples or groups of three sitting on the hearth and at the two sides of its central point, the latter hypothesis is the most probable (*fig. 6 e*). Furthermore, the absence of soot on the external bottom but its presence on all the lower body further stresses that the pot was sitting inside the fire (*fig. 6 e*). Carbon deposits on the interior of pots are found primarily at and around the base, where at times carbonized residues of food are also found, and approximately at the shoulder, with a black ring tracing the level to which the pot was mostly filled (*fig. 5 h*). This is a clear confirmation of a greasy liquid content being boiled in the pot[31]. Two pots from domestic context A946 of period VI A with an approximately six liter capacity indicate that the contents were being stirred during cooking: one has carbonized deposits blending from the bottom to the shoulder and abrasions on the bottom, possibly due to repeated stirring of the contents, and the other has traces of charred food more concentrated on the bottom and shallow abrasions (again, stirring?) cluster on the lower part of the body walls.

With the beginning of EBA 2 (VI C), fireplaces changed radically in shape and location within the room: though still round, they are larger and have a rising shoulder on one side. Shouldered hearths are never located at the center of the room, and the position of the shoulder is such that

30 D'Anna – Guarino 2012, 71; D'Anna – Jauss 2015.
31 Skibo 1992.

the person who cooked looked towards a corner, thus somewhat isolated from what happened in the rest of the room. The situation is identical in the following long lasting period VI D, when, however, a number of cooking pots include an incorporated portable hearth (*figs. 2 h; 6 f. g*). This points to some mobility of the cooking event itself in some cases, for instance during the hot summers or for long-lasting cooking which could potentially lead to deteriorating of the air quality inside the large and multifunctional room that constituted the basic residential unit in this period. When there is an oven, this too is in a corner, and food manipulation utensils, together with storage jars and other containers, are also kept on top or next to benches on this same side of the room. Thus, starting with EBA 2, there is a specialization of one area of the house in food manipulation activities. Even though these hearths certainly also heated the room they were in, their position indicates that their primary function was food preparation, and this activity was possibly not at all a shared family occupation. The position of the hearth at the center of the room in the LC and EBA 1 periods has instead suggested its multi-purpose role, function and use. The ›free space‹ around the hearth suggests that more than one person could have attended the cooking and that those cooking were less isolated while attending the pot(s) on the fire. Visual communication with the outside was nonetheless minimal (even when the house door was open), considering both the darkness that must have characterized most indoor spaces and the fact that hearths, though at the center of the room, are often not aligned to the house entrance.

Notwithstanding these changes and as anticipated above, use wear on EBA 2 and 3 (periods VI C and VI D) cooking pots does not seem to vary from that registered in the previous periods. In fact the hearths' shoulders always have larger diameters than those of the cooking pots, thus making it impossible to fix the pot on them. Again, the pot was standing on the hearth's floor, half sitting in the fire, held straight by leaning on the hearth shoulder, possibly aided also by stones or andirons. The latter are very rare in this period but, as said, there are some pots with an incorporated hearth which stand by themselves. Interesting are the soot deposits on these, as the foot on which these pots stand is re-oxidized and does not have any black deposit, nor does the base of the pot, whilst very evident is the soot on the single side of the pot that can be reached by the flames (*fig. 6 f. g*). As with the andirons of the previous phases we interpret this as indicating that the pot and its pedestal bottom were well-immersed in the burning wood.

Pots sitting in the fire would become very hot and uncomfortable to handle with bare hands. Previous studies have demonstrated that handles and lugs that might appear to be useful in lifting, dragging and tilting the pot appear to be optional elements of cooking pots[32]. Arslantepe LC pots mostly have no handles and were presumably grasped and lifted by embracing their neck and body with two hands, possibly with the aid of a cloth placed around the carination between rim and shoulder. Period VIII scraped surfaces might have been less slippery and more easily gripped, but the broadly similar shape and absence of surface treatment of all LC cooking pots suggests they were handled in the same way. In the EBA, vessels are burnished, probably more effective in heating since they were less permeable[33], but also more slippery in the hands. Furthermore, profiles have no distinct rim, which would imply different ways to grab the vessels when hot. The presence of handles and lugs on many cooking pots of the EBA might be a response to these changes.

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[32] Henrickson – McDonald 1983.

[33] Schiffer 1990; Pierce 2005.

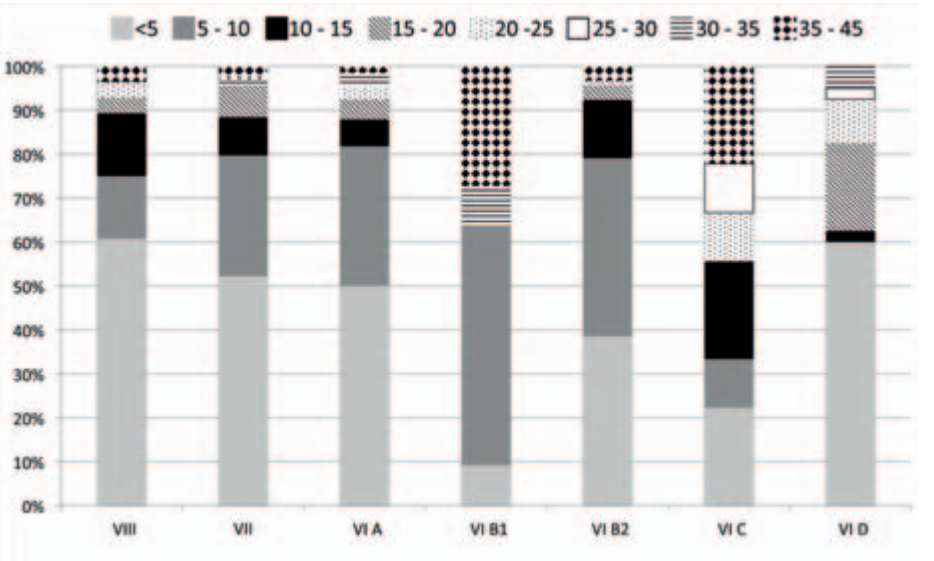

Fig. 7 Frequencies of cooking pot capacities in liters for each of the Arslantepe investigated periods: each bar stands for one period; different fills stand for capacity range (5 liter pace)

Capacity of cooking pots

In an attempt to investigate quantities of food prepared and consumed in the different periods and contexts, *figure 7* compares the dimensions of cooking vessels and shows that the range of capacities appears to be similar in all periods. Period VI B1 is certainly biased by the difficulty of identifying proper cooking pots and we are thus certainly missing some important data; we doubt that there were no cooking pots above eight liters in capacity. This period should thus be excluded from the present analysis.

The smallest cooking pots can be very tiny, i. e. below half a liter in capacity, and are equivalent to a ›cup full‹, that might be filled with an infusion or a condiment and possibly used together with other containers for the preparation of more elaborate foods. Small pots could also be used in the preparation of dairy products such as clarified butter[34]. Volumes up to approximately ten liters are most common in all LC and VI B2 periods and this is possibly the range within which daily cooking activities are performed (*fig. 7*; *table 2*). Periods VIII, VII, VI A and VI B2 behave very similarly, with the majority of the pots clustering under 10 or 15 liters in capacity. The EBA 3 instead shows a different general pattern. Period VI D cooking pot capacity in fact clusters in three groups: one group of 24 pots under four liters, a second group of 13 pots between 14 and 25 liters, and three pots around 30 liter in capacity. Pots with a capacity of 5 to 14 liters, well-abundant in the earlier period, are now absent. The previous period VI C might have the same pattern as VI D, with three pots below five liters, four pots between 12 and 26 liters, and the two largest pots more than 40 l, even though the general scarcity of pots for this period does not allow us to go beyond mere speculation. This said, excluding VI B1 and VI C for all the reasons above, if we take into account the cooking pots up to ten liters in capacity per period, which consistently form the largest group, we observe an increase in the average size up to period VI B2 (*table 3*). Period VI D is more homogenous, because – as we have seen – the

[34] Jauss 2013.

	VIII	VII	VI A	VI B1	VI B2	VI C	VI D
<5	17	36	33	1	35	2	24
5–10	4	19	21	6	37	1	
10–15	4	6	4		12	2	1
15–20	1	5	3		3		8
20–25	1		2		1	1	4
25–30						1	1
30–35		1	2	1			2
35–40							
40–45					1	1	
45–50		1					
50–55	1				1		
55–60					1	1	
60–65							
65–70			1				
70–75							
75–80							
80–85		1					

Table 2 Frequency of cooking pots, capacity (liters) per periods

	VIII	VII	VI A	VI B1	VI B2	VI C	VI D
Average	2,52	4,36	4,46	6,30	5,34	3,85	2,34
St. Dev.	2,92	2,47	2,65	1,31	2,67	1,38	1,04

Table 3 Mean and standard deviation of capacities (in liters) of the small cooking pots (≤10 liters) per periods

smallest cooking pots are all under five liters, thus with a smaller size interval. Standard deviation underlines the existing size variability of cooking pots (again, data from VI B1 is not reliable for this) for all periods. Size variability is an inherent character of cooking pots, even though it is rarely stated for prehistoric or archaeological contexts; in modern kitchens we have sets of cooking pots, typologically similar but varying in sizes that relate to their use according to the number of tablemates or the food cooked.

The largest pots over 30 and up to 70 liters are present in all periods, but they are not particularly abundant and we thus suppose that these were used on special occasions, when larger quantities of food needed to be prepared. It should be pointed out that period VIII has two cooking pots that are not preserved to a degree to which we can calculate their volume since the upper part of the vessel is missing – and for this reason are not included in this graph – but they are surely above 50 liters; for this period too, thus, we know there were larger pots.

Distribution of pots

Our next step has been that of verifying the distribution of possible sets of kitchen vessels, by positioning all pots in their context of retrieval. In order to do this, we include also pots that

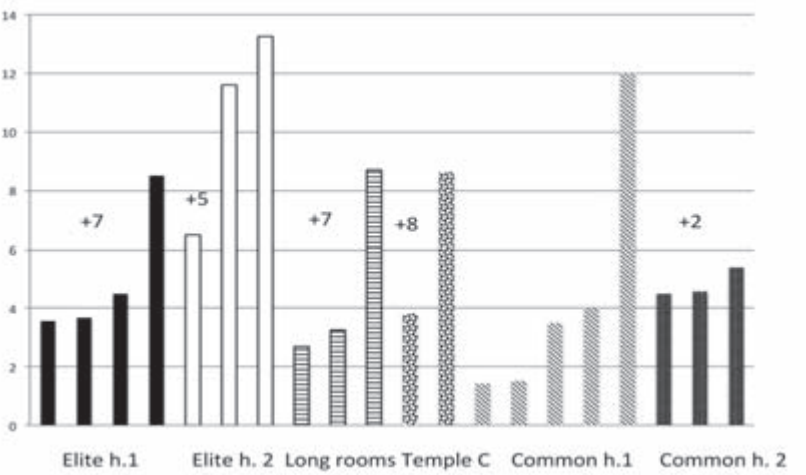

Fig. 8 Sets of cooking pots in each of the best-preserved buildings of period VII (elite house 1; elite house 2; long rooms; Temple C; common house 1; and common house 2) and indication of the capacity for the whole or near to whole ones. The number of the less well-preserved pots also composing each set is given in numbers (+7, +5, etc.).

were not whole, that are not part of the previous analyses since we do not have all measurements, but were found lying on the floor of buildings and are thus considered to be in situ and part of the buildings' kitchen set. *Figures 8* and *9* group a selection of cooking pots of periods VII and VI B2 according to their provenance and indicate their capacity. Each household or building appears to have recurrent vessel dimensions: small, medium and large pots, and in general there are more small pots than large ones, as had been noted also in the general capacity distribution. Each household or cooking unit has several small pots, some medium sized ones and one to two larger vessels. The observed trend characterizes the other periods too. In one room (A946) interpreted as a storage area of a residential context of period VI A, a set of pots with capacities from two to more than 18 liters has been found[35]. Varying here are not only dimensions but also shapes (with more and less constricted pots) and use wear traces, as mentioned above.

Arslantepe period VII is characterized by elite residences, several domestic quarters and the monumental Temple C[36]. Very different commensal events involving a varying number of people and diverse variety of foodstuffs might have been taking place in these contexts. Ceremonial consumption of meals in which up to hundreds of people possibly attended, took place in Temple C[37]. Private meals took place in different kinds of households and we expected that meals of the elites might be different from those of the rest of the community. However, cooking pot volume distribution within such different types of contexts (*fig. 8*) shows that no clear distinction emerges between the elite and non-elite areas in terms of the amount of food that was cooked; the temple area too, does not appear to have cooking vessels capable of catering greater quantities of cooked food[38]. If different food was prepared, we thus suppose that either the pots were not preserved or that it was not made in pots over the hearth.

Dimensional distribution becomes more meaningful in LC 5 (period VI A), when Arslantepe is probably a kind of central place, and redistribution of primary goods is the pivotal mechanism of its political economy. In this level, elite residences have been uncovered next to a monumental

35 D'Anna – Jauss 2015, fig. 11.
36 Frangipane 2012a.
37 Guarino 2008; D'Anna – Guarino 2010; D'Anna 2012.
38 For preliminary plans of the different period VII buildings, see Frangipane 2012a.

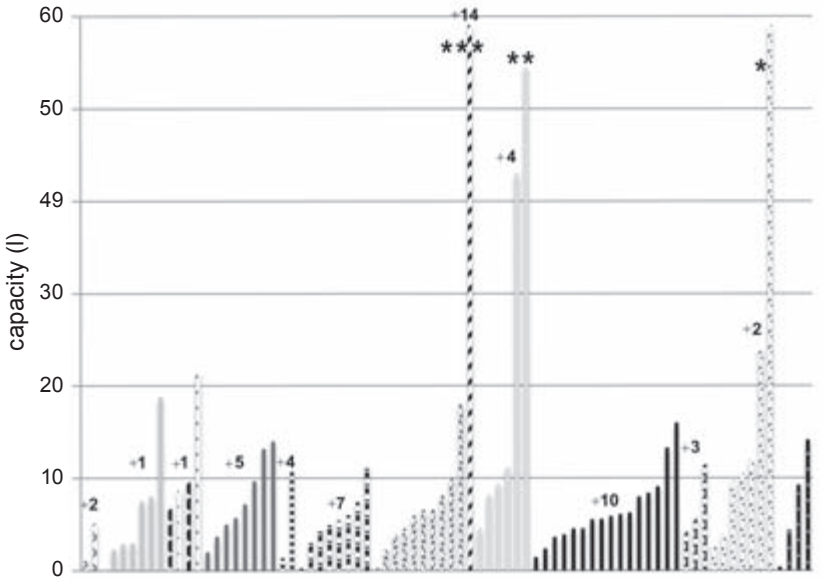

Fig. 9
Measurement of cooking pot capacity (liters) in each building of period VI B2. Each bar represents a pot the volume of which could be measured. The different shadings in the histograms distinguish households. The number above the histograms indicates the number of other cooking pots present in each corresponding building, the state of preservation of which did not allow to measure their capacity.

public complex, where redistributive and ceremonial activities, in some cases also involving the cooking of food, took place.

Although elite residences show a distribution of cooking pots all similar to that of the domestic contexts of the previous and later phases (*fig. 8* and above discussion), in the public complex the range of cooking vessels is considerably wider and large containers are more frequently attested. In the central room of a temple (Temple B), in which cooking and consumption of food in feasting events possibly restricted to a few people has been attested, the assemblage of cooking pots stands out for the presence of a big *pithos*, 70 liters in capacity, showing external soot near the base[39]. The other cooking pots in Temple B were also rather large, with a capacity of 32.5, 22.5, and 10 liters as well as three smaller pots of 6.7, 4.5 and 1.24 liters. The size and weight of these vessels suggest that cooking must have been carried out by several people together and must have been rather time and energy consuming.

A different picture is given by one of the public complex storerooms, where the presence of clay sealings, storage vessels and mass produced bowls indicates that redistributive activities took place[40]: here cooking pots tend to be smaller. It is thus possible that cooked food was only a marginal component of the allocated goods characterizing the political economy of this phase[41].

The EBA 1b village (period VI B2: 2900–2750 B.C.) appears to show a pattern similar to that of period VII and of the elite residences of period VI A. In this period a series of building complexes for small (possibly nuclear) families have been identified (*fig. 10*), typically consisting of one or a maximum of two larger rooms with a hearth, complemented by domestic storerooms and courtyards, some of which have ovens[42]. These are all outside a fortified citadel where the special pottery and bronze objects possibly indicate an elite occupation.

39 D'Anna 2010.
40 Frangipane 2007.
41 D'Anna 2015.
42 Frangipane 2012a; Balossi Restelli 2015; Piccione et al. 2015.

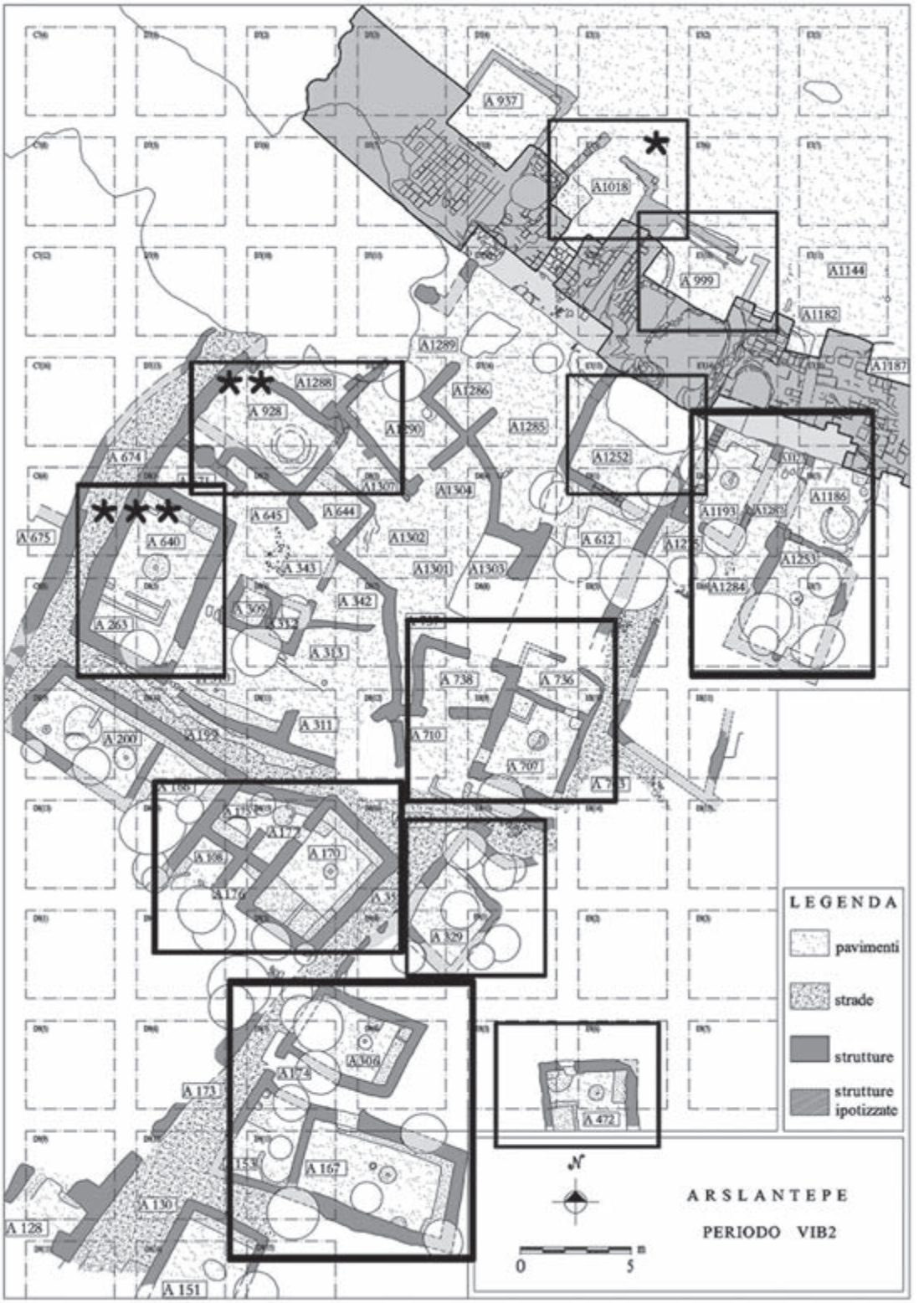

Fig. 10 Plan of period VI B2: single residential units, the cooking pots of which are represented in *fig. 9*, are singled out within the squares; the asterisks indicate the correspondence between specific households and their cooking pot capacities (*fig. 9*)

Figures 9 and *10* clearly shows that all building complexes or households have quantitatively and dimensionally similar cooking sets. Each family thus performed similar cooking practices. In line with the previous phases, domestic sets of cooking pots mostly include medium size vessels (less than ten liters in capacity), probably used for preparing daily meals. One or more larger containers (i. e. more than ten liters) were found in more than one house, and their use may have been linked to the preparation of special meals or of specific foods that were not cooked on a daily basis. A few particularly large kitchen containers exceeding 40 liters are also recorded, and significantly none of them come from the ordinary domestic contexts: one was recovered inside the citadel north of the fortification wall (A1018); another comes from a large metallurgy and open butchering area (A676), and two of them were found in an area in which the presence of a particularly large oven and of several storage vessels points to its use for communal food production activities (A928). None of these contexts have the typical round flat hearth common in the houses. These rare larger cooking pots, far too big for the circular fireplaces, were probably used in the open air, over extemporary fires, for non-ordinary cooking activities, as still ethnographically recorded in contemporary Anatolian villages.

Discussion

This overview of cooking pots and behaviors related to their use, crossing cultural, social and political changes at the site of Arslantepe, has brought us to some interesting considerations regarding both specific practices of food manipulation – and consequently consumption – and broader issues of social behavior.

Apart from possibly three cooking bowls in the whole studied sequence, the analysis of shapes shows that three different general types of cooking pots can be defined: the LC more or less globular collared containers; the non-specific VI B1 truncated-conical necked jar of Kuro-Araxes inspiration; and the VI B2 to VI D bag-shape pots. Burnishing of the surfaces, which might have important consequences for pots' porosity and thus cooking temperature, starts randomly in period VI A and becomes consistent from period VI B. However, a functionally oriented analysis of period VIII to VI D cooking pots shows a rather strong continuity over millennia of technical as well as morphological characters of cooking pots, confirmed by similar soot deposits. This suggests the use of pots for slow cooking of rather liquid or semi-liquid foodstuffs all along the extremely long lasting sequence examined, thus a surprising coherence of cooking behaviors. Moreover, this evidence allows us to imagine a typical Arslantepe meal in the form of broths, soups and porridges[43], which could be easily consumed in the large variety of simple bowls and cups that characterize the assemblages of consumption vessels in all the periods taken into account in this study. Preliminary analysis of Late Chalcolithic cooking pots has evidenced starch residues and phytoliths of wheat and barley and SEM analysis on the same samples has identified bone micro-fragments, suggesting the ingredients of the liquid or semi-liquid foods prepared[44].

[43] See for comparison the Late Minoan cooking assemblage (Morrison 2017, 112–115) and related experiments (Morrison et al. 2015).

[44] Starch grain, phytolith and chemical residue analyses are being conducted by the CaSEs group of the Universitat Pompeu Fabra of Barcelona and at the Universidad de Barcelona.

Dimensions of cooking

Within these general trends some interesting differences occur, at the level of the everyday cooking, as distributions of smaller cooking pots from domestic contexts underscore at least two different patterns. The whole LC and the EBA 1b (periods VIII, VII, VI A and VI B2) are characterized by strong similarities in household-based food preparation activities, and mostly analogous quantities of food prepared, which could be translated into comparable numbers of people per ›cooking household‹ throughout the investigated sequence. During period VIII slightly smaller containers occur but the reason for this is yet unclear. In period VII (LC 3–4), when elite and non-elite houses are attested, we have noticed no differences in the size of cooking pots. Finally, sets of cooking pots, too, evidence similar composition and variability in the size of the pots. In period VI D (EBA 3) we identified a different clustering of pot sizes, and we take this as evidence of changes in foodways. The few cooking pots as well as the nature of the archaeological record for period VI C with large number of pits for waste, a few huts and only one excavated mud brick residential complex[45] bias the evidence for period VI C and do not permit us to understand whether this change could have originated in the EBA 2. However, the similarity in hearth type with that of VI D and the sizes of the few VI C cooking pots allow for at least to not dismissing this possibility.

We also traced interesting differences in public contexts, where food was prepared for larger numbers of people and in some cases the ceremonial character of the meal might have needed special foods or drinks. This is the case for one temple of period VI A (Temple B), where cooking pots are larger and some have also more restricted necks that suggest the preparation of special drinks. The communal building of VI B1 is the only one in which a large bowl was found used over the fire, thus a peculiar and unique shaped pot that implies different ways of food preparation and consumption. Lastly, in VI B2, three are the special contexts where food preparation was possibly intended for a larger number of commensal participants: one inside the fortification and the other two in communal areas of the external village. It is only specific and anomalous cooking and eating contexts that evidence clear dimensional and morphological differences in the cooking pots and possibly other cooking practices.

Solid foods were certainly not missing at Arslantepe; these were probably baked in the ovens or grilled on a spit. Whilst grilling could obviously take place over the hearth and thus privately in each family's home, baking became a shared kin activity in the EBA, as ovens are no longer found as frequently as in the earlier phases and have thus been interpreted as ›kin-ovens‹. In period VI B1 we also have evidence of possible public and large-scale meat roasting events: large quantities of sheep and goat bones from good quality meat cuts have been dumped all together in an open area near a large wattle and daub hut[46]. This has been interpreted as the discard of meat consumed in large-scale shared events taking place possibly in the same open space[47].

Sociality of cooking

The architecture of EBA villages has suggested that kinship ties increasingly connoted the general organization of the communities and this must have also implied a reorganization of practices

45 Frangipane 2012b.
46 Siracusano – Bartosiewicz 2012.
47 Siracusano – Palumbi 2014.

of food preparation and consumption. The changes in food manipulation between EBA 1 and EBA 2, possibly noticeable in terms of quantities of food cooked though not in the way food was cooked, might suggest a transformation in daily practices and space use in the settlement that becomes much more evident when comparing VI B 2 and VI D. Even though the way pots are set in the fire does not seem to change in time throughout the LC and EBA periods, the type of fire and position in the room sees important modifications. Previous studies have shown that nuclear families occupied the houses of the different EBA villages at Arslantepe and that these were grouped in what might represent ›kin group quarters‹[48]. These seem to have shared baking facilities, whilst hearth food preparation was carried out by single nuclear families. Each house had in fact its own hearth and its own set of cooking pots. Ovens in the VI B2 period were found in specific rooms, dedicated to grinding and baking activities. If we accept the common idea that domestic food preparation was mainly a female activity[49], the VI B2 ›oven rooms‹ were possibly kinwomen spaces, mostly enclosed between four walls and not visible to the rest of the community, where women could work, discuss matters and share experiences. In VI C and VI D houses become single rooms and the ovens are in a corner of a restricted number of these houses (possibly one per ›quarter‹). The hearths too move to the corner, together with all utensils and ingredients of food preparation. The displacement of hearths from the center of the main room of a multicellular house (VI B2) to the corner of the single roomed house (VI C and VI D) as well as the disappearance of the ›oven rooms‹ (VI B2), would have had important implications on a gendered division of space and food practices at Arslantepe. With VI C the separated space of baking areas no longer exists. Instead there is a dedicated corner within the house, a space where food is preserved and prepared. Might this further suggest that food preparation has become a strongly private, more codified and non-shared (or less shared) matter? The multipurpose round hearths (talking, heating, cooking) of the previous periods could in fact leave space for a more fluid management of cooking space, with the possible movement of cooking places with extemporary fireplaces outdoors, on the basis of the participants, the weather, the season, and of what was being cooked and for whom. The formal and spatial specificity of cooking spaces in VI C and VI D instead appears to be a more codified and rigid as well as a more intimate matter. The cooking pots with attached portable hearth of period VI D might indicate a minimum degree of flexibility – even resistance against? – of this rigid everyday routine.

Conclusions

The uniquely long-excavated sequence and quantity of data available from the site of Arslantepe has proved how numbers make the difference. The long work of excavation and restoration has allowed the reconstruction of more than 300 cooking pots that provided the base for this study. The broadness of these in situ assemblages echoes the themes we meant to tackle in a temporally deep perspective: types and quantities of foods cooked, contexts in which these are prepared, and sociality of food preparation. We have here integrated a variety of analytical methods that included more traditional typological and technological considerations as well as data on capacity and access to contents, surface alteration due to use, and the distribution of in situ pots.

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48 Frangipane 2012b; Balossi Restelli 2015.

49 Murdock – Provost 1973; Brumfiel 1991; Hastorf 1991; Bray 2003.

This long term analysis has provided two levels of results: a broader one that identified elements of continuity in quality and quantity of cooked food throughout the investigated millennia and a more detailed one, concerned with specificities of single periods or individual contexts. With this work we hope to have thus contributed not only to the study of Arslantepe pottery and cooking practices, but also more in general to the approach of archaeological research on food practices.

Abstract: Cooking practices are analyzed throughout the Late Chalcolithic and Early Bronze Age occupation at the site of Arslantepe (Malatya), in Eastern Anatolia, by investigating 347 whole cooking pots and a series of in situ but fragmented ones. These vessels are mostly found within domestic or public buildings and are thus considered to be primary indicators of the cooking practices of their inhabitants. Shape, dimensions, use wear traces, capacity and distribution are evaluated and compared; these suggest long lasting food related behaviors and practices of food manipulation that appear to characterize the subsequent cultures that developed at the site. These traditions survive changes in the shapes and positions of hearths used for cooking, and stress a modification in the visibility of and social involvement in domestic food preparation. Sets of cooking devices are evaluated to identify daily and ordinary food preparation, whilst the contextualization of oversized and particular vessels testifies extra-ordinary preparations.

Kochpraktiken in Arslantepe (Osttürkei) von 4200–2000 v. Chr.

Zusammenfassung: In diesem Beitrag steht die Praxis des Kochens in Arslantepe (Malatya) in Ostanatolien während des Spätchalkolithikums und der frühen Bronzezeit im Fokus. Untersucht wurden dafür 347 komplette und eine Reihe unvollständiger Kochtöpfe aus primären Kontexten. Da die meisten dieser Kochtöpfe aus häuslichen oder öffentlichen Gebäuden stammen, können sie Auskunft über die Kochpraktiken der Einwohner Arslantepes geben. Die Untersuchung basiert auf der systematischen und vergleichenden Auswertung der Formen, Größen und Fassungsvermögen der Gefäße sowie ihrer Nutzungsspuren und Verteilung in den verschiedenen Bauten. Eine wichtige dabei gewonnene Erkenntnis ist die Beständigkeit der mit dem Konsum und der Zubereitung von Nahrung verbundenen Verhaltensweisen, die auch für die nachfolgenden Besiedlungsphasen Arslantepes charakteristisch sind. Diese Verhaltensweisen überdauern auch Veränderungen der Form und Lage der Feuerstellen in den Häusern; zugleich markieren ebendiese Änderungen aber eine unterschiedliche Visibilität und die sich wandelnde soziale Beteiligung an der häuslichen Essensvorbereitung.

Unterschiedliche Sets von Kochbehältnissen wurden untersucht, um die Prozesse der alltäglichen, gewöhnlichen Essensvorbereitung zu identifizieren. Die Kontextualisierung überdimensionierter oder anderweitig besonderer Gefäße bezeugt aber auch außergewöhnliche Anlässe der Nahrungszubereitung und -konsumierung.

Pişirme pratikleri Arslantepe'de MÖ 4200'den MÖ 2000'e kadar

Özet: Bu çalışmada, Malatya Arslantepe'deki 347 adet tam pişirme kabından ve in situ halde ele geçen bir grup pişirme kabı parçasından yola çıkılarak, yerleşmede Geç Kalkolitik'ten İlk Tunç Çağı'na dek uzanan süreçte yemek pişirme pratikleri incelenecektir. Söz konusu malzemenin,

genellikle konut ya da kamusal yapıların içerisinde bulunmasından dolayı yapı sakinlerinin yemek pişirme pratiklerini yansıttığı kabul edilebilir. Malzemenin biçim, boyut, kullanım izleri, kapasite ve dağılımı değerlendirilerek karşılaştırması yapılmış; yerleşmede izlenen kültürel süreçte beslenme ile ilgili davranış biçimlerinin ve besin hazırlama pratiklerinin uzun ömürlü olduğu görülmüştür. Bu gelenekler, çanak çömlekteki biçimsel farklılaşma ve konutlardaki pişirme amaçlı kullanılan ocakların konumlarının değişmesine rağmen korunmuş; ancak konutlarda besin hazırlama eylemi görünülürlük ve sosyal katılım yönünden değişime uğramıştır. Pişirme kaplarından oluşan setlerden hareketle gündelik besin hazırlama pratiği değerlendirilirken büyük boyutlu kaplar ve bazı özel kapların bağlamlandırılması, yerleşmedeki bazı sıra dışı beslenme pratiklerinin anlaşılmasına katkı sağlamaktadır.

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