

Highlighting the Diversity of Food Practices in the First Mediterranean Farming Societies

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Abstract

As new discoveries are made, the diet of the earliest agro-pastoral communities of the Mediterranean which was initially seen as homogeneous is revealed to be increasingly varied. However, diversity in the Neolithic food practices remains difficult to grasp because of the scarcity of large-scale diachronic and synchronic syntheses published on food remains (faunal and botanical remains), human bones (teeth lesions), kitchen utensils (ceramic and stone vessels, grinding stones, knapped flint tools), storage and cooking installations (silos, ovens, hearths). This special issue aims to shed light on the great diversity of food resources exploited and the ways of procuring, storing and preparing them among the first Mediterranean farmers by bringing together contributions from scholars who are specialized in various area (eastern vs western Mediterranean) and disciplinary fields (archaeology, archaeozoology, archaeobotany, physical anthropology, lithic use-wear analysis). Together these contributions open up new ways of understanding the Neolithization processes in the Mediterranean area from the perspective of food traditions.

Keywords

Food; Diet; Last hunter-gatherers; First farmers; Mediterranean; Southwest Asia; Epi-Palaeolithic; Pre-Pottery Neolithic; Early Neolithic.

Résumé

Initialement perçue comme homogène, l'alimentation des plus anciennes communautés agro-pastorales de Méditerranée s'est révélée au fur et à mesure des découvertes de plus en plus variée. Cette variabilité restait toutefois difficile à appréhender du fait de la rareté des synthèses diachroniques et synchroniques à large échelle publiées sur les restes alimentaires (restes fauniques et botaniques), les ossements humains (lésions dentaires), les ustensiles de cuisine (contenants en céramique et en pierre, meules, outils lithiques taillés), les structures de stockage et de cuisson (silos, fours et foyers). Le présent ouvrage vise à mettre en lumière l'extraordinaire diversité des ressources vivrières exploitées et des modes d'acquisition, de conservation et de

préparation des denrées chez les premiers paysans de la région, en réunissant des contributions de spécialistes de différentes aires (Méditerranée orientale et occidentale) et champs disciplinaires (archéologie, archéozoologie, archéobotanique, anthropologie physique, tracéologie lithique). Il ouvre des perspectives de recherche nouvelles pour appréhender les processus de néolithisation en Méditerranée sous l'angle des traditions alimentaires.

Mots-clés

Alimentation; derniers chasseurs-cueilleurs; premiers agro-pasteurs; Méditerranée; Asie du Sud-ouest; Epi-paléolithique; Néolithique pré-céramique; Néolithique ancien.

The Neolithic period: A major shift in the history of human nutrition

The Neolithic period represents a turning point in the history of human food practices. After thousands of years of a predation subsistence geared toward hunting and gathering, human communities shift to a productive economy based on agriculture and pastoralism. This major change testifies to the establishment of new relationships with the environment, in the way in which the landscape and food resources were managed and perceived.¹ The Neolithic transition is a very protracted process that took place in Southwest Asia between the eleventh and seventh millennia cal. BC. The gradual introduction of domesticated plant and animal products in the diet is then accompanied by the progressive diversification of vessels and tools used for collecting, storing, transporting, preparing and consuming foodstuffs. The profound changes observed in the food habits of the Near Eastern societies are rooted in the Final Natufian period (10500-9500 cal. BC), during which the last sedentary hunter-gatherers were likely to have begun to experiment with the cultivation of wild cereals.² During the successive Pre-Pottery Neolithic A period (PPNA, 9500-8600 cal. BC), the practice of wild plant cultivation and animal management as well as the use of stone vessels became widespread. Such new food habits were no longer confined to the Levant but reached Cyprus and Anatolia as the result of several episodes of migration of hunter-farmer populations.³ During the Pre-Pottery Neolithic B (PPNB, 8600-7000 cal. BC), the management of fully domesticated plants and animals came about along with the emergence of white ware use. Such practices are then attested throughout the eastern Mediterranean. During the Pottery Neolithic period (from 7000 cal. BC), domesticated plants and animals become with few exceptions the dominant food resources together with the widespread adoption of pottery. It is only from this time period that the new food traditions based on the consumption of domesticated plant and animal products in ceramic

1 Bruce D. SMITH, Melinda ZEDER, "The Onset Of The Anthropocene", *Anthropocene*, vol. 4 (2013), pp. 8-13; Nicole BOIVIN, Melinda ZEDER, Irene HOLST et al., "Ecological Consequences Of Human Niche Construction: Examining Long-Term Anthropogenic Shaping Of Global Species Distribution", *Proceedings Of The National Academy of Sciences*, vol. 113, No. 23 (2016), pp. 6388-96.

2 Anna REVEDIN, Biancamaria ARANGUREN, Roberto BECATTINI et al., "Thirty-thousand-year-old evidence of plant food processing", *Proceedings of the National Academy of Sciences*, vol. 107, no. 44 (2010), pp. 18815-19; Juan José IBÁÑEZ, Patricia C. ANDERSON, Jesús E. GONZALEZ-URQUIJO et al., "Cereal cultivation and domestication as shown by microtexture analysis of sickle gloss through confocal microscopy", *Journal of Archaeological Science*, vol. 73 (2016), pp. 62-81.

3 Jean-Denis VIGNE, François BRIOIS, Antoine ZAZZO et al., "First wave of cultivators spread to Cyprus at least 10,600 y ago", *Proceedings of the National Academy of Sciences*, vol. 109, no. 22 (2012), pp. 8445-49; Jean-Denis VIGNE, Antoine ZAZZO, Jean-François SALIÈGE et al., "Pre-Neolithic wild boar management and introduction to Cyprus more than 11,400 years ago", *Proceedings of the National Academy of Sciences*, vol. 106, no. 38 (2009), pp. 16135-38; Douglas BAIRD, Andrew FAIRBAIRN, Emma JENKINS et al., "Agricultural origins on the Anatolian plateau", *Proceedings of the National Academy of Sciences*, vol. 115, no. 14 (2018), pp. 3077-86.

vessels start to spread by demic and cultural diffusion in the rest of the Mediterranean.⁴ Such a diffusion was accompanied by the establishment of a patchwork of cultural entities of which the most emblematic is the *Dark-Faced Burnished Wares* (DFBW) in the Northern Levant,⁵ the *Yarmukian* and *Lodian* in the Southern Levant,⁶ the *Pre-Halaf* in Upper Mesopotamia,⁷ the *Proto-Sesklo/Sesklo* in Greece⁸ and the Impresso-Cardial Complex (ICC) in Italy, France and Spain.⁹

Brief summary of research carried out on the food practices of the first Mediterranean farmers

Up until a few decades ago, the study of Neolithic food practices mainly relied on the analysis of faunal and botanical remains (namely the charred fragments of consumed seeds and fruits as well as bones of butchered animals).¹⁰ These studies succeeded in highlighting the subsistence patterns of the first farming groups, the spectrum of exploited species and their management. An intensive mixed farming model, based on plant cultivation and animal husbandry, has been proposed for most of the Mediterranean regions.¹¹ Einkorn, emmer, barley, lentil, pea, chickpea, bitter vetch and flax/linseed were the main cultivated plants, while sheep or goats were the most common animals in the herds, followed by cattle and pigs. Since the data was still very partial at that time, the general impression provided by these pioneering archaeozoological and archaeobotanical enquiries was that the diet of the first Mediterranean farming societies was rather homogeneous in space and time. With few exceptions, all of the case studies showed the preferential consumption of foodstuffs derived from terrestrial domesticated plants and animals.

During the last twenty years, the bio-archaeological studies undertaken on the faunal and botanical remains continued by integrating new approaches (in particular Isotopic and DNA analyses¹²) that allowed, in particular, to refine taxonomic identifications. Such studies were furthermore enriched by the analyses of other significant proxies such as human remains

4 Jean GUILAINE, “The Neolithization of Mediterranean Europe”, in Chris FOWLER, Jan HARDING, Daniela HOFMANN (eds), *The Oxford Handbook of Neolithic Europe* (Oxford, 2015), pp. 81-98.

5 Akiri TSUNEKI, Oliver NIEUWENHUYSE, Stuart CAMPBELL, *The Emergence of Pottery in West Asia* (Oxford, 2017).

6 Yosef GARFINKEL, “The Yarmukian Culture in Israel”, *Paléorient*, vol. 19, no. 1 (1993), pp. 115-34.

7 Akira TSUNEKI, Olivier NIEUWENHUYSE, Stuart CAMPBELL (eds), *The Emergence of Pottery*

8 Catherine PERLÈS, *The Early Neolithic in Greece: The First Farming Communities in Europe* (New York, 2001).

9 Jean-Paul DEMOULE, Catherine PERLÈS, “The Greek Neolithic: a new review”, *Journal of World Prehistory*, vol. 7, no. 4 (1993), pp. 355-416; Jean GUILAINE, “A personal view of the neolithisation of the Western Mediterranean”, *Quaternary International*, vol. 470 (2018), pp. 211-25.

10 Sue COLLEDGE, James CONOLLY (eds), *The Origins and Spread of Domestic Plants in Southwest Asia and Europe* (Walnut Creek, 2007); Sue COLLEDGE, James CONOLLY, Keith DOBNEY (eds), *Origins and Spread of Domestic Animals in Southwest Asia and Europe* (Walnut Creek, 2013).

11 Paul HALSTEAD, “Sheep in the garden: the integration of crop and livestock husbandry in early farming regimes of Greece and southern Europe”, in Dale SERJEANTSON, David FIELD (eds), *Animals in the Neolithic of Britain and Europe* (Oxford, 2006), pp. 42-55; Ferran ANTOLÍN, Ramon BUXÓ, Stefanie JACOMET et al., “An integrated perspective on farming in the early Neolithic lakeshore site of La Draga (Banyoles, Spain)”, *Environmental Archaeology*, vol. 19, no. 3 (2014), pp. 241-55.

12 Petra VAIGLOVA, Amy BOGAARD, Matthew COLLINS et al., “An integrated stable isotope study of plants and animals from Kouphovouno, southern Greece: a new look at Neolithic farming”, *Journal of Archaeological Science*, vol. 42 (2019), pp. 201-15; Suzanne E. Pilaar BIRCH, Amelie SCHEU, Michael BUCKLEY et al., “Combined osteomorphological, isotopic, aDNA, and ZooMS analyses of sheep and goat remains from Neolithic Ulucak, Turkey”, *Archaeological and Anthropological Sciences*, vol. 11, no. 5 (2019), pp. 1669-81.

(isotopic studies,¹³ dental micro-wear¹⁴ and calculus analyses¹⁵); vessels and tools (use-wear studies of pottery,¹⁶ knapped lithic tools¹⁷ and grinding stones^{18,19}) as well as storage and cooking installations (silos, granaries,²⁰ hearths, ovens²¹). This research has succeeded in revealing the complexity of the techniques implied in food production, procurement, storage and preparation during the Early Neolithic. They have broadened our view of the food habits of the first Mediterranean farming societies, by taking into account not only the range of exploited foodstuffs (plant and animal products) but also their processing (from production to consumption). Due to the considerable accumulation of the data, significant chronological and regional differences began to appear. The differences are not only noticeable in the choice of foodstuffs consumed, but also in the ways in which food resources were collected, stored and prepared.

However, this diversity remains very difficult to assess because: (i) Most of the research undertaken on the various types of material evidence of the diet of Early Neolithic societies in the Mediterranean (in particular human remains, stone and ceramic vessels, lithic tools and

13 Domingo Carlos SALAZAR-GARCÍA, María FONTANALS-COLL, Gwenaëlle GOUDE et al., “To ‘seafood’ or not to ‘seafood’?” An isotopic perspective on dietary preferences at the Mesolithic-Neolithic transition in the Western Mediterranean”, *Quaternary International*, vol. 470 (2018), pp. 497-510.

14 Theya MOLLESON, Karen JONES, Stephen JONES, “Dietary change and the effects of food preparation on microwear patterns in the Late Neolithic of Abu Hureyra, northern Syria”, *Journal of Human Evolution*, vol. 24, no. 6 (1993), pp. 455-68.

15 Linda Scott CUMMINGS, Chad YOST, Arkadiusz SOŁTYSIK, “Plant microfossils in human dental calculus from Nemrik 9, a Pre-Pottery Neolithic site in Northern Iraq”, *Archaeological and Anthropological Sciences*, vol. 10, no. 4 (2010), pp. 883-91.

16 Julien VIEUGUÉ, “Use-wear analysis of prehistoric pottery: methodological contributions from the study of the earliest ceramic vessels in Bulgaria (6100-5500 BC)”, *Journal of Archaeological Science*, vol. 41 (2014), pp. 622-30; Julien VIEUGUÉ, Yosef GARFINKEL, Omry BARZILAI et al., “Pottery function and culinary practices of Yarmukian societies in the late 7th millennium cal. BC: First results”, *Paléorient*, vol. 42, no. 2 (2016), pp. 97-115.

17 Niccolò MAZZUCCO, Juan José IBÁÑEZ, Giacomo CAPUZZO et al., “Migration, adaptation, innovation: the spread of the Neolithic harvesting technologies in the Mediterranean”, *Plos One*, vol. 15, no. 4 (2020), article e0232455, <https://doi.org/10.1371/journal.pone.0232455>.

18 Laure DUBREUIL, “Long-term trends in Natufian subsistence: a use-wear analysis of ground stone tools”, *Journal of Archaeological Science*, vol. 31, no. 11 (2004), pp. 1613-29; Caroline HAMON, “Functional analysis of stone grinding and polishing tools from the earliest Neolithic of north-western Europe”, *Journal of Archaeological Science*, vol. 35, no. 6 (2008), pp. 1502-15; Laura DIETRICH, Max HAIBT, “Bread and porridge at Early Neolithic Göbekli Tepe: a new method to recognize products of cereal processing using quantitative functional analyses on grinding stones”, *Journal of Archaeological Science: Reports*, vol. 33 (2020), article 102525, <https://doi.org/10.1016/j.jasrep.2020.102525>.

19 Cynthianne Debono SPITERI, Rosalind E. GILLIS, Mélanie ROFFET-SALQUE et al., “Regional asynchronicity in dairy production and processing in early farming communities of the northern Mediterranean”, *Proceedings of the National Academy of Sciences*, vol. 113, no. 48 (2016), pp. 13594-99; Jessica HENDY, André C. COLONESE, Ingmar FRANZ et al., “Ancient proteins from ceramic vessels at Çatalhöyük West reveal the hidden cuisine of early farmers”, *Nature Communication*, vol. 9, (2018), article 4064, <https://doi.org/10.1038/s41467-018-06335-6>; Laura DIETRICH, Julia MEISTER, Oliver DIETRICH et al., “Cereal processing at Early Neolithic Göbekli Tepe, southeastern Turkey”, *Plos One*, vol. 14, no. 5 (2019), article e0215214, <https://doi.org/10.1371/journal.pone.0215214>; Marta PORTILLO, Rosa M. ALBERT, Donald O. HENRY, “Domestic activities and spatial distribution in Ain Abū Nukhayla (Wadi Rum, Southern Jordan), The use of phytoliths and spherulites studies”, *Quaternary International*, vol. 193, no. 1-2 (2009), pp. 174-83.

20 Georgina PRATS, Ferran ANTOLÍN, Natàlia ALONSO, “Household storage, surplus and supra-household storage in prehistoric and protohistoric societies of the Western Mediterranean”, *Plos One*, vol. 15, no. 9 (2020), article e0238237, <https://doi.org/10.1371/journal.pone.0238237>.

21 Christine FUCHS-KHAKHAR, “Home is Where the Hearth is: What a Multi-scalar Approach to Fireplaces from Çatalhöyük, Turkey, Can Reveal About Cooking Practices in Neolithic Households”, *Environmental Archaeology* (2019), pp. 1-18, <https://doi-org.acces.bibliotheque-diderot.fr/10.1080/14614103.2018.1550950>.

cooking/storage installations) is still at an early stage of development and has been applied to only a few case-studies. Consequently, the reconstruction of the dietary behaviour of these first farming societies remains very fragmentary; (ii) Little research still conducts an integrated study of several artefacts (such as faunal and botanical remains, human bones or pottery) found at the Early Neolithic sites. Such integrated studies would, however, make it possible to shed light on the complex food system; (iii) Only a few diachronic (Natufian-PPN-PN) and synchronic (eastern vs western Mediterranean) syntheses have so far been published. Without such large-scale syntheses, the variations of culinary habits of the first Mediterranean farmers in time and space remain difficult to grasp.

Aim of the special issue

This set of papers aims to highlight the great diversity of food habits in the first farming societies of the Mediterranean. It questions the diachronic and synchronic variability of culinary traditions noticeable at various scales, whether due to the choice of animal and plant products consumed or the ways in which food was produced, stored, processed and consumed. In order to better understand this diversity, we brought together scholars who are working both on the eastern Mediterranean, the area in which the Neolithic food transition took place, and the western Mediterranean, the territories in which the new food habits were spread. We furthermore invited specialists of different disciplines – archaeology, archaeozoology and archaeobotany, physical anthropology, lithic use-wear analysis – who are reconstructing food practices of Neolithic societies based on the comprehensive study of a variety of archaeological evidence: human bones and teeth, faunal and botanical remains, stone tools as well as storage and cooking installations. Such a holistic approach brings the data from different chronological entities and disciplines to bear, offering an updated and broad perspective on the food practices of the first farming societies around the Mediterranean and thus overcoming the more traditional approaches of the Neolithization process that have been mainly studied from the point of view of the stylistic and technological analyses of material culture.

This special issue, divided into two sections in order to maintain coherence regarding the archaeological contexts, includes 11 articles. The first section comprises six contributions dealing with the Eastern Mediterranean and Southwest Asia, the core area of the Neolithization process. Fanny Bocquentin et al. contribute with the article on the foodways transition during the Neolithization process from a dental perspective. Thanks to the analysis carried out in several sites of the South and North Levant from the Natufian to the Pottery Neolithic period, Bocquentin et al. are able to demonstrate an increase in caries and associated diseases during the Neolithization process. The shift from hunter-gatherer to agriculture is linked with a gradual increase of oral disease, exposing teeth to more carious lesions. However, such an increase in dental pathologies is not continuous. A first change in the pathological patterns occurs with the Late/Final Natufian witnessing a first transition towards a cereal-based subsistence before the Neolithic. A second break occurs in the seventh millennium cal. BC, when radical changes in oral pathology are observed. Bocquentin et al. interpret this sudden and drastic change in carious lesions as the result of a complex set of factors, including the introduction of new foodstuffs (such as honey), the appearance of a new way of preparing food (cooking, boiling, fermenting), the appearance of new bacteria, changes in the domesticated crops, a significant increase in proteins and lipids intakes and a better dental care.

Lionel Gourichon and Liora Horwitz track the evolution of ungulate domestication in the Near East, gathering data from more than 70 sites from both the Northern and Southern Levant. This comprehensive research is based on the analysis of the relative abundance of the main herd animals exploited over time in each site and region, but also including data related

to age and sex profiles. As a result, the authors succeed in highlighting a north-south gradient in livestock domestication, with earliest evidence coming from the Euphrates and the southeastern Anatolian region. They also point out that Neolithic livestock domestication culminated in widespread faunal extinctions – including the wild progenitors of the domestic herds – changes in faunal biomass, increasing competition over grazing zones and a gradual impoverishment of the inhabited biosphere, whose consequences are continuing nowadays.

Amaia Arranz-Otaegui presents a review of the main approaches that archaeobotanists have used to identify the origins of plant food husbandry and consumption in southwest Asia. Despite the fact that the debate has been mainly focused on a few plant species (the founder crops of Neolithic agriculture), food plants comprise a wide range of resources such as seeds, tubers, fruits, nuts, leaves, stems and flowers. Arranz-Otaegui emphasizes the importance that other species of grasses, legumes, fruits and nuts had in the Neolithic plant economy. It is only with the beginning of the PPNB that changes in the archaeological record become more clear with the appearance of domesticated cereals and of new crop species such as durum wheat, bread wheat and naked barley. Arranz-Otaegui stresses the ways of storing, cooking and consuming plants by the Neolithic populations by including all exploited edible plants and by enlarging archaeobotanical analysis to other materials. This includes charred food remains, non-seeded plants and plant parts that are more rarely preserved at archaeological sites, but that can provide important insights into the Neolithic diet.

Fiona Pichon and Juan José Ibáñez present an overview of the current state of knowledge of the lithic tools used in food procurement and processing during the Pre-Pottery Neolithic in the Near East. The analysis of stone tools allows the understanding of how food procurement and processing practices were carried out, and how such techniques were adapted to the new economic and social needs that surged with the Neolithization process. The use-wear study of the sickle blades demonstrates that harvesting of wild cereals took place already two millennia before the first domesticated species appeared. During the PPNB, in the Middle Euphrates, plants were gradually harvested in a riper state, pointing to this zone as one core area where cereal domestication was first being achieved. The hunting toolkit also underwent important changes from the Natufian to the PPNB period. The appearance of heavier and larger arrowheads during the PPNB, a period in which hunting was progressively substituted by livestock farming, is somewhat paradoxical. It may be associated to a shift in the hunted species, with a decline in the mass hunting of gazelles, in favour of bigger prey, like onagers (donkeys) or aurochs (wild cattle). Nevertheless, as pointed out by Pichon and Ibáñez, the use of new hunting tools may be associated with social status and representation of hunters and hunting.

The article by Laure Dubreuil and Nigel Goring-Morris focuses on the variability of the ground stone tools from the PPNB period of the Southern Levant. Grinding slabs and handstones, as well as pestles and mortars, were mainly used for transforming non-oily vegetables such as cereals and legumes. Nevertheless, the variability of used tools and motions suggests that different by-products were obtained. Two distinct grinding systems to process domesticated plants were by the way used, one-handed plano-convex tools versus two-handed handstones associated with querns. Dubreuil's and Goring-Morris's work indicates that ground stones during the PPNB differ from site to site in their relative tool class frequencies and in their morphologies. The authors suggest that these variations reflect variability in the range of matter processed and in the type of by-products obtained.

Elisha van den Bos presents a synthesis of the structures associated with food preparation in the Early Neolithic of western Anatolia and southern Balkans. In Anatolia, at the earliest sites, between 6800-6500 cal. BC, the range of facilities connected to food preparation is limited. It is only from the second half of the seventh millennium, and even more so during the sixth millennium, that the range of archaeological evidence becomes more diverse, with a larger number of ovens, hearths, grinding installations, clay tables and storage bins. A similar

paradigm is observed in Greece with a poor representation of cooking structures during early phases (6500-6200 cal. BC) and an increase in cooking areas from the sixth millennium cal. BC onwards. Van den Bos's work suggests that such increasing complexity in cooking facilities is probably connected to a period of blooming agrarian economies, showing an intensification of household production and a diversification of preparation methods.

The second part of the volumes includes five articles focused on the central and western Mediterranean, the territories into which the new food habits spread.

Maria Saña et al. draw a comprehensive picture of the habits of animal food exploitation and consumption during the Western Mediterranean Neolithic. Animal husbandry is one of the main outcomes of food provisioning for Neolithic societies, including meat, but also fats, blood, marrow and dairy production. At most sites in the western Mediterranean, the main product of slaughtered animals was meat, as animals were killed before reaching adult age. However, dairy products were also important from the early phases of the Neolithic onwards. Nevertheless, the Neolithic communities continued to exploit a wide range of wild animal resources, including birds, molluscs and fish. Hunting was focused on red deer, wild boar, roe deer and wild goats, but also a huge variety of lagomorphs and small carnivores (i.e., fox, badger, lynx, wildcat, marten, weasel and genet). Saña et al. also demonstrates that several culinary techniques were in use during the Early Mediterranean Neolithic, including toasting, roasting and boiling. In addition, they provide examples of cases of communal dining, remarking that food consumption not only had a meaning for subsistence, but also as social practice, including feasting and community consumption.

Ferran Antolín et al. analyse how the first farming populations of the central Mediterranean were able to transform the crop spectrum they inherited by adapting it to the new environmental conditions and by including new plants in their set of cultivated crops. Some major regional trends are visible, with naked wheat more abundant in southwestern France and in the northeastern sector of the Iberian Peninsula, while glume wheat and pulses are better represented in northern Italy. This might be due to a combination of a wetter climate and different types of available soils, but it might also have to do with cultural choices. Such regional differences would have had a considerable impact on the adopted cooking practices, as the choice of naked wheat would have made it easier to obtain flour, in comparison to emmer wheat, while for glume wheat dehusking would be necessary to obtain edible grains.

Niccolò Mazzucco identifies a regional variability in the Neolithic toolkit used for food production. This is clearly visible for the harvesting toolkit with different sickles that were in use in different areas of the Mediterranean. Curved sickles with a serrated cutting edge dominate the southern part of the Italian peninsula and the Iberian Peninsula, while in the northern Mediterranean arc those sickles were gradually abandoned in favour of harvesting tools characterized by straight cutting edges. Mazzucco is also able to highlight a territorial and spatial variability in butchering practices. Butchering tools are not equally represented in all sites, but it would seem that, in some settlements, animal slaughtering and processing had greater importance. Such differences were probably due to issues of site function; there were specific sites where animals were more intensely slaughtered during certain seasons of the year, probably in relation to the annual pastoral cycle. A strong cultural variability is observed as well for the hunting gear, suggesting that the production of arrowheads was culturally driven and affected by social and symbolic factors.

Caroline Hamon focuses on Early Neolithic grinding implements and their role in prehistoric food practices. In the Mediterranean area, grinding tools were used in several fields of the economy and were especially, but not exclusively, employed for the processing of cultivated plants. The low level of effort invested in the production of these tools, their lack of typological standardization, their small size and their low duration of use, fits well with small and rather mobile populations, exploiting a great diversity of plant food in a varied economic

strategy. The lack of finishing suggests that aesthetic considerations were not a priority for grinding tools. Conversely, in central Europe the important cultural value represented by cereal processing is revealed by several symbolic practices. Cereal grinding appears to have played a central role in daily food preparation at a domestic level. The deposition of grinding stones in Early Linearbandkeramik (LBK) funerary contexts demonstrates their status as markers of identity and, possibly, reveals a gendered distribution of tasks within LBK households.

Cecilia Conati Barbaro focuses on the study of cooking structures such as ovens, hearths and cooking pits, based on Italian and Mediterranean case studies. Several typologies of ovens exist since the Early Neolithic. They may be built above ground, such as clay or stone ovens, or underground. In Southern Italy, domed ovens predominate, while few examples are known in the Po Plain. Underground ovens are known at a few sites, including at Portonovo-Fosso Fontanaccia in central Italy. At this site, the presence of charred cereal caryopses with traces of glumes inside five ovens suggests that they were used for roasting or drying cereals before storage or consumption. In addition, several pits excavated in front of the ovens contained faunal remains of pigs and ovicaprids, supporting the hypothesis that the ovens were also used for cooking meat. Another type of combustion structure are the pits or earthen ovens. They are dug into the soil and filled with wood and stones, in order to cook large amounts of meat and vegetables, possibly for collective feasts or ritual meals.

