Research Articles

Same Taste, Different Place: Looking at the Consciousness of Food Origins in the Roman World

Author: Erica Rowan

Abstract

While an enormous variety and quantity of foodstuffs were moved around the Roman Empire, the general population may not always have reflected upon or valued knowledge regarding the origin of their foodstuffs. This article looks at the methodological challenges associated with identifying a consciousness of food origins and connectivity, particularly in the non-elite. Sensory archaeology is used to demonstrate a degree of consciousness based on the physical experience of consumption and the mnemonic links forged between consumption, emotion, and memory. Focusing on the sensory experiences of non-native soldiers, archaeobotanical assemblages from Roman military sites in Germania inferior are used as case studies. The article concludes with a closer look at the frequently mentioned, yet not fully explored notion of a ‘taste of home’ in the ancient world and at what point a foodstuff no longer evoked a reflection upon its place of origin.

Keywords: Roman, food, archaeobotany, sensory archaeology, connectivity, military

How to Cite: Rowan, E., 2019. Same Taste, Different Place: Looking at the Consciousness of Food Origins in the Roman World. Theoretical Roman Archaeology Journal, 2(1), p.5. DOI: http://doi.org/10.16995/traj.378

Introduction

There is an abundance of archaeological and literary evidence for the transport and trade of foodstuffs throughout and beyond the Roman Empire. The question of an ancient awareness of ingredient origins, however, has received little scholarly attention, especially for foods consumed by the non-elite. Focusing on the archaeobotanical record, this article will begin by looking at the methodological challenges associated with identifying a consciousness of food origins. Then, a sensory approach is taken, exploring how the flavour of foreign imports marked these items out as different. While the sensory experience of preparing or consuming an item outside the range of locally available and frequently consumed goods would have been unmissable, it will be argued that not all imports provoked the same reaction or reflection upon the same location. Material from Roman military sites on the Lower Rhine Delta and Germania inferior will be used as case studies. The article will then conclude with an exploration of what it may have meant to be consciously connected in the Roman world and at what point a foodstuff no longer evoked a reflection upon its place of origin.

Roman literary sources provide ample evidence of an elite awareness of the origins of their staple food supply and the
origins of foreign or luxury goods (Erdkamp 2011). Seneca (Epistles 77) records shipments of Egyptian grain arriving into Puteoli while Pliny (Naturalis historia 12.8–16; 14.16–17) dedicates entire book chapters to the arrival of spices from India and wine from Greece. Sometimes ingredients in the Roman world were desired strictly for their foreign quality rather than their taste or nutritional value (Horace Satires 2.4; Petronius Satyricon, 38; Pliny NH 12.14). At other times place of origin was inseparable from a food’s taste and quality (Pliny NH 14.3–5; Pliny Epistles 1.15; Wilkins 2008). Juvenal’s fifth satire features a host who eats the highest quality fish imported from the clean waters around Corsica and Sicily while the abused guest is served blotched and unclean seabass raised on sewage in the Tiber (92–106). Recognizing an item’s place of origin and understanding the associated value of both the place and the good within its wider culinary and cultural framework were essential forms of knowledge for elite members of Roman society.

This conceptualization of connectivity and the perceived value placed on these imported goods is, however, more difficult to discern for the general population where almost no written documentation of their thought processes exists. We are able to observe shifting patterns in access to imports and consequently can see that the desire to consume locally unavailable foods, even if not the most luxurious and expensive items, was not restricted to the elite (e.g. Bakels and Jacomet 2003; Cappers 2006; Locker 2007). The reasons behind this desire are not the focus here and would have varied from individual to individual and from situation to situation. Instead, we are trying to work out if people knew where their food came from and if so, how can we tell? The general population may not always have reflected upon or even valued knowledge regarding the origin of their foodstuffs. How do we know place of origin or distant origins were of primary importance or any importance at all? Baetican olive oil was supplied in vast quantities to soldiers on the German limes, ensuring that it was a regular part of their diet (Blázquez 1992). Yet how do we know that the Spanish origins of the olive oil were considered, especially if it was consumed on a regular basis? We cannot assume a blanket consciousness of connectivity for all imported items at all points in time. Similarly, we cannot take for granted that an item retained its non-local associations for several centuries, especially if local cultivation started to take place. As will be shown, answering these questions can significantly alter our understanding of connectivity in the Roman world.

Previous Scholarship
To date, scholarship has tended to focus on the economic and cultural aspects of imported goods, using food to trace distribution, physical routes of connectivity, their relative monetary value, and their social value in relation to the creation and alteration of identity (van der Veen 2008; Scheidel 2014; Pitts and Versluys 2015; Wilson and Bowman 2017). Consequently, as archaeologists and archaeobotanists we have a tendency to present finds of imported foodstuffs through the medium of distribution maps. We often take a bird’s eye view, tracing the movement of a good or goods over an enormous area and/or span of time (Bakels and Jacomet 2003; Sadori et al. 2009; Carreras and Morais 2012). In publications on the variety and quantity of imported goods, especially non-staples, members of Roman society, for entirely practical reasons, are grouped into broad generic categories: the military, the elite, and non-elite urban and rural inhabitants (Bakels and Jacomet 2003; van der Veen 2008; van der Veen et al. 2008; Livarda 2011; Livarda and Orengo 2015). In discussions regarding the consumption of imported ingredients, a knowledge of the foreignness of the items is often assumed: soldiers desire a taste of home, military officers wish to display their status and entertain guests, while the urban and rural elite similarly wish to display wealth, knowledge of Roman food practices and perhaps even allegiance to the Roman empire (Kuijper and Turner 1992; Cool 2006; Cheung et al. 2012; Livarda 2018). Such overarching approaches are crucial for our understanding of the Roman economy, the impact of climate change and slow changes in cultural practices and attitudes. Nevertheless, it does mean that scholarship has not yet explored the individual’s relationship and reaction to specific imported items. Here I wish to build upon the existing body of scholarship, but rather than taking a broad approach, tease out the nuanced differences amongst both consumer and product. If an awareness of food origins did exist, what form might
this awareness have taken and how would it have varied depending upon the individual and item in question? A military legion, for example, could consist of primarily local or foreign soldiers. The difference between native and migrant is crucial when thinking about an individual’s interaction and reaction to particular food items. Similarly, not all imported goods would have been treated the same way, even by a single individual. It is unlikely the consumption of imported figs from the Mediterranean and imported peppercorns from India by a military commander at Oberaden would have provoked the same reaction (Bakels and Jacomet 2003: 553). As will be shown, breaking down our categorizations of both people and ingredients can also help us better understand conceptualizations of connectivity in the ancient world.

Local vs True Imports

Thus far the term imported foods has been used in a broad manner and further definition is required. How far does an item need to be shipped to be considered imported? A particular number of miles? Days of travel? Across provincial boundaries? Instead of using distance as the measure, a differentiation between ‘local’ and ‘true’ imports, based on the climatic possibility of production within a wide region, will be used. Here local imports will be regarded as items that could be produced within the area (be it a hinterland, province, etc.) but for whatever reason were also imported, perhaps due to an insufficient supply. Cereals, for example, were frequently transported between and within provinces (Aldrete and Mattingly 1999; Breeze 2000; Whittaker 2002; Thomas and Stallibrass 2008: 5–7). Determining an awareness of the foreign nature of these goods is extremely difficult as the taste, texture and manner of consumption may have been nearly identical to the experience of consuming the locally produced version. In the Bay of Naples, bread made from imported Egyptian wheat may have tasted identical to bread made from Campanian wheat (Seneca Ep. 77; Casson 1980; Rickman 1980: 262–263). We know of course that the Romans valued goods from particular areas, even when there was a local supply. Pork from Gaul and Cisalpine Gaul was appreciated in Italy, a region that already produced pork (Varro De re rustica 2.4.10). However, differentiating between the two may have been down to the quality of an individual’s palette or a verbal statement by the supplier stating its place of origin. True imports, on the other hand, are ingredients that could not be grown or produced locally such as olive oil in Roman Britain or dates in Italy. These items were less readily available and more difficult to acquire, making it unlikely, in most cases, that they were part of the daily repertoire of food for most people. Moreover, many of these items, at least in the northern provinces, would not have had a directly comparable equivalent regarding flavour, texture and smell, making them stand out from a sensory perspective. It would have been difficult to match the sweetness of raisins or dried figs or the strong flavour of dill and coriander in Roman Britain or the Lower Rhine. True imports, foods that would evoke the greatest sensory response, will be the focus here.

The Methodological Challenge

Identifying any type of consciousness or stream of thought in the ancient world is a difficult and risky undertaking. We cannot assume our mental reaction to a particular experience would match anyone’s in the past. Consequently, there are three methodological challenges that must be addressed. Firstly, there is the problem that reflection upon a food’s non-local origin is a personal psychological experience. Smelling, tasting or touching a foodstuff can evoke a strong internal reaction without necessarily producing any visible or noteworthy external reaction. Eating a favourite dessert can be an extremely enjoyable and pleasurable experience but the individual eating it does not have to let anyone else know how they feel. Secondly, if we assume that reflection did occur in particular situations, how do we go about measuring that reflection using only the surviving material culture? We are looking at an event, whereby even if the individual visibly and audible demonstrated knowledge of the foodstuff’s origins, their physical and emotional response was usually not recorded in any lasting way.

The third challenge is perhaps the easiest to tackle, but only if we are satisfied with a somewhat esoteric answer, at least at this stage. If an individual did think about the non-local origins of an ingredient, what exactly came to mind? Food has the ability to impart not only an economic or cultural sense of connectivity but a personal one as well.
Determining knowledge of non-local origins, in this situation, will therefore be more important and more practical than trying to determine knowledge of the specific place of origin. An individual living in Roman Britain, for example, may have grown up in Rome consuming only imported olive oil from Spain. If that individual ate Spanish olive oil while in Britain they would probably think of Rome (i.e. home) and not Spain. Thus the aim is to determine whether or not people thought of someplace else, regardless of where that place may have been and whatever real or imagined form it took.

A Sensory Approach

These methodological challenges will be addressed by taking a sensory approach. While there are very few biological universals and food cultures and habits can vary enormously, it cannot be denied that for all able-bodied humans, eating is a synaesthetic experience whereby all the senses are engaged at the same time. Food is smelled, seen, touched, tasted and heard (Sutton 2005; Skeates 2010: 22). Eating is also an intimate and personal act of incorporation that (hopefully) takes place several times a day. Depending upon the type of food, eating can be an intensely enjoyable or repellent experience, evoking physical and emotional reactions (Holtzman 2006: 364). This daily repetitive act creates a deeply ingrained link between food, the senses, and emotion, leading to feelings of joy, comfort and pleasure but also perhaps anger and hatred. As a mnemonic device it aids in the construction of memories that are stored, often subconsciously in the body, and can be recalled whenever a similar consumption experience takes place (Hamilakis 1999: 57; 2013: 84; Lupton 2005).

Anthropological work on food, memory and the individual experience remains a relatively new avenue of research (Lupton 1994). Traditionally, work has focused on historical dietary changes, female relationships with food and the use of food in the creation of nationalism and national identities (Holtzman 2006). Similarly, in archaeology the focus has been on subsistence strategies, nutrition, ecological relationships and food as a symbol (Hamilakis 2013: 50). The sub-field of the archaeology of the senses has grown exponentially in recent decades, especially in the area of food and drink consumption. While the focus tends to remain on prehistory, in the last few years there has been an increased interest in the Graeco-Roman period (e.g. Toner 2014; Betts 2017). Edited volumes by Bradley (2015) and Rudolph (2018) respectively explore various sensory aspects of smell and taste in antiquity. Chapters by Livarda (2018) and Wallace-Hadrill (2014) have explored imported foods from the sensory perspective but not with the aim of assessing a consciousness of connectivity.

Here the intention is to focus on two aspects of food consumption, namely the basic physical sensory experience and the mnemonic links forged between food and memory during an individual’s lifetime. Firstly, the fact that eating is a synaesthetic experience means that from the purely sensory perspective, eating something out of the ordinary is difficult to miss and would provoke a bodily reaction. However, familiar foods eaten in unfamiliar settings or with an unusual group of people can also mark the experience out as different. For example, the consumption of distinctive or non-ordinary foods, such as meat in a largely vegetarian diet and/or in an unfamiliar space was one of the ways ancient societies ensured commensal feasting events were demarcated as special (Hamilakis 2008: 15). Consuming food during ritual or burial events had a similar effect (Hamilakis 2011).

The second feature is the link that is created between food, memory and place. As Hamilakis (2013: 85–86) states,

'The evocative power of sensuous memory generated through eating can connect people to places...We consume place when we eat, be it the place that food comes from, or the place we mnemonically associate that food with, based on past experiences. Food, as with all other sensorially powerful phenomena, can help produce and sustain imagined communities...Food produces sensorial geographies whereby place acquires a distinctive sensorial identity, often with invisible olfactory boundaries, as when the smells of distinctive food items envelop newcomers to a specific locale.'

The distinctive sensorial identity of a place is created by the range of foods consumed on a daily basis and the sensory
experiences associated with those consumption experiences. Eating an imported food in the Roman world would therefore be noted as something outside the sensorial boundaries of the place, provoking both a physical and emotional reaction in the consumer and leading to thoughts of ‘someplace else’. As will be shown, the place would of course depend upon an individual’s current location and their existing collection of food memories.

As this is the first publication of its kind to tackle this question, we must begin from a relatively simple starting point. Consequently, the article will look only at the sensory experiences of non-native soldiers stationed on the Lower Rhine Delta and at the nearby military forts at Oberaden and Neuss. These are geographical regions where the cultivation of many ‘traditional’ Roman foods was not possible and evidence for imports is in abundance. By looking at soldiers it will also be possible to take a closer look at conceptualization of connectivity through the frequently mentioned, yet not fully explored notion of a ‘taste of home’ in the ancient world. The notion of home, as defined by and in relation to food has only been recently been explored by the wider food studies community (de Maret and Geyzen 2015: 2).

**Soldiers in the Lower Rhine Delta and Germania inferior**

Augustan military campaigns saw the construction of the first Roman military camps in the Netherlands. The series of Roman forts and auxiliary camps constructed along the lower Rhine and in northern Germania inferior between 19 BC – AD 140 have been well studied (Cavallo et al. 2008; Groot and Kooistra 2009; Kooistra 2009, 2012; Polak 2009; 2017; Kooistra et al. 2013) (Figure 1). The camps and their occupation history are traditionally divided into three periods: the first bases built between 19 BC–AD 40, the establishment of auxiliary camps from AD 40–70 and the timber forts built after the Batavian revolt of AD 69/70 (Cavallo et al. 2008: 69). Since the aim is to explore the non-native experience of consuming imported goods, the focus will be on the first period of occupation where many of the legionary and auxiliary soldiers were recruited from outside the region (Reddé 2018: 133). The later auxiliary camps, at least until the Batavian revolt, are believed to have been occupied by locally recruited troops (Cavallo et al. 2008: 74).

The first camp, designed to hold two legions, was constructed between 19 –16 BC near Nijmegen. In 12 BC the camp was abandoned. Twenty years later three new camps were constructed at Vechten, Meinerswijk and Velsen (Cavallo et al. 2008; Kooistra 2009: 219). Datable carbonized and waterlogged marcobotanical material was collected from Nijmegen, Velsen and Neuss (Knörzer 1970: 15–16; de Hingh and Kooistra 1995: 104; Kooistra 2009: 219, 2012). Mineralized remains, which date to the same period, were recovered from wells, pits and latrines at Oberaden while the warehouses at Oderaden and Neuss were also sampled for carbonized material (Kučan 1992; Schamuhn and Zerl 2009: 242) (Table 1). All four sampled sites have produced a mixture of locally produced and imported goods, including exotics such as olive, peach and black pepper.

| Table 1 | Archaeobotanical finds of local and imported foods from the military camps in northern Germania inferior (Kooistra 2009, 2012: 176; Reddé 2018). | Excel | CSV | Original | PPT |
Unfortunately, we do not have a full list of the legions stationed at these camps during this time but the evidence does point to primarily warmer Mediterranean origins. At Neuss it is thought that the soldiers came from the southern and eastern provinces (Schemuhn and Zerl 2009; Kooistra 2012: 177). We know that the Legio V Alaudae was stationed at Velsen but as the legion was not newly formed it is difficult to make any conclusions regarding the origins of the soldiers (De Weerd 2006). Although the evidence is scant, inscriptions, coins, and weapons suggest that the auxiliary soldiers at Velsen came from Gaulish, Spanish, Illyrian and eastern units (Polak 2017: 640). A Daco-Thracian unit may have been stationed at Oberaden (Brewer 2000: 36). Thus these men were stationed in a region that was determinedly climatically different from their place of origin.

Archaeobotanical sampling, combined with extensive and intensive zooarchaeological, palaeo-ecological and geomorphological regional data means that we can reconstruct the diets of the soldiers living in the Lower Rhine Delta with a high degree of accuracy (Kooistra 2009; Kooistra et al. 2013; Van Dinter et al. 2014). In other words, we can reconstruct the distinctive sensorial identity of that place as experienced by the soldiers. Based on palynological data and macrobotanical sampling at both the military and civilian sites, we know that locally available foods included six-row barley, emmer wheat, millet, flax, gold-of-pleasure, and beef while fruit available for collection included bilberry, blackberry, dewberry, elder, hazel, raspberry and sloe (Kooistra 2009: 224). The Romans introduced edible varieties of celery and beet. Carbonized finds of non-local weed seeds including corn cockle and cornflower suggest that bread wheat and spelt were imported from Gaul (Kooistra 2013; van Dinter et al. 2014: 22). Similarly, while pig bones dominate the zooarchaeological assemblages at both Nijmegen and Velsen, pork may have been imported from nearby areas with more suitable pig rearing habitats. At Velsen 80% of the avifaunal assemblage was composed of chicken, while the remaining 20% was made up of peacock and a range of wild birds. All of these birds, however, would probably have been considered luxury goods at the time and therefore not part of the average soldier’s diet (Prummel 1987; 1993; Cavallo et al. 2008). Similarly, while amphorae evidence demonstrates that wine, olive oil and fish sauce were also imported to the forts in Germania inferior they were not recovered in quantities to suggest widespread regular consumption (Bosman and de Weerd 2004: 33; Eijstrud 2004; Carreras and Morais 2012; van den Berg 2012). At Nijmegen, the recovery of fish bones from twelve species, including local taxa such as eel, pike and catfish, and migratory species including salmon were found, suggesting that soldiers did have access to a wide range of fish (Hoek and Brinkhuizen 1995). Consequently, the range of available meat products did not differ significantly from those available in more southern regions of the Empire, although the consumption of fish may have been a new experience for soldiers who grew up in inland locations. A range of wild greens and seeds were undoubtedly consumed, but this practice would have taken place throughout the Empire (Bakels et al. 1997). On the
other hand, the narrow range of agricultural goods produced by the local population meant that the daily diet would have probably felt, if not somewhat limited then at least a bit bland for soldiers who had grown up in the more southern regions of the Empire. (Kučan 1992: 243).

It is worth pausing then, to think about the composition of the diet of these soldiers when they still lived in their home territories. The ever growing body of archaeobotanical and isotopic evidence from the Roman world increasingly suggests that even the non–elite, non–poor ate a varied diet, so variation in the socio–economic background of the soldiers should make little difference to our assessment (Killgrove and Tykot 2013; Rowan 2017a, 2017b). The range of cereals would have been similar to those available at the military camps and thus the consumption of a range of wheat species, along with barley and millet may have been one of the most familiar aspects of the Lower Rhine diet (Heinrich 2017). However, the soldiers would have grown up with a much wider range of pulses, fruits, vegetables and nuts. In the Mediterranean, frequently consumed pulses included lentils, chickpeas and broad beans while the carbonized nut shell fragments of walnuts, hazelnuts, almonds and pine nuts have been recovered from numerous sites (Rottoli and Castiglioni 2011; Murphy et al. 2013; Rowan 2017a). Figs, olives and grapes were Mediterranean staples while other fruits included apples, pears, blackberries, and a range of stone fruits (plums, cherries etc.) (Bertacchi et al. 2008; Rottoli and Castiglioni 2011). The availability of a wide range of herbs and spices, such as poppy seeds, dill, fennel, coriander, mint, mustard, and celery added flavour to various dishes and breads (Šoštarić and Küster 2001; Ciaraldi 2007; Bosi et al. 2017; Rowan 2017a). Finally, we must assume that wine, olive oil and fish sauce were also frequently consumed. The amount of meat eaten would have depended upon availability and income (MacKinnon 2018). Thus individuals ate a diet that was not only highly varied with regards to taste, texture, smell and sight but one that consisted of ingredients that, for the most part, could not be grown in the northern provinces.

As a result, the consumption of any of the true imports by any individual, regardless of military rank, would have created a distinctive sensory experience that would have been impossible to ignore. Since cooking in military camps was done at the level of the contubernium and camps did not possess central kitchens soldiers would have had a large degree of control over how they consumed or prepared imported goods (Carroll 2005). Non–routine circumstances, such as a religious festival, may have helped to mark the occasion as special. However, even in the absence of any out–of–the–ordinary occurrences, the vast difference in the smell, taste, sight, touch and even sound of the item, relative to any regularly provided food would have provoked a strong bodily reaction and ensured that the consumer knew the food was not from the area. The bitterness of an olive, the soft oiliness of a walnut, the sweetness of a fig and the spicy heat of black pepper were unlike any of the locally available items. Therefore, it can be argued that the distinctive synaesthetic experience for a soldier at Neuss, Oberaden or the Lower Rhine Delta, of eating one of these foods, ensured that the consumer reflected, if just for a moment, upon somewhere else and was therefore consciously connected to another part of the Roman world. Where, however, was that place? Was it real or imagined? The imported goods recovered from these military sites differed in their place of origin as well as their cost, and crucially, not all experiences would have been the same.

**Food, Home, Migrants, and Memory**

Most of the imports are what would be considered inexpensive items in a Mediterranean context. Figs, apples, pears, grapes, olives, cherries, almonds, walnuts, pine nuts and chickpeas, grow in relative abundance in warmer climates and could all be easily preserved for year round consumption (Thurmond 2006). To reach the forts the items were imported up the Rhine and Danube in various forms; dried figs, olives in brine, grapes and peaches either dried or in a preserve (Columella Rust. 12.49–50; Kučan 1992: 243–246; Thurmond 2006: 184–185; Curtis 2012; Rowan 2014). While these items are easy to transport, they are also highly representative of a Mediterranean diet or ‘Roman’ diet. Archaeobotanical sampling at the sites has not enabled us to tell which rank of military personnel consumed these goods, except for the officer’s latrine at Oberaden. However, evidence from the Vindolanda tablets for the purchase of black pepper, the wide spread recovery of figs at numerous sites in the northern provinces and the huge quantities of...
The desire for regular soldiers to consume such items has often been presented as soldiers searching for a taste of home (Bakels and Jacomet 2008: 552). Livarda (2018: 192) states that Mediterranean and exotic seasonings ‘followed’ the army and, ‘What also seems clear is that an extra effort was possibly made, especially in the more politically unstable first phase of the Roman occupation in the north, to access produce from “back home.”’ Both she and Hamilakis (1999; 2010: 190–191) argue that the familiar taste and smell of the foods would have, subliminally and often subconsciously lent emotion and physical support to the soldiers while simultaneously providing a feeling of security and enjoyment. Although soldiers may not have been consciously aware of these benefits, it is clear that eating something from ‘back home’ generated positive feelings. The degree of psychological awareness is not in question here. Neither is the idea that the soldiers did indeed desire a taste of home. Instead I wish first to clarify what is meant by home, as it is not often explicitly stated in archaeological literature on food, and secondly demonstrate the way the links between food, home and emotion require us to re-assess notions of connectivity for migrants living in the Roman world.

The direct connection between home, the nuclear family and the physical space of a house is a late 18th century middle-class concept where one could retreat from the public into the privacy of their own home (Hareven 1991). Today, in anthropological research, home has been much more broadly defined as a bound physical place and/or an imagined place with wide geographical boundaries including locality, region and nation (de Maret and Geyzen 2015: 2). As Mallett (2004: 84) states, ‘...it can be a dwelling place or a lived space of interaction between people, places and things; or perhaps both...Home can be singular and/or plural, alienable and/or inalienable, fixed and stable and/or mobile and changing...Home can be an ideological construct and/or an experience of being in the world.’ She goes on to state that home can be associated with positive feelings of comfort and security or negative feelings of oppression, marginalization and estrangement. It is a highly emotional place intimately wrapped up in an individual’s definition of the self. This broad and less Euro-centric definition of home works well for studies of the Roman world where the domus, the familia, and the division between public and private were much more fluid concepts than they were in the 18th century (Allison 2004; Hales 2009: 44–47).

If the home is a highly emotive place that generates memory and identity, so too is the act of food consumption. As stated earlier, the repetitive act of eating creates powerful memories (Hamilakis 2010; Tsamis 2010; Abarca and Colby 2016). Taste and particularly smell are associated with episodic memory, meaning that the smell of a particular food will evoke the place, people, time of year, and emotions associated with the original generators of that smell experience. The olfactory pathways in the brain differ from the other sensory pathways. They are much more closely related to the primitive, emotion-laden parts of the brain and consequently smell is remembered much more synaesthetically than colours, objects or sounds (Pelchat and Blank 2001; Sutton 2001: 101–2; 2005). Secondly, as is well known, food plays a large role in the creation of identity (Fischler 1988; Garnsey 1999; Twiss 2007; Brulotte and Di Giovine 2014). Throughout much of history what you ate, where and with whom defined both your personal and broader cultural identity and the Roman world was no different. The vast body of ancient texts that use food as metaphors and symbols for moral codes of conduct attests to the importance of food as a marker and measure of identity and ‘Roman-ness’ (e.g. Ovid, Fasti 6.169–86; Pliny NH 8.78, 18.2). The fact that food consumption often takes place in the home means that the two become inextricably linked and deeply embedded in the human mind. If the home is viewed in a positive light, and as a place of comfort and security, then this will lead to the creation of positive food memories.

The soldiers on the Lower Rhine Delta, however, were immigrants far from home. Starting in the late 1990s migration studies began looking at the connection between food, home and the migrant identity, seeking to better understand
memory, nostalgia, change, and the search for a sense of past and belonging (Sutton 2001; Kershen 2002; Dietler 2007). Numerous anthropological studies focusing on colonization, past and current forced migration, and modern immigration have all similarly found that acquiring and consuming foods from home, both privately and as a group, is one of the most powerful and symbolic ways a migrant can obtain a sense of connection to their home or home community (Erdinç 2001; Janowski 2012; Weller and Turkon 2015). Studies have also found that when placed in an unfamiliar environment food takes on a hyper-significant role and a common symptom of culture shock is a preoccupation with food (Locher et al. 2005; Brown et al. 2010: 202). It is also one of the most frequent tools used to mitigate homesickness (Sutton 2000: 125). Since the home does not have to be a physical place, consuming ‘food from home’ can also link migrants to imagined communities where the people in those communities are eating the same items (Sutton 2001: 84–5).

The combined sensory and emotional experience of eating an infrequently available yet familiar item would have unquestionably evoked a memory of someplace else for the migrant soldiers on the Lower Rhine Delta. Over the course of their lifetimes the creation of episodic food memories would have ensured that the smell and taste of figs or olives, for example, led to the remembrance of other peoples, places or seasons, and raised any number of positive emotions. Using the broad definition of home, this may have been a physical family house, town, region or even another military camp, but it may also have provided a sense of connection to the wider imagined ‘Roman’ community. The time period reflected upon may also have varied from an early childhood memory to a more recent experience, depending upon when the individual first encountered the ingredient. While this article is not claiming that the Roman military experience perfectly paralleled modern migrant experiences, in no studies of modern migrants consulted did migrants claim to have no sensory or emotional reaction when eating foods from home (Kershen 2002; Brown et al. 2010; Janowski 2012; Weller and Turkon 2015). In other words, the experience and the memories evoked were impossible to ignore even if they were not consciously explored or reflected upon in detail by the individual. Thus it is highly unlikely any non-local soldier could have eaten one of these imports without evoking the memories or emotions associated with a different time and place. The experience (perhaps thoughts of Rome rather than home) would have been very different for the later local soldiers who occupied the camps.

This conclusion, while perhaps seemingly obvious, has important implications for our understanding and conceptualizations of connectivity and community in the Roman world especially when the soldier is both military man and migrant. When conceptualizing connectivity and the individual experience, it may be worth placing the local and the migrant, whether soldier or civilian, and their respective experiences in starker contrast. While both native and non-native individuals could feel connected to a wider imagined ‘Roman’ community, unlike the local individual, the migrant soldier also had a home community to consider. There is an additional layer of connectivity to contemplate when looking at the migrant, and one that raises a host of other questions (that it is unfortunately beyond the scope of this article to answer). How did notions of space, time and geography differ between local and migrant? In what ways did concrete knowledge of another place influence the migrant’s view of the Roman Empire or the world as a whole? Food had the power to connect a migrant to a world probably unknown to the native. Moreover, if we imagine for a moment that most soldiers were not from the city of Rome itself, then a host of other communities were often considered and potentially deemed to be of far greater importance than Rome, which only serves to further decentralize the capital (Pieterse 2015). Finally, the fact that the same ingredient when consumed by a local individual and a migrant, would provoke vastly different psychological and emotional reactions furthers the notion that conceptualizations of connectivity in the ancient world were formed on an individual basis (Morley 2015b).

True exotic imports

It is now time to look at the true luxury imports; namely the peach, watermelon, rice and black pepper. These ingredients would have been rare and expensive even within the Mediterranean during the late first century BC to early first century AD. Archaeological, archaeobotanical and literary evidence reveal that the Romans only started to
cultivate the peach in Italy in the first century AD (Pliny HN 15.40; Sadori et al. 2009). Watermelon was imported from Egypt while rice came from India or the Near East (Bakels and Jacomet 2003: 553). Black pepper arrived via the Red Sea ports from India (Cappers 2006: 114–117). Although the relatively recent conquest of Egypt in 30 BC meant that the Red Sea trade had increased considerably in recent years, pepper remained expensive (Pliny HN 12.14; Strabo Geographica 2.5.12).

As stated above, eating, and the sensory experience of eating are very strongly linked to memory. However, since none of these items would presumably have formed a regular part of the diet of any of the military personnel, regardless of place of origin, there may have been few memories to evoke (Livarda 2018: 191). Unlike the consumption of a staple foodstuff, such as walnuts or figs, eating one of these luxury items would not automatically evoke a host of other memories. Memories of previous consumption experiences may have arisen as they would have stood out as unique taste experiences. For the military officer at Oberaden, who’s latrine contained peppercorns and almonds, the sensory experience of eating the pepper would have been similar to the experience of an individual in, for example, Herculaneum (Italy) or Mursa (Croatia) consuming black pepper (Kučan 1992: 245–246; Bakels and Jacomet 2003: 547; Reed and Leleković 2017; Rowan 2017a). In other words, without any local equivalent and in the absence of a repetitive interaction with the item, the experience of eating a truly foreign good was a distinctive and atypical sensory experience no matter where you were in the Roman Empire. Reflection upon place of origin for the pepper may have included an abstract notion of India, since it is extraordinarily unlikely anyone in Italy or Germania inferior had ever been there. If the exact place of origin was unknown then simply an imagined exotic location beyond the edges of the Empire could have been considered. Rome, or the abstract concept of Rome, may have been regarded as mediator (Livarda 2018). It is a similar case for the watermelon and rice, brought in from places not widely known or visited. The true exoticness of the food and the infrequency of its consumption made for a distinctive sensory (although not necessarily pleasant) experience and at least some distant place, real or imagined, was probably considered. This distant place was also, importantly, probably different from the place evoked by the consumption of the more familiar Mediterranean imports.

The case of the peach, however, is somewhat different and highlights the importance of assessing imported items within their wider historical and chronological context. While new to Italy in the early and mid-first century AD, once cultivation began, the peach, as seen through the archaeobotanical record, can be found throughout Italy and as an imported good in many parts of the northern provinces (Sadori et al. 2009). Consumption, particularly by the wealthy, probably became more frequent. Pliny (HN 15.40) states that one peach cost a denarius. By the time of Diocletian’s price edict roughly two hundred years later they cost, at most, 4 and 6 denarii for 10 large or 20 small peaches respectively. Consequently, there may have been a shift in how the foreignness of a peach was conceptualized. In Italy, for some, it would have become part of the regular repertoire of food and evoked no sense of foreignness at all. In the northern provinces, depending upon an individual’s place of origin and frequency of consumption, what once may have evoked a sense of the exotic may now evoke a sense of home.

In sum, the diet of the soldiers living on the Lower Rhine Delta was limited and plain by Mediterranean or even northern Italian standards. Aside from the cereals and meats, it lacked the other staples of the Roman diet such as figs, grapes, olives, wine, olive oil and fish sauce. With no local equivalent or replacement, the synaesthetic sensory experience of eating either the luxury imports or the more standard Mediterranean goods would have been unmissable. While both types of imports would have provoked strong bodily and emotional reactions it is important to note that there would have been distinctive differences in the way these foods were experienced and reflected upon. As non-standard parts of the diet, even in well-connected regions of Italy, the luxury imports would have been associated with a limited suite of memories or no memories at all. The cheaper Mediterranean goods were more likely connected to a host of powerful, episodic and emotionally charged memories that produced strong feelings of connectivity and may have led to reflection upon physical or conceptual homes.
Local Cultivation

So far we have examined a very particular group of individuals; non-locals in a foreign environment eating either familiar or unfamiliar imported foods over the course of only a few decades. While it is beyond the scope of the article to examine all circumstances surrounding the consumption of true imports throughout the Roman world and across multiple centuries, it is worth briefly addressing one additional point of interest.

One agricultural practice that is linked to but that can alter the sensorial identity of a place is local cultivation. Over the course of many centuries, several items, once imported and potentially luxury exotic foods, were introduced and then grown locally in many parts of the Roman Empire (Jacomet et al. 2002; van der Veen 2008). The introduction of the peach into Italy, discussed above, is a prime example (Sardori et al. 2009). After a short period of time some of these foods became inexpensive, widely available and consequently part of the local cuisine and fully integrated into the diet. At what point did these items lose their non-local associations? When did they cease to evoke a sense of someplace else? At what point did people no longer care or entirely forget that these items were once foreign imports? More modern examples include the tomato in Italy and the potato in Ireland, ingredients used in many 'traditional' dishes and central to the food identities of their respective countries (Hjalager and Richards 2002: 7, 76; Gentilcore 2010). In the Lower Rhine Delta, the continued recovery of archaeobotanical and pollen finds of walnut, grape, coriander, fennel, and dill, combined with their climatic suitability, suggests they may have been cultivated locally following the Batavian revolt in AD 69/70 (Pals 1997: 42–44; Bakels and Jacomet 2003; Kooistra 2009: 222). If a non-native soldier frequently consumed coriander and dill while stationed in the region would they still think of someplace else? How would the sensory experience differ for the soldiers stationed there during the early first century AD to those stationed there in the 70s or 80s AD? How would the local population view these items? In Britain, the Romans introduced plum, damson, apple, pear and cherry, items that were eventually grown locally and where cultivation continued into the post-Roman period (van der Veen and Livarda 2008: 21). After how many years or generations did people forget that cherries were not native? Did they ever lose their association with Roman culture and if so, how long did that take? According to Bradley (2003) orally transmitted memories can become unstable within 100–200 years and that all forms of memory making or retaining can easily change. Consequently, we should not expect that whatever notions of foreignness or connectivity that were originally associated with these items remained the same for hundreds of years. Just as diet changed so too would an item’s link to another place and time.

Conclusions

This article has been a methodological exploration into the ancient awareness of food origins. Sensory archaeology was used to demonstrate a degree of consciousness based on the physical experience of consumption and the mnemonic links forged between consumption, emotion, and memory. The synaesthetic experience of eating a true imported item, a food whose smell, taste and texture were outside the distinct sensorial identity of a place would have created a strong enough physical and psychological reaction to lead to at least a moment of reflection upon its non-local origins. This conclusion is relatively straightforward, but that moment of reflection is more complex than it first appears and it is vital that we begin to take both consumer and product into greater consideration. As has been shown, not all imports would have provoked the same reaction and each item must be considered carefully within its wider geographical and historical framework. Moreover, there needs to be a greater consideration of the individual, their place of origin, and the range of episodic memories they may have accumulated during their lifetime. As the case of the soldiers stationed on the Lower Rhine Delta and at Oberaden and Neuss has shown, their migrant status would have significantly impacted their reactions to particular items. If the item was a luxury import, and an infrequent part of the diet, reflection may have been on the exotic unknown or the location of a previous sensory experience involving that food. However, for a familiar item, consumed often during childhood, eating it may have led to thoughts of home and provided a sense of connectivity to a real or imagined community. Thus very different places
are given attention.

Gaining a taste of home was a complex emotional, psychological and physical experience and deserves a closer examination than we have previously allotted it. While home could take any number of forms, detailed knowledge or consideration of a distant geographical place(s) makes us question and re-assess notions of geography, connectivity and the strength of community in the ancient world. What impact does that additional knowledge have on the migrant's understanding of the shape and size of the world? Perhaps obtaining a taste of imperial power, Rome or a globalized world was not always the aim (Livarda 2018)? Have we been unfairly prioritizing the economic and social value of a food over its personal and emotional value? Knowledge of the precise geographical origins of a foodstuff, its cost and wider cultural associations may in fact have been less important than, or overridden by, the desire to achieve a sense of connectivity.

In the final section the impact of the local cultivation of new foods on the distinctive sensorial identity of an area is briefly explored. An awareness of food origins would have shifted as the origins of the foods themselves changed and we should not assume a static reaction to imports over several centuries or even decades. Food is a powerful generator of memories that can linger or change over time and widespread changes to those memories can have significant cultural impacts. While culture dictates much of our interaction with food, it is clear that reactions to all foods, and in particular imported items, is an individual experience. While the personal experience in antiquity is difficult to capture, this article has shown that it is not impossible and instead is a fruitful avenue of research that should be pursued further. Moreover, we should continue to explore, on an individual level, the way people in antiquity not only conceptualized but actively strived, through food, to achieve a sense of connectivity.

Notes

1 For example see Aelius Aristides Orations 26: 12–13; Athenaeus Deipnosophistae 1.7a–b; Columella De re rustica 1.20, Josephus Bellum Judaicum 2.383, 386; Suetonius De Vita Caesarum, Divus Claudius 18–19. 

2 See also Wiethold 2003; Carroll 2005: 367; Carreras 2006; Cool 2006; Ciaraldi 2007; van der Veen et al. 2008; van der Veen 2008; 2011; Eckardt et al. 2014: 542–544; Livarda and Orengo 2015.

3 See also Williams and Carreras 1995; van der Veen 2008; van der Veen et al. 2008; Livarda 2011; Pagnoux et al. 2013; Livarda and Orengo 2015; Orengo and Livarda 2016.

4 See also Sutton 2000; 2001: 7–9; 2008; 2010; Holtzman 2006; Korsmeyer and Sutton 2011.

5 For more focused studies see Bartosiewicz 2003; Hamilakis 2015; Morley 2015a; Potter 2015; Kamash 2018; Rowan forthcoming.

6 For other examples of a varied non–elite diet see van der Veen 1998; van der Veen and Tabinor 2007; Reed and Leleković 2017; Martyn et al. 2018.

7 Although the rarity of almond at early military sites suggests that it may have been considered a luxury good at this time (Kućan 1992: 245; Bakels and Jacomet 2003: 553).

8 This of course was not necessarily the reason or only reason for acquiring or purchasing these foods.

9 For modern scholarship on the topic see Shaw 1982/83; Gowers 1993; Garnsey 1999; Broekaert et al. 2016.

10 For more recent work see Brown et al. 2010; Dawdy 2010; de Maret and Geyzen 2015.

11 Sixteen Camulodunum 184 wine amphorae from Crete and Asia Minor, along with two Dressel 43 Cretan wine
amphorae and one Camulodunum 189 probably carrying fruit from the Levant were recovered from the pre–Flavian levels at Nijmegen (Van den Berg 2012: 216). Although there is not time to go into any great depth on the origins of the amphorae these finds raise the interesting question of whether or not the officers or soldiers knew the origins of their fruit and wine. Since some of the soldiers may have been from the eastern provinces, these particular wine varieties might have been familiar.

Acknowledgements

This article came out of the RAC session Ancient Consciousness of Connectivity in the Roman World, supported by Exeter’s Centre for Connectivity in the Roman World. I would like to thank my session co-organizer Chris Siwicki and Connectivity Centre founder Martin Pitts for all their help. I would also like to thank the anonymous reviewers for their useful and constructive feedback. To all of those who engaged me in verbal discussions about the article, I am grateful for your supportive comments and encouragement. Finally, I would like to especially thank everyone on my many excavation teams in Italy, Turkey and Tunisia, and especially those at Sardis and Aphrodisias, who brought and shared food from home. As temporary sometimes homesick migrants, you were the original inspiration for this article.

Competing Interests

The author has no competing interests to declare.

References

Ancient sources

Aelius Aristides (Translated by C.A. Behr 1981). Orations. The Complete Works. Vol. II. Leiden: Brill.  

Athenaeus (Translated by S.D. Olson 2007). The Learned Banqueters. Loeb Classical Library. Cambridge MA: Harvard University Press.  

Columella (Translated by H.B. Ash 1941). On Agriculture. Loeb Classical Library. Cambridge MA: Harvard University Press.  

Horace (Translated by J. Davie and R. Cowan 2011). The Satires and Epistles. Oxford World’s Classics. Oxford: Oxford University Press.  

Josephus (Translated by H. St. J. Thackeray 1927). The Jewish War. Loeb Classical Library. Cambridge MA: Harvard University Press.  

Juvenal (Translated by N. Rudd and W. Barr 1992). The Satires. Oxford World’s Classics. Oxford: Oxford University Press.  

Ovid (Translated by A. Wiseman and P. Wiseman 2011). Fasti. Oxford World’s Classics. Oxford: Oxford University Press.  

Petronius (Translated by P.G. Walsh 2009). The Satyricon. Oxford World’s Classics. Oxford: Oxford University Press.  

Pliny (Translated by H. Rackham 1945). Natural History. Loeb Classical Library. Cambridge MA: Harvard University Press.  

Pliny the Younger (Translated by P.G. Walsh 2006). The Complete Letters. Oxford World’s Classics. Oxford: Oxford University Press.  

Seneca (Translated by E. Fantham 2010). Selected Letters. Oxford World’s Classics. Oxford: Oxford University Press.  

Van den Berg 2012: 216
Strabo (Translated by H.E. Jones 1930). *Geography*. Loeb Classical Library. Cambridge, MA: Harvard University Press.

Suetonius (Translated by C. Edwards 2000). *Lives of the Caesars*. Oxford World’s Classics. Oxford: Oxford University Press.

Varro (Translated by W.D. Hooper and H.B. Ash 1934). *On Agriculture*. Loeb Classical Library. Cambridge MA: Harvard University Press.

**Modern sources**

Abarca, M.E. and Colby, J.R. 2016. Food memories seasoning the narratives of our lives. *Food and Foodways* 24(1–2): 1–8. DOI: https://doi.org/10.1080/07409710.2016.1150101

Aldrete, G.S. and Mattingly, D. 1999. Feeding the city: the organization, operation, and scale of the supply system for Rome. In: D.S. Potter and D. Mattingly (eds) *Life, Death and Entertainment in the Roman Empire*. Ann Arbor: University of Michigan Press: 171–204.

Allison, P. 2004. *Pompeian Households: An Analysis of the Material Culture*. Los Angeles: Cotsen Institute of Archaeology. DOI: https://doi.org/10.2307/j.ctvdjrqdr

Bakels, C. and Jacomet, S. 2003. Access to luxury foods in central Europe during the Roman period: The archaeobotanical evidence. *World Archaeology* 34(3): 542–557. DOI: https://doi.org/10.1080/0043824021000026503

Bakels, C., Wesselingh, D., and van Amen, I. 1997. Acquiring a taste: the menu of Iron Age and Roman period farmers at Oss–Ussen, the Netherlands. *Analecta Praehistorica Leidensia* 29: 193–211.

Bartosiewicz, L. 2003. There’s something rotten in the state…’. Bad smells in Antiquity. *European Journal of Archaeology* 6(2): 175–195. DOI: https://doi.org/10.1179/eja.2003.6.2.175

Bertacchi, A., Lombardi, T., Sani, A., and Tomei, P.E. 2008. Plant macroremains from the Roman harbour of Pisa (Italy). *Environmental Archaeology* 13(2): 181–188. DOI: https://doi.org/10.1179/174963108X343290

Betts, E. (ed.) 2017. *Senses of the Empire: Multisensory Approaches to Roman Culture*. London: Routledge. DOI: https://doi.org/10.4324/9781315608358

Blázquez, J.M. 1992. The latest work on the export of Baetican olive oil to Rome and the army. *Greece & Rome* 39(2): 173–188. DOI: https://doi.org/10.1017/S0017383500024153

Bosi, G., Mazzanti, M.B., Montecchi, M.C., Torri, P., and Rinaldi, R. 2017. The life of a Roman colony in Northern Italy: Ethnobotanical information from archaeobotanical analysis. *Quaternary International* 460: 135–156. DOI: https://doi.org/10.1016/j.quaint.2016.08.008

Bosman, A. and de Weerd, M. 2004. Velsen: The 1997 excavations in the early Roman base and a reappraisal of the post–Kalkriese Velsen/Vechten dating evidence. In: H. Thoen et al. (eds) *Archaeology in Confrontation. Aspects of Roman Military Presence in the Northwest (Studies in Honour of Prof. Em. Hugo Thoen)*. Gent: Academia Press: 31–62.

Bowman, A., Thomas, J., and Adams, J. 1994. *The Vindolanda Writing–Tablets (tabulae Vindolandenses II)*. London: British Museum Press for the Trustees of the British Museum.

Bradley, M. (ed.) 2015. *Smell and the Ancient Senses*. London: Routledge. DOI: https://doi.org/10.4324/9781315736051

Bradley, R. 2003. The translation of time. In: R.M. Van Dyke and S.E. Alcock (eds) *Archaeologies of Memory*. Oxford:
Breeze, D.J. 2000. Supplying the Roman army. In: G. Alfeldy, B. Dobson, and W. Eck. (eds) Kaiser Heer und Gesellschaft in der Römischen Kaiserzeit. Gedenkschrift für Eric Birley. Stuttgart: Franz Steiner Verlag: 59–64.

Brewer, R.J. 2000. Roman Fortresses and Their Legions. London: Society of Antiquaries of London.

Broekaert, W., Nadeau, R., and Wilkins, J. 2016. Food, Identity and Cross-Cultural Exchange in the Ancient World. Brussels: Éditions Latomus.

Brown, L., Edwards, J., and Hartwell, H. 2010. A taste of the unfamiliar. Understanding the meanings attached to food by international postgraduate students in England. Appetite 54(1): 202–207. DOI: https://doi.org/10.1016/j.appet.2009.11.001

Brulotte, R. and Di Giovine M.A. 2014. Edible Identities: Food as Cultural Heritage. Farnham: Ashgate.

Cappers, R.T.J. 2006. Roman Foodprints at Berenike: Archaeobotanical Evidence of Subsistence and Trade in the Eastern Desert of Egypt. Los Angeles: Cotsen Institute of Archaeology, University of California. DOI: https://doi.org/10.2307/j.ctvdjrqw

Carreras, C. 2006. A quantitative approach to the amphorae from Xanten: A more comprehensive view of the long-distance Roman trade. In: J. von Feeden and I. Martell (eds) Römische Amphoren der Rheinprovinzen unter Besonderer Berücksichtigung des Xantener Materials. Xanten, Xantener Berichte Vol. 14. Mainz: Zabern: 25–39.

Carreras, C. and Morais, R. 2012. The Atlantic roman trade during the principate: New evidence from the western façade. Oxford Journal of Archaeology 31(4): 419–441. DOI: https://doi.org/10.1111/j.1468-0092.2012.00396.x

Carroll, M. 2005. The preparation and consumption of food as a contributing factor towards communal identity in the Roman army. In: Z. Visy (ed.) Limes XIX. Acts of the XIXth International Congress of Roman Frontier Studies. Pécs: University of Pécs Press: 363–372.

Casson, L. 1980. The role of the state in Rome’s grain trade. Memoirs of the American Academy in Rome 36: 21–33. DOI: https://doi.org/10.2307/4238693

Cavallo, C., Kooista, L.I., and Düting, M.K. 2008. Food supply to the Roman army in the Rhine delta in the first century AD. In: S. Stallibrass and R. Thomas (eds) Feeding the Roman Army: The Archaeology of Production and Supply in the North-West Roman Provinces. Oxford: Oxbow Books: 69–81.

Cheung, C., Schroeder, H., and Hedges, R.E. 2012. Diet, social differentiation and cultural change in Roman Britain: New isotopic evidence from Gloucestershire. Archaeological and Anthropological Sciences 4(1): 61–73. DOI: https://doi.org/10.1007/s12520-011-0083-y

Ciaraldi, M. 2007. People and Plants in Ancient Pompeii: A New Approach to Urbanism from the Microscope Room, the Use of Plant Resources at Pompeii and in the Pompeian Area from the 6th Century BC to AD 79. London: Accordia Research Institute, University of London.

Cool, H. 2006. Eating and Drinking in Roman Britain. Cambridge: Cambridge University Press. DOI: https://doi.org/10.1017/CBO9780511489570

Curtis, R.I. 2012. Food processing and preparation. In: J.P. Oleson (ed.) The Oxford Handbook of Engineering and Technology in the Classical World. Oxford: Oxford University Press: 369–392.

Dawdy, S.L. 2010. “A wild taste”: Food and colonialism in eighteenth-century Louisiana. Ethnohistory 57: 389–414.
de Hingh, A. and Kooistra, L. 1995. Reste von getreide und anderen Pflanzen. In: J.K. Haalebos *Castra und Canabae, Ausgrabungen auf dem Huneberg in Nijmegen, 1987–1994*. Nijmegen: Katholieke Universiteit: 103–109.

de Maret, O. and Geyzen, A. 2015. Tastes of homes: Exploring food and place in twentieth-century Europe. *Food and Foodways* 23(1–2): 1–13. DOI: https://doi.org/10.1080/07409770.2015.1011980

De Weerd, M. 2006. Repressie op afstand in een voorland zonder grenzen; De Romeinse limes in Nederland voor de opstand van de Bataven. *Westerheem* 55(1): 5–26.

Dietler, M. 2007. Culinary encounters: Food, identity, and colonialism. In: K. Twiss (ed.) *The Archaeology of Food and Identity*. Carbondale: Center for Archaeological Investigations, Southern Illinois University Carbondale: 218–242.

Eckardt, H., Müldner, G., and Lewis, M. 2014. People on the move in Roman Britain. *World Archaeology* 46(4): 534–550. DOI: https://doi.org/10.1080/00438243.2014.931821

Ejstrud, B. 2004. Size matters: Estimating trade of wine, oil and fish–sauce from amphorae in the first century AD. In: T. Bekker–Nielsen (ed.) *Ancient Fishing and Fish Processing in the Black Sea Region*. Aarhus: Aarhus University Press: 171–181.

Erdinc, F. 2001. Journeys through smell and taste: home, self, identity. In: H. Walker (ed.) *Food and Memory. Proceedings of the Oxford Symposium on Food and Cookery 2000*. Totnes: Prospect Books: 91–99.

Erdkamp, P. 2011. The food supply of the capital. In: P. Erdkamp (ed.) *The Cambridge Companion to Ancient Rome*. Cambridge: Cambridge University Press: 262–277. DOI: https://doi.org/10.1017/CCO9781139025973.019

Fischler, C. 1988. Food, self and identity. *Social Science Information* 27: 275–293. DOI: https://doi.org/10.1177/053901888027002005

Garnsey, P. 1999. *Food and Society in Classical Antiquity*. Cambridge: Cambridge University Press. DOI: https://doi.org/10.1017/CBO9780511612534

Gentilcore, D. 2010. *Pomodoro!: A History of the Tomato in Italy*. New York: Columbia University Press. DOI: https://doi.org/10.7312/gent15206

Gowers, E. 1993. *The Loaded Table: Representations of Food in Roman Literature*. Oxford: Clarendon Press.

Groot, M. and Kooistra, L. I. 2009. Land use and agrarian economy in the Roman Dutch river area. *Internet Archaeology* 27. DOI: https://doi.org/10.11141/ia.27.5

Hales, S. 2009. *The Roman House and Social Identity*. Cambridge: Cambridge University Press.

Hamilakis, Y. 1999. The anthropology of food and drink consumption and Aegean Archaeology. In Coulson, W. and Vaughan, S. (eds) *Palaeodiet in the Aegean*. Oxford: Oxbow Books: 55–63.

Hamilakis, Y. 2008. Time, performance, and the production of a mnemonic record: from feasting to an archaeology of eating and drinking. In: L.A. Hitchcock, R. Laffineur, and J. Crowley (eds) *DAIS: The Aegean Feast*. Liège: Université de Liège: 3–19.

Hamilakis, Y. 2010. Re–collecting the fragments: Archaeology as mnemonic practice. In: K.T. Lillios and V. Tsamis (eds) *Material Mnemonics: Everyday Memory in Prehistoric Europe*. Oxford: Oxbow Books: 188–199.

Hamilakis, Y. 2011. Archaeologies of the senses. In T. Insoll (ed.) *The Oxford Handbook of the Archaeology of Ritual and
Kučan, D. 1992. Die Pflanzenreste aus dem römischen Militärlager Oberaden. Bodenaltertümer Westfalens. In: J.-S. Kühlborn and S. von Schnurbein Das Römerlager in Oberaden III: Die Ausgrabungen im nordwestlichen Lagerbereich und weitere Baustellenuntersuchungen 27. Münster: Aschendorff: 237–65.

Kuijper, W. and Turner, H. 1992. Diet of a Roman centurion at Alphen aan den Rijn, the Netherlands, in the first century AD. Review of Palaeobotany and Palynology 73(1–4): 187–204. DOI: https://doi.org/10.1016/0034-6679(92)90057-N.

Livarda, A. 2011. Spicing up life in northwestern Europe: Exotic food plant imports in the Roman and medieval world. Vegetation History and Archaeobotany 20(2): 143–164. DOI: https://doi.org/10.1007/s00334-010-0273-2.

Livarda, A. 2018. Tastes in the Roman provinces: an archaeobotanical approach to socio-cultural change. In: K.C. Rudolph (ed.) Taste and the Ancient Senses. London: Routledge: 179–196. DOI: https://doi.org/10.4324/9781315719245-11.

Livarda, A. and Orengo, H. A. 2015. Reconstructing the Roman London flavourscape: New insights into the exotic food plant trade using network and spatial analyses. Journal of Archaeological Science 55: 244–252. DOI: https://doi.org/10.1016/j.jas.2015.01.008.

Locher, J.L., Yoels, W.C., Maurer, D., and van Ells, J. 2005. Comfort foods: An exploratory journey into the social and emotional significance of food. Food and Foodways 13(4): 273–297. DOI: https://doi.org/10.1080/07409710500334509.

Locher, A. 2007. In piscibus diversis; the bone evidence for fish consumption in Roman Britain. Britannia 38: 141–180. DOI: https://doi.org/10.3815/00000007784016520.

Lupton, D. 1994. Food, memory and meaning: The symbolic and social nature of food events. The Sociological Review 42(4): 664–685. DOI: https://doi.org/10.1111/j.1467-954X.1994.tb00105.x.

Lupton, D. 2005. Food and emotion. In: C. Korsmeyer (ed.) The Taste Culture Reader: Experiencing Food and Drink. Oxford: Berg: 317–324.

MacKinnon, M. 2018. Tastes of meat in antiquity: integrating the textual and zooarchaeological evidence. In: K.C. Rudolph (ed.) Taste and the Ancient Senses. London: Routledge: 161–178. DOI: https://doi.org/10.4324/9781315719245-10.

Mallett, S. 2004. Understanding home: A critical review of the literature. The Sociological Review 52(1): 62–89. DOI: https://doi.org/10.1111/j.1467-954X.2004.00442.x.

Martyn, R., Garnsey, P., Fattore, L. et al. 2018. Capturing roman dietary variability in the catastrophic death assemblage at Herculaneum. Journal of Archaeological Science: Reports 19: 1023–1029. DOI: https://doi.org/10.1016/j.jasrep.2017.08.008.

Morley, N. 2015a. Urban smells and Roman noses. In: M. Bradley (ed.) Smell and the Ancient Senses. London: Routledge: 110–119.

Morley, N. 2015b. Globalisation and the Roman economy. In: M. Pitts and M.J. Versluys (eds) Globalisation and the Roman World: World History, Connectivity and Material Culture. Cambridge: Cambridge University Press: 49–68. DOI: https://doi.org/10.1017/CBO9781107338920.005.

Murphy, C., Thompson, G., and Fuller, D.Q. 2013. Roman food refuse: urban archaeobotany in Pompeii, Regio VI, Insula 1. Vegetation History and Archaeobotany 22(5): 409–419. DOI: https://doi.org/10.1016/s0939-4985(13)31980-5.
Orengo, H. A. and Livarda, A. 2016. The seeds of commerce: A network analysis–based approach to the Romano-British transport system. *Journal of Archaeological Science* 66: 21–35. DOI: https://doi.org/10.1016/j.jas.2015.12.003

Pagnoux, C., Celant, A., Coubray, S. et al. 2013. The introduction of *Citrus* to Italy, with reference to the identification problems of seed remains. *Vegetation History and Archaeobotany* 22(5): 421–438. DOI: https://doi.org/10.1007/s00334-012-0389-4

Pals, J.-P. 1997. Introductie van cultuurgewassen in de Romijnse tijd. In: A.C Zeven (ed.) *De Introductie van onze Cultuurplanten en hun Begeleiders van het Neolithicum tot 1500 AD*. Wageningen: Vereniging voor Landbouwgeschiedenis: 25–51.

Pelchat, M.L. and Blank, F. 2001. A scientific approach to flavours and olfactory memory. In: H. Walker (ed.) *Food and Memory*. Proceedings of the Oxford Symposium on Food and Cookery 2000. Totnes: Prospect Books: 185–191.

Pieterse, J.N. 2015. Ancient Rome and globalization: decentring Rome. In: M. Pitts and M.J. Versluys (eds) *Globalisation and the Roman World: World History, Connectivity and Material Culture*. Cambridge: Cambridge University Press: 225–239. DOI: https://doi.org/10.1017/CBO9781107338920.013

Pitts, M. and Versluys, M.J. 2015. *Globalisation and the Roman World: World History, Connectivity and Material Culture*. Cambridge: Cambridge University Press. DOI: https://doi.org/10.1017/CBO9781107338920

Polak, M. 2009. The Roman military presence in the Rhine delta in the period of c. AD 40–140. In: A. Morillo, N. Hanel, and E. Martín (eds) *Limes XX, XXth International Congress of Roman Frontier Studies, Léon (España)*. Madrid: Consejo Superior de Investigaciones Científicas: 945–953.

Polak, M. 2017. The Roman military presence in the Rhine delta in the pre-Flavian period. In: N. Hodgson, P. Bidwell, and J. Schachtmann (eds) Roman Frontier Studies 2009: Proceedings of the 21st International Congress of Roman Frontier Studies (Limes Congress) held at Newcastle-upon-Tyne in August 2009. Oxford: Archaeopress: 636–641.

Potter, D. 2015. The scent of Roman dining. In: M. Bradley (ed.) *Smell and the Ancient Senses*. London: Routledge: 120–132.

Prummel, W. 1987. Poultry and fowling at the Roman castellum Veslen I. *Palaeohistoria* 29: 183–201.

Prummel, W. 1993. Birds from four coastal sites in the Netherlands. *Archaeofauna* 2: 97–105.

Reddé, M. 2018. The impact of the German frontier on the economic development of the countryside of Roman Gaul. *Journal of Roman Archaeology* 31: 131–160. DOI: https://doi.org/10.1017/S1047759418001265

Reed, K. and Leleković, T. 2017. First evidence of rice (*Oryza cf. sativa* L.) and black pepper (*Piper nigrum*) in Roman Mursa, Croatia. *Archaeological and Anthropological Sciences*: 1–8. DOI: https://doi.org/10.1007/s12520-017-0545-y

Rickman, G. 1980. The grain trade under the Roman Empire. *Memoirs of the American Academy in Rome* 36: 261–275. DOI: https://doi.org/10.2307/4238709

Rottoli, M. and Castiglioni, E. 2011. Plant offerings from Roman cremations in northern Italy: A review. *Vegetation History and Archaeobotany* 20(5): 495–506. DOI: https://doi.org/10.1007/s00334-011-0293-3

Rowan, E. 2014. Roman diet and nutrition in the Vesuvian Region: A study of the bioarchaeological remains from the Cardo V sewer at Herculaneum. Unpublished DPhil thesis, University of Oxford.

Rowan, E., 2017a. Bioarchaeological preservation and non–elite diet in the Bay of Naples: An analysis of the food
remains from the Cardo V sewer at the Roman site of Herculaneum. *Environmental Archaeology* 22(3): 318–336. DOI: https://doi.org/10.1080/14614103.2016.1235077

Rowan, E. 2017b. Sewers, archaeobotany and diet at Pompeii and Herculaneum. In: M. Flohr and A. Wilson (eds) *The Economy of Pompeii*. Oxford: Oxford University Press: 111–134. DOI: https://doi.org/10.1093/acprof:oso/9780198786573.003.0005

Rowan, E. forthcoming 2019. Food and the senses. In: J. Day and R. Skeates (eds) *Routledge Handbook of Sensory Archaeology*. London: Routledge.

Rudolph, K.C. 2018 (ed.) *Taste and the Ancient Senses*. London: Routledge. DOI: https://doi.org/10.4324/9781315719245

Sadori, L., Allevato, E., Bosi, G. et al. 2009. The introduction and diffusion of peach in ancient Italy. In: J.P. Morel and A.M. Mercuri (eds) *Plants and Culture: Seeds of Cultural Heritage in Europe*. Bari: Edipuglia: 45–61.

Schamuhn, S. and Zerl, T. 2009. Zur Landwirtschaft der Kelten, Römer und Germanen im Gebiet von Nordrhein-Westfalen. *Kontinuität oder Wandel?* In: Kelten am Rhein: Akten des dreizehnten internationalen keltologiekongresses: bis 27. Mainz: Philipp von Zabern: 239–250.

Scheidel, W. 2014. The shape of the Roman world: Modelling imperial connectivity. *Journal of Roman Archaeology* 27: 7–32. DOI: https://doi.org/10.1017/S1047759414001147

Shaw, B. 1982/83. Eaters of flesh, drinkers of milk: the ancient Mediterranean ideology of the pastoral nomad. *Ancient Society* 13/14: 5–31.

Sidebotham, S.E. and Zych, I. 2010. Berenike: Archaeological fieldwork at a Ptolemaic–Roman port on the Red Sea coast of Egypt 2008–2010. *Sahara* 21: 7–26.

Skeates, R. 2010. *An Archaeology of the Senses: Prehistoric Malta*. Oxford: Oxford University Press.

Šoštarić, R. and Küster, H. 2001. Roman plant remains from Veli Brijun (island of Brioni) Croatia. *Vegetation History and Archaeobotany* 10: 227–33. DOI: https://doi.org/10.1007/PL00006934

Sutton, D.E. 2000. Whole foods: Revitalization through everyday synesthetic experience. *Anthropology and Humanism* 25(2): 120–130. DOI: https://doi.org/10.1525/ahu.2000.25.2.120

Sutton, D.E. 2001. *Remembrance of Repasts: An Anthropology of Food and Memory*. Oxford: Berg. DOI: https://doi.org/10.5040/9781350044883

Sutton, D.E. 2005. Synesthesia, memory, and the taste of home. In: C. Korsmeyer (ed.) *The Taste Culture Reader: Experiencing Food and Drink*. Oxford: Berg: 304–316.

Sutton, D.E. 2008. A tale of Easter ovens: Food and collective memory. *Social Research* 75(1): 157–180.

Sutton, D.E., 2010. Food and the senses. *Annual Review of Anthropology* 39: 209–223. DOI: https://doi.org/10.1146/annurev.anthro.012809.104957

Toner, J. 2014. (ed.) *A Cultural History of the Senses in Antiquity*. London: Bloomsbury. DOI: https://doi.org/10.5040/9781474233057

Thomas, R. and Stallibrass, S. 2008. For starters: producing and supplying food to the Roman army. In Thomas, R. and Stallibrass, S. (eds) *Feeding the Roman Army: The Archaeology of Production and Supply in the North–West Roman Provinces*. Oxford: Oxbow Books: 1–17.
Thurmond, D.L. 2006. *A Handbook of Food Processing in Classical Rome*. Leiden: Brill.

Tsamis, V. 2010. Layers of memory: an embodied approach to Late Bronze Age central Macedonia, Greece. In: K.T. Lillios and Tsamis, V. (eds) *Material Mnemonics: Everyday Memory in Prehistoric Europe*. Oxford: Oxbow Books: 103–122.

Twiss, K.C. 2007. *The Archaeology of Food and Identity*. Carbondale: Center for Archaeological Investigations, Southern Illinois University Carbondale.

Van den Berg, J. 2012. Rare and exotic amphorae in north–west Europe: finds from the Roman fort on the kops plateau, Nijmegen. *Journal of Roman Pottery Studies* 15: 215–235.

Van den Berg, T. 1985. Paleobotanisch onderzoek van enkele anthropogene lagen uit de romeinse haven bij velsen. *Internal Report Universiteit Amsterdam*.

Van der Veen, M. 2008. Food as embodied material culture: Diversity and change in plant food consumption in Roman Britain. *Journal of Roman Archaeology* 21: 83–109. DOI: https://doi.org/10.1017/S1047759400004396

Van der Veen, M., 2011. *Consumption, Trade and Innovation: Exploring the Botanical Remains from the Roman and Islamic ports at Quseir al–Qadim, Egypt*. Frankfurt am Main: Africa Magna Verlag.

Van der Veen, M., and Hamilton-Dyer, S. 1998. A life of luxury in the desert? The food and fodder supply to Mons Claudianus. *Journal of Roman Archaeology* 11: 101–116. DOI: https://doi.org/10.1017/S1047759400017219

Van der Veen, M., Livarda, A., and Hill, A. 2008. New plant foods in Roman Britain—dispersal and social access. *Environmental Archaeology* 13(1): 11–36. DOI: https://doi.org/10.1179/174963108X279193

Van der Veen, M., and Tabinor, H. 2007. Food, fodder and fuel at Mons Porphyrites: the botanical evidence. In: V.A. Maxfield and D.P.S. Peacock (eds) *Survey and Excavation at Mons Porphyrites 1994–1998. Volume 2: The Excavations*. London: Egypt Exploration Society: 83–142.

Van Dinter, M., Kooistra, L.I., Dütting, M.K. et al. 2014. Could the local population of the lower Rhine delta supply the Roman army? Part 2: Modelling the carrying capacity using archaeological, palaeo-ecological and geomorphological data. *Journal of Archaeology in the Low Countries* 5(1): 5–50.

Wallace-Hadrill, A. 2014. The senses in the marketplace: the luxury market and eastern trade in Imperial Rome. In: J. Toner (ed.) *A Cultural History of the Senses in Antiquity*. London: Bloomsbury: 69–89. DOI: https://doi.org/10.5040/9781474233057.ch-003

Weller, D.L. and Turkon, D. 2015. Contextualizing the immigrant experience: The role of food and foodways in identity maintenance and formation for first- and second-generation Latinos in Ithaca, New York. *Ecology of Food and Nutrition* 54(1): 57–73. DOI: https://doi.org/10.1080/03670244.2014.922071

Whittaker, C.R. 2002. Supplying the army. Evidence from Vindolanda. In: P. Erdkamp (ed.) *The Roman Army and the Economy*. Amsterdam: Gieben: 204–234.

Wiethold, J. 2003. How to trace the “Romanisation” of central Gaule by archaeobotanical analysis?—some considerations on new archaeobotanical results from France Centre–Est. *Actualité de la recherche en Histoire et Archéologie agraires*. Besançon: Presses universitaires franc–comtoises: 269–282.

Wilkins, J. 2008. Athenaeus the navigator. *The Journal of Hellenic Studies* 128: 132–152. DOI: https://doi.org/10.1017/S007542690000094.
Williams, D. and Carreras, C. 1995. North African amphorae in Roman Britain: A re-appraisal. Britannia 26: 231–252. DOI: https://doi.org/10.2307/526878

Wilson, A. and Bowman, A.K. 2017. Trade, Commerce, and the State in the Roman World. Oxford: Oxford University Press. DOI: https://doi.org/10.1093/oso/9780198790662.001.0001