AFF 1.1 (2022) 5–15
https://doi.org/10.1558/aff.16902

Archaeology of Food and Foodways ISSN (print) 2514-8370
Archaeology of Food and Foodways ISSN (online) 2514-8389

Learning About the Past Through Food

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Food plays a central role in human life, both past and present. For much of human history, obtaining a sufficient amount of food was a daily priority. Eating not only engages the senses, but it is a vital form of social engagement, creating important and crucial social and familial bonds. The various steps and stages required in the procurement, production, preparation and consumption of food all leave their traces in the archaeological record. Much of the material culture we encounter at archaeological sites, from the macro to the micro, can in some way be connected to food. Archaeologists continue to develop new techniques and technologies that bring us closer to the ways in which people interacted with food, in its many variant forms, in the past. This thematic essay does not seek to provide a thorough review of archaeological food studies, but rather, in the words of Levi-Strauss, to provide something, like food, that is 'good to think with'. The goal is to present some of the traditional research questions and methods surrounding food, along with explorations of some newer perspectives. It highlights the importance of environmental archaeology and archaeological sciences, and demonstrates how the integration of macro- and micro-remains, through microscopic techniques and the analysis of residues found on ceramics, can aid in our understanding of a wide range of foodways practices, from fermentation to storage, cooking and consumption. Now is the time to reorient both past and future research, to more clearly address the rich and engaging topic of what and how our ancestors ate, why they did so, and what every part of this great process might have meant to them.

The main goal of most archaeologists is to get closer to the past, and what better way of doing that than by seeking the most common of daily practices, that of eating. It is a rich, sensual, haptic experience that most people love and look forward to; many even live to eat. The best part is that it engages all of our senses; taste, smell, sight, touch, and sound; involving our whole body and mind simultaneously. Most people tend to like to eat every six hours or so, making food garnering and preparation more than a daily activity. In fact, for most of human existence, procuring food was the main task completed during daylight hours, accompanying

Keywords: Foodways, archaeology, organic remains, food processing, taphonomy, archaeological methods

other tasks. The most common social engagement with family and friends occurs over meals, with commensality forming the core of our social identity.

This essay is not meant to be a thorough review of current archaeological food studies, by any means. These comments are simply some of the ideas that come to mind when I think of where we are currently within the discipline of food archaeology. I expect much more work will continue to be published on the topic, along with a broadening and deepening of techniques. Books on the topic began to be published a decade ago, from the richly evocative book by Martin Jones (2007), to those of Christine Hastorf (2016), Katheryn Twiss (2019) and Robyn Cutright (2021), food is increasingly being used to illustrate and understand past politics, conquest, ethics, religion, gender, race relations, colonialism, and identity; core themes in archaeological investigations (Bray 2013; Dietler 2007; Hastorf 1991; Janik 2003; Kennedy and VanValkenburgh 2016). There are many excellent, recent projects that illuminate these 'typical' archaeological topics, but do so with an expressly food orientation, such as Amanda Logan and Dores Cruz's (2014) paper discussing the politics of food security and gender engagements in Ghana's past and present (2014), or Jade d'Alpoim Guedes and colleagues' (2013) paper that discusses the trade of food products across Tibet. There are many more. The bottom line is that there are an increasing number of publications reporting on past daily practices and eating.

It is therefore not surprising that there is a new archaeology of food and foodways journal, dedicated to the presentation of the vast range of materials that relate to food. It is becoming clear to archaeologists that much of what we encounter in the archaeological record are the leftovers of food activities. The material recovered from dwellings can often be linked to consumption, storage and preparation. Some items are directly related to food, such as animal bones and plant remains, while other materials are less directly associated with food studies, such as lithic tools, which are created to attain food, and ceramics, which are most often used for the storage, preparation and serving of food (Subias 2002). Even pits, while often identified as rubbish dumps in their final use, were most likely used for the storage or fermentation of foodstuffs. At this stage in archaeology, in addition to the recovery of new material, we can also revisit, from a food perspective, the material that has already been excavated, analyzed and published, and find new interpretations. This form of heritage archaeological research is exciting, as we can revisit regions and times, in the future, to open up the material to interrogate our views of the people who lived there.

What I have found, in my study of past foodways, is that it is not only the persistent engagement with food that makes it so dominant in the material record, but that food's value permeates most social, political, symbolic and spiritual interactions, embodying as well as giving life (Smith 2006; Van der Veen 2014). We are always working indirectly in archaeology, and therefore have to justify our interpretations and assumptions, especially when we venture into the realms of stating valuation and choice. Well-being begins with food security, both climatologically and politically (Stahl and Logan 2014). Today, governments spend a great deal of time in international dealings regarding food stores, as groups did in the past, to feed their populations (Guedes et al. 2016). Wars have often been fought with neighbors to claim resources or access productive land, and even today people work primarily to be able to purchase food and shelter. Food is also essential in forming social identities. It is not just a daily requirement, but is also a part of spiritual experiences and landscape engagement, defining religious groups by their rules of consumption, with fasting often heightening spiritual engagement. The concepts

of special meals, feasts or luxury foods have also allowed us to investigate additional consumption activities, contrasting them with daily foods and allowing us to think about past cultural values and concepts of well-being (Dietler and Hayden 2010; Ervynck et al. 2003; Hastorf 2003; Van der Veen 2003). Identifying evidence of feasts allows us to assume that there were times of plenty in the past, while also directing us to seek out the choices that people made about what they ate, and how they prepared that food.

There were, however, not always times of plenty. Sometimes it is hard to envision the periodic shortages that were experienced by most populations in the past. They are most often discussed by bioarcheologists, who present the levels of malnutrition evident in human bone, especially teeth and crania (Skinner and Hung 1989; Walker et. al. 2009). It is difficult to identify these very significant past experiences in the artifactual evidence, except when people moved away from a settlement, suggesting a failure in gaining sufficient sustenance. When we see abandonment of this sort, archaeologists tend to suggest that people moved because they had no more food, because they were impacted by war, or because they experienced dramatic climatic issues. Although clearly important and quite ubiquitous, it is difficult to chart the periodicity of bad-year economics in enough detail to identify the exact cause for a given radical cultural change (cultural or political collapse), as is discussed within archaeology (Halstead and O'Shea 2004). New methods, and the application of multi-proxy data using lake cores, sediments, ice cores, oxygen isotopes, diatoms, and tree rings, can help clarify drought or cold episodes and their intensities. However, these indicators do not always provide information as to the extent of food resource reduction (Dincauze 2000; Zhang 2015). With evidence for sustained drought or flooding, as with the El Niño oscillations, we can begin to correlate food scarcity with climatic events, but the shorter-term annual scarcities are usually inferred in archaeological settings. Resiliency is often claimed when residents remain in a location through major climatic or political changes, and this must be related, in part, to the diversity of food sources and habitat use, and how these ingredients were prepared (Nelson et al. 2012; Redmond 2005; Schoon et al. 2011). We can gain some insight from modern foragers who talk about variable food access throughout the year, from historical documents about food scarcity cycles in the pre-modern world, and from current politically-derived famines. We can assume, therefore, that people probably did lack food periodically, or at the very least, lacked their favored food choices intermittently throughout their lives, creating second class foods in every society.

There has always been a spectrum of food valuation in any group's food palette and cuisine. Individuals, families and communities had both more and less favored foods, just as each of us does today. Food choice played a role in what was brought home to eat, in the seasonal fare. Our goal as archaeologists is to gather more detailed information on the possible foods that people could have eaten throughout the seasons, knowing that there would have been a ranking of food access and cost, but also a ranking of the flavors and desire to eat them. The flavor principle, as first proposed by Elizabeth Rozin, was as active and important in the past, for the earliest people, as it is today (Rozin 1973). Staple foods and added flavors result in cuisines that are culturally-created and desired. One person's favorite food is another person's most disgusting, and these core proclivities are learned as a child. Paul Rozin found that children do not solidify their concepts of disgust, taste, smell and texture until around five years of age (Rozin et al. 2008: 765). We cannot assume that everyone around the world, or in the past, likes or liked what we like to eat; offal is one group's treat and another group's starvation food

(Speth 2017; Stefánsson 1914). We can learn about temporal food valuation traditions through detailed archaeological study, investigating a range of material, both micro and macro, but it takes time to gain such information.

Strategies of foraging, hunting, food production and food management have been the most common archaeological projects associated with food (Bogaard 2004; Marston 2017; Van der Veen and Jones 2006). These are most productively completed through the modeling of past environments, the exploration of procurement practices in association with plant and animal behaviors, as well as the estimating of yields (Bogaard et al. 2013; Currie et al. 2015; Fraser et al. 2011; G. Jones 1992). These studies provide solid backgrounds in terms of what could have been produced, where, and in what quantity. They help us see changes through time in food availability, as well as plant and animal management strategies. These models are then compared with ecofactual data to provide a big-picture view. When trying to study actual meals and diets, however, this broader orientation is too removed from daily life, and we must use other methodologies and techniques to study material in a more fine-grained manner.

We are thrilled when we find evidence of an actual meal or dish; of a combined set of ingredients in a cultural context that allows us to know about a meal that was consumed in the past (Chiou 2017; Hastorf 2016; Sutton and Reinhard 1995). This boldness in interpretation by archaeologists is an exciting step in the study of past foods and meals, with direct evidence of consumption opening up interpretive horizons of past lives. That is, if we can identify clear evidence of meals and courses through more detailed microscopic work, we can begin to accept that meals are ubiquitous at every settlement that we investigate, and thus we can begin to fill in the gaps to envision the details of such meals and their participation in society. Scholars have begun to do this in two ways. The first strategy has been to actually identify fragments of meals or prepared foods. For example, what used to be called fragments, lumps, or simply charred organic matter in macrobotanical analysis have now been investigated in more detail. These intensive cellular identifications are most often completed through the use of a scanning electron microscope (SEM) (Arranz-Otaegui et al. 2018; Heiss et al. 2020; Kubiak-Martens 2002). In these studies, different tissue fragments have been identified, related to bread, porridge, tuber fragments, gruel, and maize stew (Barton and Paz 2007; Fuller and Gonzalez Carretero 2018; Gonzalez Carretero et al. 2017; Larbey et al. 2019; Valamoti 2002; Wollstonecroft et al. 2011). These findings have led to an increased interest in tubers, and an awareness that they were a major component of many diets around the globe.

The second strategy has been to use the available data, including the archaeological record of edibles encountered at a settlement, as well as reconstructed models of the environment, to envision potential meals. Some archaeologists have created possible menus and meals based on the archaeological evidence, including evidence of seasonality and climate (Minnitt and Coles 1996: 58; Atalay and Hastorf 2006: 314; Valamoti 2009). Thinking about these all together and envisioning people joining together at the end of the day to talk and eat, these meals seem plausible. For example, Minnitt and Coles (1996: 58) came up with a lovely Iron Age menu for a Glastonbury lake village that they re-analyzed from an archaeological investigation completed in the early twentieth century. Their menu has several options for each dish, including a starter of bean and duck egg with brookline, a fish course of smoked eel and wild celery, a meat course of teal served with watercress and samphire, a dessert of bilberry crumble, and drinks of nettle beer or crab apple cider. Focusing on both what is grown/produced and what

is collected, such flavor combinations can be proposed and even recreated. These archaeologists assumed that the residents ate a wide range of wild ingredients along with their domesticates, gleaned throughout the year to create their dishes, flavors and meals. We can see a resurgence of interest in these wild flavors in our current urban populations, with the growth of gathered-food restaurants such as René Redzepi's restaurant 'Noma', Sami Tallberg's 'Cargo', or Vincent Medina and Louis Trevino's 'Café Ohlone'. These gathered dishes recreate the flavors and textures that form the cuisine of an imagined community. By eating this, you too can join in that community that lives with the land. Even with molecular studies of ceramic interior scrapes, we will never know what ingredients went into a single dish, except through studying coprolites. Karl Reinhard has illustrated the value of coprolite investigation through his research with Mark Sutton at Antelope House in the American south-west, identifying distinct summer, autumn and winter meals based on both wild plants and domestic maize, and their differing preparation styles (Sutton and Reinhard 1995). Without such preservation, bringing a range of data types together is the most productive way for us to imagine meals that could have been eaten in the past.

In the 1990s, Richard Evershed and Carl Heron began to focus on carbonized and absorbed organic residues and lipid residue analysis within artifacts (Evershed et al. 1991). Since then, such analysis has expanded out to provide information on food preparation and meal construction. This molecular analysis clarifies how ceramics have been used, and determines what food was boiled, fermented and stored in various settings (Correa-Ascencio and Evershed 2014; Evershed et al. 2008; Miller et al. 2020; Mukherjee et al. 2008; Spangenberg et al. 2006).

Investigating the past through the lens of food has directed us to study the small-scale. We have learned the importance of investigating items used to store, prepare and present food, as well as their placement and associated contexts for eating, through more detailed excavations and recordings. We have seen this more focused approach in archaeology increase over the past twenty years, accompanied by the growth of zooarchaeology and paleoethnobotany (Metheny and Beaudry 2015; Marston et al 2015; Miracle and Milner 2002; Pearsall 2015; Russell 2011). It is now standard practice to systematically collect both macro- and micro-samples for macrobotanical, starch, phytolith and pollen analysis, to allow for regular representative analysis and interpretation. Architectural studies have helped to define how space could have been utilized, although the scale of dwelling groups, their storage, fuel, preparation, cooking and eating locales are also important. Specific items uncovered in their use-location (primary deposits) speak to where, how, and what people ate. Contextual recording is all (Harris 1989), as a lithic or seed means something completely different in different cultural settings and associations within a settlement. We need documentation, not just to have the evidence to support contemporaneous material, but also to be able to identify what happened where. Schiffer was correct when he urged archaeologists to identify the taphonomic history of every excavated deposit (Miksicek 1987; Schiffer 1995). This pursuit requires more detailed excavation and recording, which have been made more feasible by digital methodologies (Smith and Levy 2012; Tripcevich and Wernke 2010). Food studies have moved archaeology towards these smaller-scale excavations, and to systematic screening and sampling, capturing more detailed, contextual evidence that speaks to food and its value. This collected evidence, in turn, requires more detailed laboratory analyses at a range of study scales.

These research trajectories have led not only to more systematic analyses, but also to the completion of much more microanalysis, both of whole and of fragmentary items, including studies of grain size alterations with carbonization, cellular patterns, tissue anatomy, micromorphology, starch, phytoliths, insects, diatoms, organic molecules, eDNA, and aDNA. The search continues for further and more varied diagnostic evidence of foodstuffs, which could potentially record each step in food life-cycles. There are too many examples of good work to mention here – that is what this journal will do! But I will mention just a few trends that are promising. Micro-taphonomic work on food fragments focuses on tissue anatomy, which is especially important in studying storage tissues such as geophytes and OSUs (Kubiak-Martens 2002; Larbey et al. 2019; Melamed et al. 2016). Evidence of preparation and cooking from plant and animal remains has also been increasingly informative, due to a large group of scholars receiving multi-year grants to study food production and processing in Europe, such as the EARTH program (Early Agricultural Remnants and Technical Heritage; Chevalier et al. 2014) and PlantCult (Valamoti et al. 2017). For example, the current goal of PlantCult is to "...explore the role of the culinary transformation of plant ingredients in the shaping of social and cultural identities during prehistory, and the contribution of plant foods to social cohesion and differentiation, including the emergence of elites, in daily, communal or special consumption contexts" (Valamoti et al. 2017: 1). These teams of archaeologists have completed a wide range of research on specific steps in archaeological food evidence, well beyond landscape management, planting, and harvesting. They focus on food storage and food processing, such as threshing and grinding, but also on food preparation, cooking, and all of the associated taphonomic impacts that modify the material uncovered in excavation and meal formation. While the main focus of these two projects is South-west Asian domesticates, their methods and forms of interpretation can help all food archaeologists.

Out of the many entries into past foodways, there are several forms of investigation I want to mention that have initiated an escalating trend in food studies; how food processing can be studied in archaeological settings. The first strategy is studying food processing through experimentation. This taphonomic subdiscipline really began with Anna Behrensmeyer (1978) and Diane Gifford Gonzalez (Gifford and Behrensmeyer 1977), with their study of African animal bones exposed to wind, rain, and living animals, noting taphonomy. One example of a taphonomic study was that completed by Sissel Johannessen and colleagues (Goette et al. 1994), who systematically studied a range of maize-cooking strategies, describing the taphonomic and anatomical changes that occur when maize kernels are toasted, roasted or boiled, at a range of different temperatures and for various lengths of time, and then charred. From this work, we concluded that the archaeological maize encountered was all slow boiled at a low temperature, suggesting that any other maize-cooking processes would not have survived the cultural and natural taphonomic transformations. While sobering, this was informative when it came to our interpretation of the kernels found in that archaeological record. Delwin Samuel (1996) took this one step further with her taphonomic investigation of starch grains, linked to the fermentation and cooking of cereal grains (wheat and barley) in the making of beer. Through SEM work, she identified starch grain pitting caused by this fermentation process. Equally useful was the work by Amanda Henry, who studied the systematic breakdown of starch grains through boiling, photographing the food every five minutes to note the tissue and starch grain changes, until each sample was so gelatinous as to be impossible to identify

(Henry et al. 2009). This project included ten Eurasian food plants. There have been many more food publications since, including processing and consumption evidence identifying starch and phytoliths within human tooth calculus (Hardy et al. 2012; Hardy et al. 2018; Henry and Piperno 2008). We cannot complete too many replicable, precise studies that seek out archaeological plant and animal dietary evidence, as each one gives us new knowledge and perspectives about past foodways.

Increasingly, molecular research through carbon, nitrogen, sulfur and oxygen stable-isotope geochemistry by those in the archaeological sciences is providing new insights about past foodways, expanding our view of dietary trends. Although carbon and nitrogen stable isotopes have been providing food evidence for forty years, and have become increasingly robust and informative, sulfur and oxygen are adding new dietary evidence about people and their plant and animal foods (Ambrose 1993; Bogaard and Outram 2013; Hu et al. 2006; Katzenberg and Weber 1999; Müldner and Richards 2007). All of these microanalyses are allowing us to get closer to identifying long-term food processing techniques, such as fermentation, and not just for the more standard beer and wine, but for dishes as well (Cavalieri et al. 2003; Fuller and Gonzalez Carretero 2018; Grainger 2011; Levin 2018; Samuel 1997). As these identification techniques become more common, we can utilize them in specific contexts, such as storage/processing pits and ceramics. Processing and cooking strategies alter the nutrition and digestibility of the consumed foods, which can help us reconstruct diet, nutrition and meals, as well as general levels of past health (Wandsnider 1997).

As I noted at the start of this article, most archaeological research could be interpreted as the study of past foodways. Now is the time to attempt to revisit the archaeological record from this vantage point; we will gain a much richer past. By reexamining the data, as well as adding new approaches to our studies, we will uncover new information about past foods and foodways, dishes and courses, and thus gain a subtler and richer view of past human life. Through such a reorientation, we will address the rich and engaging topic of what and how our ancestors ate, and what it might have meant to them as they created their families, society and individual identities through the foods they gathered, prepared and ate. This journal will provide a venue for many of these studies, allowing us all to access a range of new results and insights into how our ancestors were so successful and enriched by their food.

Bon Appetit

Acknowledgments

I would like to thank the editors of this new journal, Shanti Morell-Hart, Erica Rowan, and Shinya Shoda, knowing that the journal will be a vibrant and important participant in archaeology. Thanks also to the reviewers who helped to tidy up the paper, and Daniel Gronow for his crisp editing. I wish you and this journal well and good eating.

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