

# Food for thought

## On the culture of food and the interpretation of ancient subsistence data

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The study of ancient food habits often includes scientific or technical analyses of some sort, e.g. osteological, plant macrofossil, bone chemical or organic chemical analyses. Quite a lot of effort is put into understanding the formation processes and post-depositional changes such as decomposition and taphonomy. The cultural aspects of the formation of these materials are often not considered at all. This paper presents a food culture model and considers some of its consequences for the interpretation of subsistence data based on ancient material remains.

*Keywords:* food culture, archaeology, sampling, analysis, interpretation, model

### Introduction

This paper presents a food culture model developed within the project *By House and Hearth* (Hjulström & Isaksson 2005), financed by the Swedish Research Council. The model is based on previous work concerning food culture, both theoretical and empirical, in several fields such as anthropology, ethnology, sociology, history and archaeology (Barthes 1967; Lévi-Strauss 1978; Douglas 1979; Montanari 1994; Hill 1995; Dietler 1996; Beardsworth & Keil 1997; Counihan & Van Esterik 1997; Dillman 1997; Isaksson 2000; Bringéus 2001; Ashley et al. 2004; Goldstein et al. 2005). One major aim of the project *By House and Hearth* was to analyse the culture of food and subsistence in eastern central Sweden during the Early Medieval period. In doing so we needed to analyse a multitude of sources, e.g. finds, features, osteological and archaeobotanical material, food lipid residues in pottery, bone chemical data and soil chemistry, representing a variety of archaeological contexts. In order to be able to evaluate and interpret all these diverse food culture signals, we soon realised that we needed

a theoretical framework that took the integration of multiple data sets and contexts into consideration. The result is a structural model rather than a strictly mathematical one, that enables us to trace possible flows of food culture signals in any set of archaeological material.

### Culture

The concept of culture applied in the model deviates somewhat from the traditional archaeological definition of culture, and is in a sense a more cognitive one (see Pappmehl-Dufay 2006:24ff for a discussion on this issue). Culture is defined as shared consciousness and systems of meaning, or more specifically knowledge, the way knowledge is accumulated and the way it is used and shared by groups of people. Knowledge is used here in its widest sense, ignoring the question of truth, and includes everything from facts to ideas, ideals, conceptions, convictions and ideologies (cf. Ehn & Löfgren 1989:13–19).

Knowledge is commonly expressed through words, but through the *use* of knowledge traces are left in

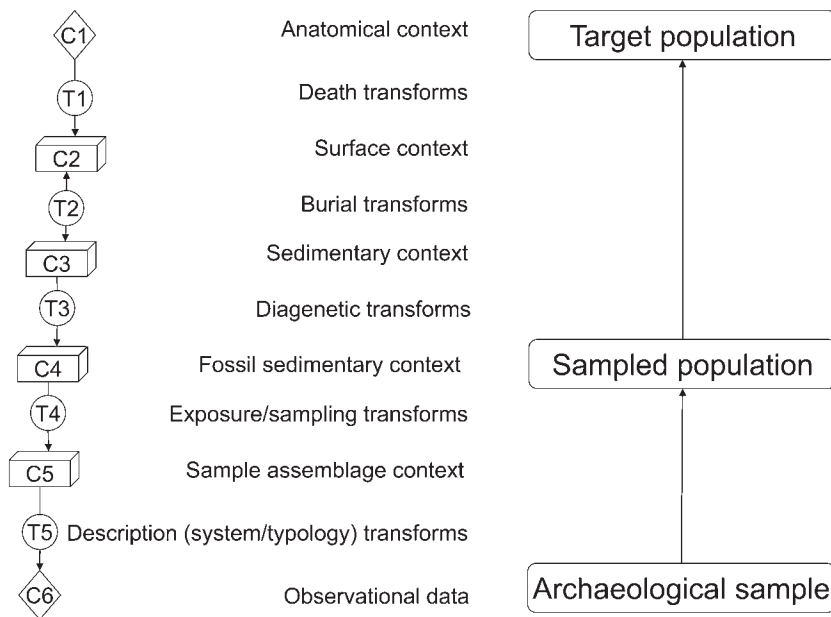


Figure 1. A taphonomic transformation sequence (left) and the relation between the target population, sampled population and archaeological sample (right). The step between the archaeological sample and sampled population may be governed by principles of statistical inference, whereas the step between the sampled and target populations is governed by principles of archaeological inference and knowledge of diagenetic pathways. Modified after Orton (2000:42).

material remains, i.e. what we find in an archaeological record. This does not mean that what we see in the material culture is the same as spoken or written words, because material culture is capable of carrying messages that language cannot communicate. Artefacts and other forms of material culture are active in transforming social life, and social difference may be signalled through material culture. Including the way knowledge is *accumulated* makes this a dynamic definition of culture, and as a researcher one is forced to relate to the interactions between people, both vertically, as in the transmission of knowledge from one generation to another, and horizontally, as in transmission between neighbours. At some level all this is unique for every individual at a given time, but when selected parts are *shared* by several individuals, cultural groups are formed. As a consequence, every individual may also be a member of several cultural groups. The culture of food consequently deals with knowledge concerning food and eating.

### Flows of signals

Prehistoric food culture signals will pass through a number of cultural and natural processes before they are perceived by archaeologists. A taphonomic model for such a transformation sequence, as presented by Clive Orton (2000) in his book on sampling in archaeology, is reproduced in figure 1. Orton describes this as a ladder which we painfully try to climb back up, and according to Orton (2000:56), the further we

go, either the less we can say and/or the stronger are the assumptions we must make.

I do not pretend that the gap between the sampled and target populations in Figure 1 has been bridged, but it is easy to gain the impression from this model that if only we can reach the top everything will be fine. Even so, a food culture signal that flows through this model will have a prehistory that will also affect what ends up in our archaeological samples. The main issue is how to select the food culture signal that has the highest potential for solving the archaeological problem we are interested in. To do this it is necessary to add a few more steps to the ladder.

### A food culture model

Starting from the top of the model (Fig. 2) humans typically does not eat everything edible that is around them. That which is considered edible is said to be part of the menu (C02) of that food culture. This is an exclusively cognitive transform (T01) and when we search for evidence for the introduction of milk and dairying, for instance (Copley et al. 2005; Craig et al. 2005) it is the material remains of such a transform we are looking for.

The food signal passes through a few or all of the processes (T02–05) before it reaches the mouth and becomes part of the dietary context (C1). Diet is defined as that which an individual actually eats during a longer period of time (i.e. a matter of years). At each stage there is the possibility of residue formations

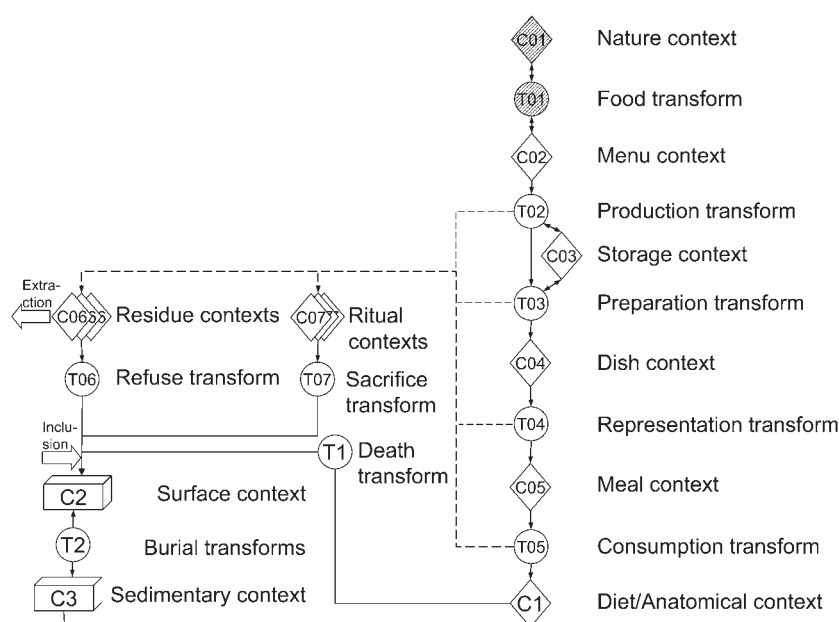


Figure 2. A model for the flow of food culture signals into deposition in an archaeological context. C1–C3 and T1–T3 correspond to the same boxes in Figure 1. The hatched boxes mark exclusively cognitive entities.

ending up in various contexts (C06<sub>n</sub>), from which material may be taken for other uses and may be lost to us at this point, e.g. bones used for the production of tools, etc. There is also the possibility of the inclusion of non-food signals. Pottery, for example, may be used for many other things than food, producing a false food signal in the analysis of lipid residues. This extraction and inclusion is indicated by the arrows in the left-hand part of the model.

The usefulness of the model is that it forces us to think through all these aspects, and it helps in making predictions. If I catch a fish and eat it raw and wriggling, for example, I go from production (T02) to consumption (T05) directly and there will be very little residue left (C06<sub>n</sub>), except for some discarded fish bones on the river bank. If instead I put the fish in a basket (C03), take it home, clean it and cook it (T03), put it on a serving dish (C04) and garnish it (T04), present it as the main course for some friends (C05), who take pieces of it onto their own plates, adding sauce and potatoes before eating it (T05), I have left a whole trail of evidence. Furthermore, apparently ignoring the preparation (T03) and representation stages (T04), as in the first case, is not the same as the lack of a signal. If such behaviour is not culturally acceptable I would pretty soon be quite lonesome on my fishing trips. In another context the same behaviour may instead be a strong signal for the formation of a cultural group, expressing distinctiveness relative to *others*.

The model implies that food signals from residue contexts (C06<sub>n</sub>) will only provide circumstantial

evidence of menus (C02), depending on how closely it is possible to connect the signal to a certain step (T02–05) or context (C03–05). Food signals from residue contexts may come from pollen, plant macrofossils, bones and pottery use (lipid residues), etc. They may thus be the result of production (T02), preparation (T03), representation (T04) *or* consumption (T05), and the only way to try and establish which of these applies is to integrate other archaeological data such as finds and features, i.e. to establish the archaeological context of the sample. Food signals from dietary contexts (C1) will provide direct evidence of menus (C02), but will on their own provide little evidence of the other aspects. The only way to get at diet is through analyses of human bone chemistry, whereupon the signal will be the sum of production, preparation, representation and consumption over a period of time.

Prehistory entailed very different realities from our own in many aspects, especially where sacred and secular features were intrinsically interwoven. The idea of a distinct duality between the profane and the sacred has been characterised as a post-Enlightenment rationality that is not necessarily applicable to every cultural or historical context (Brück 1999). It may, however, be a thought structure that is far older, connected with Jewish-Christian mythology. People of other faiths (e.g. Buddhist) do apprehend the separation between work and worship, labour and prayer as a structure that is deeply embedded in Christian thinking (cf. Eilert 1986:19–20). This dualism may or may not have existed, or may have existed at various strengths,

in prehistoric beliefs, and the relevant conditions at any point in history may be very difficult to pinpoint. It may be more fruitful to speak in terms of various degrees of ceremoniousness (i.e. formal normative behaviour, whether profane or religious) rather than of various degrees of influence from religious or magical ideas (i.e. ritual) in a given archaeological context. At any step (T02–05) or in any context (C03–05) ritual or ceremonial behaviour (T07) may or may not have occurred. In Classical Greece, for example, all animals had to be slaughtered and prepared by professional *mageiroi* with the appropriate religious ritual. There was not even a word in the ancient Greek language for an entirely secular form of slaughter (Ekroth 2008). Eating was in general greatly ritualised, with sacrifices to the gods taking place even at everyday meals (Dalby 1995). It may prove to be very difficult to separate between signals from everyday routines (i.e. T06) and from recurrent formal-normative behaviour (i.e. T07) in a particular archaeological record. The relevance of this is that in ritual or ceremonial contexts (C07<sub>n</sub>) religious, cultural and social importance will be so pronounced that such effects can easily be misinterpreted as being of dietary significance. On the other hand, to try and compare food culture signals expressed in pronouncedly ritual contexts, e.g. grave goods, with those found in apparently mundane contexts, e.g. at settlements, may be very rewarding if the aim is to study religious, cultural and social aspects of food and eating. A possible prediction to be obtained from this model is that the probability of an identical food signal appearing in a residue context (C06<sub>n</sub>) and a dietary context (C1) within a given food culture may be quite low.

### Food culture dynamics

The flow of the food culture signals is changeable, being influenced by a number of cognitive concepts, ideas and values. Several of the food culture concepts and entities presented below will be very hard or impossible to trace directly in the archaeological record, but as they do have an indirect influence on food culture signals it is necessary to take them into consideration during sampling and interpretation.

The contexts that we actually find and that are available to sample will depend on the spatial organization of subsistence, and we will rarely have access to the complete landscape of a food culture, a landscape that will in any case have been changing over time. Two fundamental concepts are the dish (C04), i.e. foods, one or several, that people choose to cook together,

and the meal (C05), i.e. one or more dishes that people choose to eat on the same occasion. The meal may be looked upon as a non-verbal sign system, the dishes included in it being separate signs with a given placement in the syntax. This is one way in which food and eating is a representation (T04), and breaking the syntax, intentionally or not, will be interpreted in particular ways by the people around. Other ways in which the transition from dish to meal is a representation is in the selection of dishes for specific meals, and also in the arrangement of the dramatized performance that may constitute a meal. Ideas on where, when and how meals should be eaten are all collected under the concept of meal customs, and the timing and number of meals during the day under the concept of meal order. The culinary art designates the techniques and arts of food preparation (T03), including ideas on the boundary between raw and cooked, on how certain foods should be prepared, and on which foods could be cooked together, etc. It is important to approach these issues with an open mind, as taste is something that is primarily cultural. The capacity of anything to cause disgust or nausea is typically not an inherent character of the things causing these feelings. The feelings are real enough, but precisely what makes people feel disgusted or nauseated is something that is learnt, i.e. knowledge, and thereby culture. All these concepts are tied in with whole systems of meaning and shared consciousness, and as these change, so will also the expressions of the food culture (Fig. 3).

Meal companionship (at C05) is an important entity, as it provides individuals with a social and cultural identity as –“we who eat together”. An individual may be a member of several meal companionships even during a single day, e.g. based on work, duties, rank, gender, age, etc. The members know how the dishes should taste and can have a potent influence in bringing about changes in them. As taste and smell are strong sensory impressions, people connect these impressions with memories, moods and other associations. Smell derives from short-chain and relatively volatile organic compounds abundant in many foods, and these contribute greatly to the smell in places where the foods are kept or prepared. Each meal companionship knows what a specific dish should taste like, a knowledge that is recreated at each meal where the given dish is eaten. Differences in taste and smell add considerably to the social and cultural identity of meal companionships, contributing to the ability of food to act as a social binder. The compositions of dishes and meals are thereby the results of interpretation and construction on the part of each meal

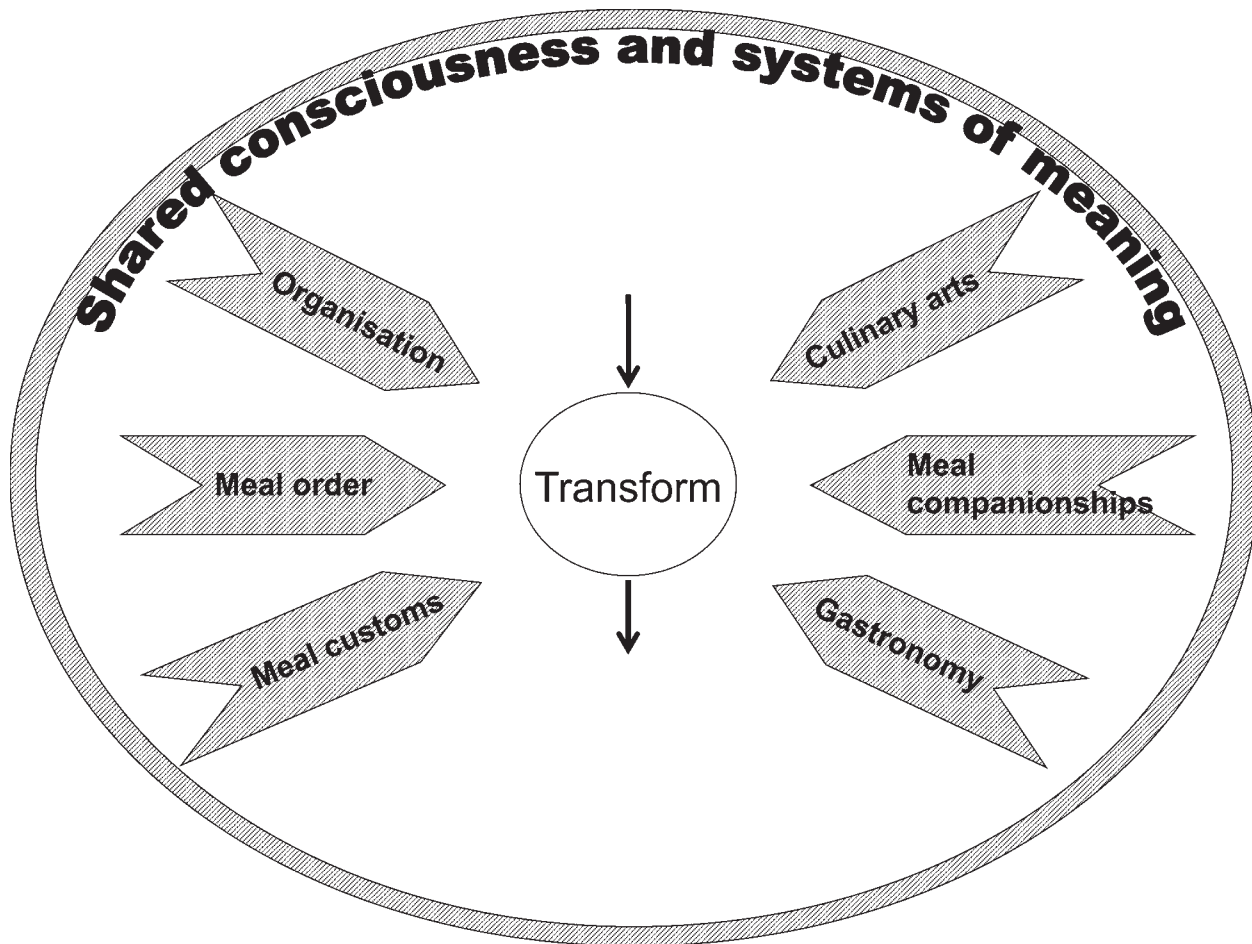


Figure 3. Cognitive concepts, ideas and values influencing and changing the flow of food culture signals.

companionship. A meal companionship may develop its own dishes with more or less intact meal customs and order, and also syntax.

Changes may arise through three major processes: innovation (i.e. individual learning), borrowing (i.e. social learning) and distortion. Innovation is of course an effect produced by the creative cooks, individually acquiring skills and knowledge, but the freedom to use this creativity, and the lasting nature of its effect, will be highly dependent on just how susceptible a given society is to culinary novelties. In order to last, anything new has to be accepted by a meal companionship as defined above, and traditional food cultures tend to be quite conservative. Borrowing is the introduction of new ingredients, cooking techniques, whole dishes, etc. from other groups through social learning or copying (at C02), preferably from groups with prestige (cf. gastronomy below). If borrowing takes place from groups with prestige this may be quite a quick, widespread process, whereas copying from peers (e.g. neighbours of a similar station in life)

may be slower and more local. Distortion is the slow and subtle change that can take place in dishes over time, in which ingredients may increase or decrease in amount, become excluded or exchanged, and new ones may be included. Ingredients may be excluded due to unavailability (at C01 or T02) or through exclusion from the menu (C02), i.e. loss of their cultural value as food. An increase may be caused by abundant availability (again at C01 or T02), or because a certain ingredient is considered tasty (C05) or has other beneficial qualities, e.g. promoting strength or health, etc. In the case of the inclusion of new ingredients we are again dealing with innovation (T01), although it may also be a way of replacing an ingredient which is no longer available. If the new ingredient in such a case is of a similar character as the original one, this will reflect a desire to keep the character of the dish. Distortion may also occur as a result of pure transmission or copying errors either between or within generations. In general, changes may be expected to be slow, as they have to be accepted by the meal companionship, but



after a time a dish may have changed quite considerably relative to its original form, and although it may still be considered traditional by the meal companionship, it may be regarded as deviant by *others*. The meal companionship is therefore culturally both an exclusive and inclusive entity.

Food and eating may also be socially hierarchical. This is expressed in the gastronomy of a food culture, defined as a doctrine of finer cooking. Gastronomy can prescribe a ranking list of any aspect of foods (C02), the culinary arts (T03), dishes (C04), modes of representation (T04) and meals or meal customs and companionships (C05). From this perspective the meal companionships are socially exclusive/inclusive and it is prestigious to have a knowledge of the gastronomy of one's culture and an ability to live up to its standards. What is included in a gastronomy can often be given causal explanations in economic terms, but in order to make these explanations understandable they must be complemented with more final ones, i.e. including intentions and purposes, as expressed through the ideological or cosmological content of ideas, for example as found in C07 and T07. Furthermore, the lack of an expressed gastronomy is not the same as the lack of a food culture. The maintaining of a simple diet may be a very strong signal of cultural group inclusion.

## Problems

The integrated nature of the model is not without problems. One consequence is the necessity for contextual considerations, which can affect sampling strategies. Instead of taking an independent random sample of all items from every context, it is preferable to select certain secure and well-characterized contexts and to take a stratified sample from each of these, for instance. The population from which a sample is taken is usually very far removed from the total population, but with a contextual sampling strategy it is at least possible to have an idea of what the sample represents.

One prediction that can be made regarding the model is that it is only through the comparison of residue contexts that we will be able to pick up the nuances of prehistoric food cultures. It is consequently necessary to compare food signals, including ones that may demand the application of quite different analytical techniques. This entails the problem that the differences in detectability between the techniques used to pick up food signals may be too wide for a rational comparison to seem possible. Another consequence of

accepting this model is the need to establish contextual comparability between sites when conducting inter-site studies. The investigation of an archaeological site will seldom cover all the contexts and transforms in figure 2, and if different parts of the flow of food culture signals are overrepresented at one site, or certain contexts completely missing, this will have serious consequences for the outcome and the interpretations, rendering the simple random sample approach useless, e.g. for comparisons of vessel use between sites by means of lipid residue analyses. A contextually stratified sampling approach would be much more sensible. The sampling approach is further complicated by the fact that very little may be known of the life history or life span of the finds and features sampled at a particular site, or whether any connection is possible between life span and use. In certain cases, however, even though we do not trust any single food culture signal from an individual context, we may safely compare the composition or ratios of various food signals between contexts (cf. Orton 2000:67f).

## Applications

Application of the food culture model complicates things; providing more questions than answers, but it is necessary at least to relate to such questions in any study of prehistoric food culture, because the complexity does not derive from the model as such but from the nature of the food cultures concerned. The only thing the model does is to force us to ask questions. Another consequence of accepting this model is the necessity for considering context in both the selection of sampling strategies and the adoption of analytical techniques, and also in interpreting the data, avoiding grab sample approaches and naïve direct-link interpretations.

The need to try and answer these questions derives from the potential for identifying as many possibilities as is feasible, and for identifying crucial problems and weaknesses in a line of interpretation. In doing so it is also possible to find support for an interpretation from other sources that may have been overlooked, or to identify new ways of approaching the problem, e.g. as an inducement for the development of new analytical techniques.

Most of the material considered within the *By House and Hearth* project so far derives from an Early Medieval settlement at the village of Tuna beside Lake Mälaren in the parish of Alsike, Uppland, Sweden (Hjulström & Isaksson 2005), close to a site where a boat-grave cemetery has been investigated. The village

is located on a low hill, surrounded by level fields, and was situated during the Iron Age on the northern shore of a shallow bay penetrating deep into the landscape east of the site. The cemetery has been excavated on three occasions: in 1895–96 by H. Stolpe and 1928 and 1931 by T. J. Arne. There are at least 14 graves in the cemetery, of which 10–13 are boat burials, and 17 individuals have been identified, with men, women and children all represented. Most of the graves have been dated to the Viking Age, except for two which date from the first half of the 6th century AD. These early graves are probably not boat graves, but chamber graves. The aim of our recent excavations was to try and find a settlement contemporary with the boat graves. Ten trenches were investigated inside the present-day village and four of these yielded finds, layers and features contemporary with the cemetery. In one part finds from the late Viking Age (AD 750–1050) were recovered from the lowest layers and features, and in another part the earliest finds were from late Migration Period (AD 400–550). These ages have been corroborated by means of radiocarbon dates for plant macrofossils from a number of features in each part.

One example is a comparison of signals referring to food production (pollen, T02) and preparation (lipid residues in cooking pots, T03) (Isaksson et al. 2005). Chronological correlation with an increase in pollen of *Cannabaceae* (hemp) in a nearby wetland showed a good match between the traces of oil-rich vegetables on pottery from contexts in the later part of the settlement. These two observations implied a strong vegetable oil fraction in the dishes that had been prepared and intensified cultivation of hemp in the late Viking Age. The oil-rich seeds were regarded as residual products rather than primary products of cultivation (i.e. plant fibres). It is argued that the evident use of the seeds for food, which is by no means self-explanatory even though it represents an economically correct form of behaviour (a causal explanation), must be understood in a wider context through the cultural theme of the *competent housekeeper*, a theme that is found in Old Norse sagas and in contemporary runic inscriptions. This theme is connected in its turn with the culturally elaborating key scenario of *hospitality*; i.e. generosity with food was a means of increasing one's social esteem, which was invaluable in a society where social influence was based on personal relations (for a more definitive explanation, see Isaksson 2000).

But applying the model to its full, alternative explanations can also be presented. As cooking and eating is part of a shared consciousness, the increase of vegetable oils may reflect a change in the ideas surrounding

food upon increased contacts with the Christian ideology, i.e. the effect of a change in the overall system of meaning and shared consciousness, or else the difference may be spatial rather than chronological and may thus reflect the spatial organization of the site, or alternatively, the addition of oil-rich seeds to the food may be connected with the high status of foods rich in fat, i.e. gastronomy. If the material represents two different but at least partly contemporary households, and thus two separate meal companionships, the difference may be the result of a course of distortion. The possibility of different tastes and scents distinguishing between the two meal companionships, and thus being important for defining the identities of these social groups, has also been discussed as an explanation (Isaksson et al. 2005).

Another example of the application of the model is a comparison between analyses of lipid food residues on pottery from the settlement remains (T03–T05) and analyses of the bone chemistry of human skeletal remains from the adjacent and contemporary boat grave cemetery (C1) (Olsson & Isaksson 2008). The results show a discrepancy between the two food signals. Eight out of twelve individuals had a diet dominated by fish, giving a ratio of 0.67, and five out of 29 pots showed traces of possible fish lipid residues, resulting in a ratio of 0.17. One possible explanation is the difference in detectability between the two food signals, especially due to the difficulty of detecting lipid residues from lean lacustrine fish. This might indeed be the case, but there are also other possibilities. As it was not possible to excavate the whole site, the population from which the pottery sample was taken is far from representative of the total population. The difference may therefore be a result of a spatial organization of subsistence whereby fish were mostly prepared in an unexcavated part of the settlement, or of meal order and customs if most food was consumed at times when the individuals analysed were outside the settlement. Also, we would expect there to have been several meal companionships, and it is also clear that the individuals in the cemetery do not represent the whole population, but rather the top level in the social hierarchy.

As for the culinary arts, there are many other ways of preparing and eating fish as well as cooking it in a pot, e.g. raw, dried, pickled, cured, fermented, roasted, etc. If any or all of these techniques were preferred over cooking in a pot, this could explain the difference. Also, we know nothing of the life history or life span of the vessels, or of any possible connection between life span and use. The meat pots may well have

been used only occasionally, while the fish pots would have been used more regularly if the cooking of fish was limited to particular vessels, restricting the number of vessels recorded as containing fish. This brings us to gastronomy; in one of the settlement contexts we found remains of luxury objects connected with feasting, notably a shard of imported Frankish glass from a drinking-vessel. If this whole deposition layer represents residue from feasting activities, this may have influenced the results, given that meat was part of the gastronomy of this society.

This site is probably no more complicated than any other, but whatever the reason for it may be, it can be concluded that pottery use does not reflect the everyday diet, at least not at this site and certainly not in the sample analysed here.

## Conclusions

I hope I have been able to show the importance of including the consequences of cultural aspects of food and eating in the evaluation of various bodies of subsistence data derived from ancient material remains. I have also stressed the significance of contextual considerations both for the selection of sampling strategies and analytical techniques and for interpretations of the data. What it all boils down to is the importance of an integrated approach in order to begin to understand prehistoric food cultures, and of course the usefulness of the model presented here for confronting these issues.

*English language revision by Malcolm Hicks.*

## References

- Ashley, B., Hollows, J., Jones, S. & Taylor, B. 2004. *Food and Cultural Studies*. London.
- Barthes, R. 1967. *Elements of Semiology*. London.
- Beardsworth, A. & Keil, T. 1997. *Sociology on the menu: an invitation to the study of food and society*. London.
- Bringéus, N.-A. 2001. *Man, Food and Milieu. A Swedish Approach to Food Ethnology*. East Linton.
- Brück, J. 1999. Ritual and Rationality. *Journal of European Archaeology* vol. 2, pp. 313–344.
- Counihan, C. & Van Esterik, P. (eds.). 1997. *Food and Culture. A Reader*. New York, London.
- Copley, M. S., Berstan, R., Dudd, S. N., Aillaud, S., Mukherjee, A. J., Straker, V., Payne, S. & Evershed, R. P. 2005. Processing of milk products in pottery vessels through British prehistory. *Antiquity* 79, pp. 895–908.
- Craig, O. E., Chapman, J., Heron, C., Willis, L. H., Bartosiewicz, L., Taylor, G., Whittle, A. & Collins, M. 2005. Did the first farmers of central and eastern Europe produce dairy foods? *Antiquity* 79, pp. 882–894.
- Dalby, A. 1995. *Siren feasts. A history of food and gastronomy in Greece*. London.
- Dietler, M. 1996. Feasts and Commensal Politics in the Political Economy. Food, Power and Status in Prehistoric Europe. In P. Weissener & W. Schiefenhövel (eds.): *Food and the Status Quest. An Interdisciplinary Perspective*, pp. 87–125, Oxford.
- Dillman, F.-X. 1997. De rituella gästabuden i fornskandinavisk religion. In A. Hultgård (ed.): *Uppsälakulten och Adam av Bremen*, pp. 51–73. Nora.
- Douglas, M. 1979. *The World of Goods: Towards an Anthropology of Consumption*. London.
- Ehn, B. & Löfgren, O. 1989. *Kulturanalys. Ett etnologiskt perspektiv*. Stockholm.
- Eilert, H. 1986. "Träd stilla gå djupt". Vandringar i Japans inre landskap. Delsbo.
- Ekroth, G. 2008. Mat och status. Om fördelningen av kött mellan människor och gudar i antik grekisk offerritual. In B. Pettersson & P. Skoglund (eds.): *Arkeologi och identitet*. Nordic TAG VIII, Lund, 20-23 april 2005, pp. 189–206. Lund.
- Goldstein, D., Mennell, S., Merkle, K. & Parasecoli, F. 2005. *Culinary cultures of Europe: identity, diversity and dialogue*. Strasbourg.
- Hill, J. D. 1995. *Ritual and Rubbish in the Iron Age of Wessex. A study on the formation of a specific archaeological record*. BAR British Series 242. Oxford.
- Hjulström, B. & Isaksson, S. 2005. *Tidevarv i Tuna. Arkeologiska undersökningar i Tuna by, Alsike sn, Uppland*. Rapport från Arkeologiska forskningslaboratoriet 3. Stockholm University.
- Isaksson, S. 2000. *Food and Rank in Early Medieval Time*. Theses and Papers in Scientific Archaeology 3. The Archaeological Research Laboratory, Stockholm University.
- Isaksson, S., Olsson, M. & Hjulström, B. 2005. De smorde sina kräs. Spår av vegetabilisk olja i keramik från yngre järnålder. *Formvännen* 100, pp. 179–192.
- Lévi-Strauss, C. 1978. *The Origin of Table Manners*. Translated by J. Weightman & D. Weightman. London.
- Montanari, M. 1994. *The Culture of Food*. Oxford.
- Olsson, M. & Isaksson, S. 2008. Molecular and isotopic traces of cooking and consumption of fish at an Early Medieval manor site in eastern middle Sweden. *Journal of Archaeological Science* 35, pp. 773–780.
- Orton, C. 2000. *Sampling in Archaeology*. Cambridge manuals in archaeology. Cambridge.
- Papmehl-Dufay, L. 2006. *Shaping an identity. Pitted Ware pottery and potters in southeast Sweden*. Theses and Papers in Scientific Archaeology 7. Department of Archaeology and Classical Studies, Stockholm University.