2. Background to the transition to agriculture

2.1. Introduction.

In the Cordon Bleu world of French cookery the perfect béchamel sauce weaves ingredients into a self-supportive matrix. The hot butter provides a base to burst the wheat flour starches, which add absorptive bulk, and gelatinous potential. The milk colloid is miscible with the buttery fats, and smoothly dilutes the mass of the roux, providing an environment for the flour to take gelatinous effect. The milk's liquidity also suits the capture of volatile plant oils from the onion, cloves, bay and nutmeg supporting the retention of their flavour, and culminating in a gastronomic symphony of perfectly harmonised ingredients. In the same way, historical discourses can become mutually-reinforcing of certain agendas (Foucault, 1970), certain perspectives, and certain value-attitudes to materiality.

Such is the case when we look at interpretations of the transition to agriculture that occurred c.4100-3900 BC in southern Scandinavia; ideas form self-supporting networks, research can take self-fulfilling roles by emphasising certain artefact types, and our values that make sense of the past are the values we often find *in* the past. For Marek Zvelebil (1986) the history of Mesolithic research is spoken through a voice which intones with changing anthropological understandings of *hunter-gatherers*. If this is so for the Mesolithic, how can we characterise our understandings of the transition to the Neolithic? The answer must surely be through *food.* It is interesting that the search for 'origins' has not played a major role in Mesolithic agendas. Conversely, the Neolithic is a period that has been driven by 'origin' searches. Traditional interpretations of the adoption of domesticates in southern Scandinavia that derive from multiple lines of evidence orbit this singular process of domestication, and are epitomised in the notion of the Neolithic package (section 2.2.). Even though a simultaneous appearance of new artefacts types cannot now be supported by increasingly well-dated sequences, a majority of the explanations for why the transition to agro-pastoralism occurred still reinforce a linear conception of the process of domestication. Section 2.3 in this chapter outlines the four main interpretations of the transition to agriculture. All key southern

Scandinavian sites mentioned in this chapter are illustrated in figure 2.1. Opinions about how it happened, the speed, whether catastrophically abrupt or a gradual infiltration, and regional differences in the form that southern farming influences may have taken are addressed.

Figure 2. 1. A map of southern Scandinavia showing all the key sites mentioned in this chapter.

The primary purpose of this chapter, however, is to explore the way food *values* have been expressed in these interpretations and the way these values impact on, and shape explanations. The transition is our story of food; domestication arguably the origin of our specific ontological relationship to Nature, our multi-national food exchange institutions, our industrialised world. It is perhaps surprising therefore that the concept of Food is so little critiqued; what it *is*, what it's *for*, and how and why it was *valued* in the past. Due to the fact that our society does identify so much more readily with the Neolithic, there has been a tendency for many value-assumptions to be taken as intuitive facts, and these shall be commented on this in this chapter. It is perhaps no surprise that the discipline is slow to challenge the value-assumptions placed on food, since it is only in the last few decades that 'cuisine' and 'taste' debates have sprung up in philosophy (Korsmeyer, 1999), to tackle the way more qualitative food features can be serious motivators of change. Section 2.4 introduces the idea of Cuisine not in the literal sense of food combinations, but as the selective

mixing and acceptable manipulation of *food values* in culinary processing. Food, preceded by a capitalisation, may be singular in objective appearance, but this masks a potent biography that takes us through production, use, processing, display, storage as well as consumption. Such extended histories across a range of mundane to ritual social spheres, as well as a number of measurable latent qualities to the raw materials, lend Food this potential to convey and represent complex values. Cuisine is medicine, gift, poison, danger, pollution, celebration, purity. Cuisine is a potent expression and articulator of social change.

Food and its consumption have been assumed as too individual and personal to be a significant factor in change. It is difficult to divorce food from an idea that pragmatic and more mundane subsistence values are primary, in order to realise its broader potency in social remodelling. An emphasis on food *production* in interpretations stems from this concept of food as energy, work and industrial potential. There has been a two-fold countermeasure to this subsistence fixation. In the first case, the mundane sphere is substituted for the ritual sphere, which has stressed how the difficulty of acquiring foods can lend them prestigious positions in exchange networks. Parker Pearson (2003) identifies a consequent polarity because of this debate: traditional commentators of a paleoeconomic school emphasise food *production* as the driver of the transition, whereas recent advocates of socially driven change emphasise *consumption* as key. This latter is an important new direction, but it is argued that social contexts have been generated from what is still, essentially, paleodietary datasets, driven by paleodietary values of food. Realising the fuller expression of social reasons for the transition to agriculture requires generating datasets that give an opportunity for past values and choices to be voiced.

The second countermeasure to subsistence debates is a more general theoretical response to mechanical pragmatism in archaeology, and is driven by post-structuralist anthropology and sociology. The objective here is on meaning: what it is, how it is structured, how it engages past peoples with more-than-pragmatic appreciations of their material world. In section 2.5 approaches that prejudice Meaning are critically tackled. The concepts of meaning and value have been uncritically taken as substitutes for one another though, and this has had repercussions for the possibility of conceptualising change. It is argued that post-structuralist agendas informed by the philosophy of Derrida have had little impact on

explanations of change. We explore how appropriate it is to substitute the qualities that values possess with the qualities of meaning. The formal research aims and objectives are described (section 2.6), with some secondary targets for the way novel interpretations should *represent* processes.

2.2. The Agricultural Package.

Within the centuries around 5th-4th millennia BC the material culture of southern Scandinavia sees dramatic alteration, relative to the more static traditions maintained for a millennia before. At this general scale every sphere of life is impacted; technology is supplemented with pottery, polished stone axes frequent sites alongside their flaked ancestors, the ritual realm is swamped with new megalithic and non-megalithic monument types (figure 2.2, e & f). Imported artefacts increase in frequency (Price, 1996), like the Danubian shaft-hole axes (Nielsen, 1993), antler axes, and bone combs (figure 2.2, c & d). In Scandinavia, cattle, pig, sheep/goat and dog are introduced into faunal assemblages, whilst einkorn, emmer, naked and hulled barley find their way into floral assemblages (Andersen, 1993).

Figure 2. 2. In the period around the transition to agriculture some new artefact forms emerge: a) new pottery styles, b) polished flint axes (http://oltiden.natmus.dk), c) shaft-hole axes, d) antler axes, e) megalithic monuments, f) megalithic monuments.

These are the composites of the 'agricultural package', a parcel of tools for living a Neolithic way of life. The idea was popularly accepted by the archaeological community for many years because it worked at a general scale of time and space.

Looked at as a process erupting from south-east Asia and moving across Europe to the north-west, artefacts associated with a sedentary Neolithic lifestyle and with the rise of elites are generally found in association with domesticated plants and animals.

2.3. Explanations for the transition to agriculture.

2.3.1. 'Invasion' of the Nature-tamers.

The invasion hypothesis is directly linked to the Neolithic 'package' idea, and is both the oldest explanatory proposition and the most critiqued. Yet elemental nuggets of it occasionally resurface and get reworked, especially regarding the *scale* of movements and the *distances* travelled. Initially the movements of artefacts were equated squarely with the movements of people, or techno-economic *ideas* by extension. These gave way to later models that charted the movement of ideas or cultural influences. Recent work on ancientDNA (aDNA) (Haak *et al.* 2005, Burger *et al.* 2006, Malmström *et al.* 2010) has led to a renaissance of explanations about how domesticated food sources could have been introduced to northern Europe, on the back of geographical redistributions of people, though perhaps in smaller numbers.

The 'Wave of Advance Model' was famously proposed (Ammerman and Cavali-Sforza, 1971) to account for a pattern where early domesticates become ever more recent as we move in a more northern European direction from a Near Eastern epicentre (Figure 2.3). Two strands of movement were suggested. The first strand moved the transition west along the Adriatic Sea's Dalmatian coast and through the Mediterranean over the period of 5500-5000B.C., (Fagan, 1998; Zilhão, 2001) by supposed coastal means. The second movement was north-west through the Balkans where the early Neolithic Linearbandkeramik Culture were occupying the Middle Danube by c. 5500 B.C., reaching southern Holland in the west c. 4800 B.C. (Fagan, 1998) and the Polish Vistula in the east by about 5400 B.C. (Gronenborn, 2003; 79).

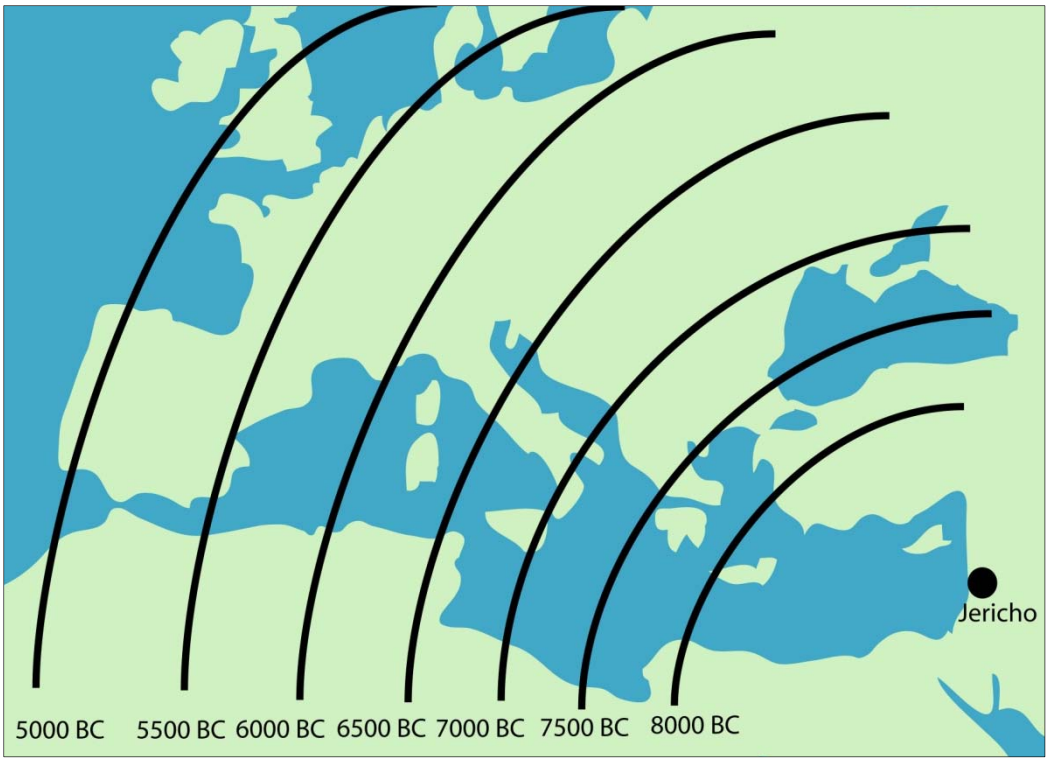

Figure 2. 3. A map adapted from Ammerman and Cavalli-Sforza (1971) illustrating the temporal thresholds envisaged for the Neolithic movement, in years BP.

The speed of the transition continues to be a subject of primary debate. At such a generalised level the changes taking place and their pace were greatly homogenised by the 'Wave of Advance Model'. Essentially one singular change was purported at this scale; the aggressive imposition of the package through a process of assertive population displacement, calculated to have occurred at 5km per year (Ammerman and Cavali-Sforza, 1984).

The tenability of the 'package' could not be sustained after intensive regional investigation however. Although most of the earliest evidence of domesticates can be placed around 3900 BC in Denmark and slightly earlier in northern Germany at 4100 BC, the evidence for concerted investment in domesticates does not exist until the beginning of the Early Neolithic 2 (ENII) around 3500 BC (Andersen, 1993). Before this evidence is restricted to a limited number of sites such as Muldbjerg I in the Åmose region of Zealand where there are a few domesticated animals plus pottery with impressed cereal grains. The site is pollen dated to just after the elm decline at 3900 BC, and is in association with the earliest Neolithic A Oxie style pottery (Zvelebil and Rowley-Conwy, 1984). The earliest evidence of domestic animals dates from between 4228-4080 BC and comes from (Hartz 1997/8).

Pollen profiles supporting this picture are limited, especially in Zealand where there are less than five cores to work with. However, immediately after the elm decline between 4000-3900 BC the pollen profiles in eastern Denmark and northern Jutland display the classic 'landnam' phase (fig 2.4). This is a pollen peak in birch, then

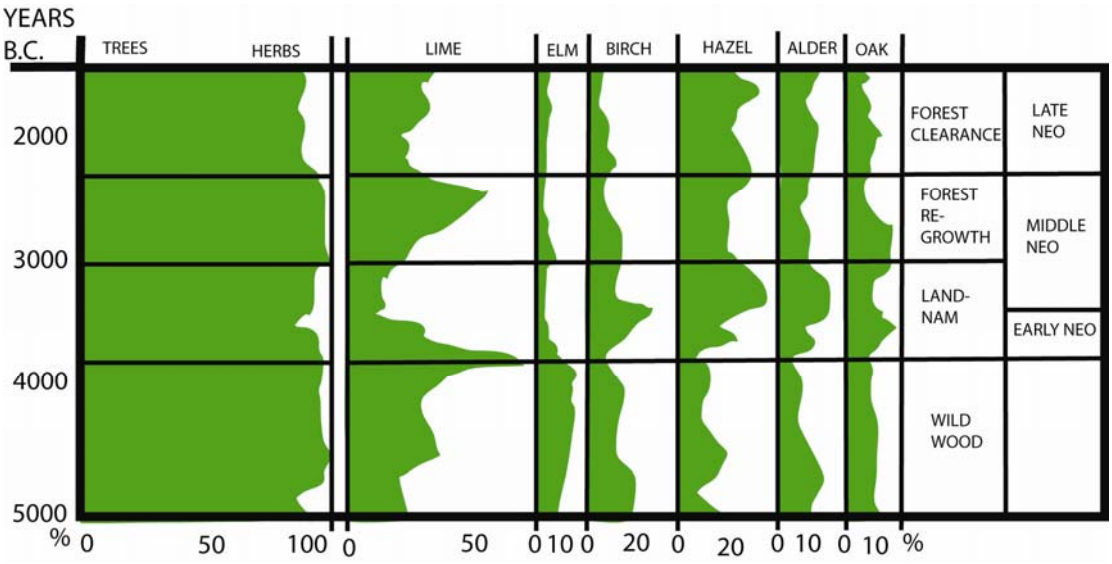

Figure 2. 4. A pollen profile from the area of Fuglsø on Djursland, showing the reduction in elm around the Early Neolithic, and the coincident increase in birch, hazel, alder and oak (adapted from Andersen 1993, 88).

hazel, in association with cereal pollen and cultivation induced weed profiles (Andersen, 1993). However this evidence is small-scale compared to the hunted and foraged assemblages at sites: Mulbjerg I has a predominantly non-domesticated food repertoire, for example. Domesticates make a slow introduction into the archaeological record then, from an already intensified resource basis of the Late Mesolithic characterised by large fish weirs and an extensive range of marine mammal and fish (Price, 1996).

Megalithic monuments also resist incorporation into the 'package'. Megalithic architecture is introduced at the beginning of EN II c.3500 BC, in the form of megalithic long barrows, dolmens and causewayed enclosures (Nielsen, 1993). Megalithic graves, a classic indicator of Neolithisation, do have a non-megalithic precursor that has only more recently been recognised. These timber-built graves are strongly distributed in western Denmark on Jutland (figure 2.5), but radiocarbon dates indicate a much earlier introduction around 3900 BC (Madsen, 1993). They exhibit sophisticated construction with a number of architectural themes ranging

from raised timber chambers such as Konens Høj, to single entrance rectangular funerary chambers as at Troelstrup, plank coffins, and grave-beds surrounded by stone frames (Madsen, 1993).

Figure 2. 5. The distribution of known timber-built graves from the Early Neolithic in Denmark (adapted from Madsen 1993, pg 96).

The claim that megalithic architecture hails the rise of elites, and was brought with colonising Neolithic groups as a mark of the stratified society, cannot be maintained in the face of these timber precursors. This is especially the case with the increasing evidence for Mesolithic mortuary commemoration activities. Most famously the sites of Vedbæk on Zealand (Brinch Petersen & MeikleJohn, 2003), Tagerup (Ahlström, 2003) and Skateholm in Sweden show a tradition of flat graves, but more recent salvage excavation at Bøkkebacken an extension of Vedbæk in northern Denmark (Larsson, 2004) suggest the practices are more common than once believed.

Where previously Ertebølle style pointed-base vessels had been thought a contiguous phenomenon to flat-based Funnel Beakers, concerted excavation of shell-middens led to the discovery that they were sequentially distinct from one another. It became apparent that pointed-based ceramics appear in middens c.4700 B.C. (Andersen, 1994) about 800 years before the first domesticates and flat-based pottery at c.3900 B.C. In northern German Schleswig-Holstein they make their first appearance

around 5100 B.C. (Hartz *et. al.* 2002), and are documented at Ringkloster in central Jutland c.4700 B.C. (Andersen, 1994).

The most accepted explanation for these pottery vessels and their premature appearance short of the Neolithic proper is that they are an indigenous adoption of progressive ideas and show the exertion of influence from central and southern Germany (Fischer, 2002). This view has been cemented in popular opinion by the 'Availability Model' (Zvelebil & Rowley-Conwy, 1984) which proposes that this 800 years was a window of contact and exchange, where indigenous adaptations to southern Linearbandkeramik (LBK) farmer materiality could be made. Wholesale adoption of domesticated resources or other aspects of the 'package' were not necessary or acceptable to an indigenous Mesolithic outlook, and so essentially a reciprocally permeable 'frontier zone' (Zvelebil & Rowley-Conwy, 1984) was maintained. This staggered adoption is the commonly held view of the domestication process.

This explanation again follows this unilinear outlook; the phenomenon of pottery styles is assumed to follow a singular process of progression which brings about the ultimate object of investigation, domestication. Ertebølle pottery is relegated to a position as merely forerunner to the better-understood Funnel Beaker pottery, marker of the adoption of domesticates. Features of the construction technique and aspects of shape have been used to suggest continuity. At both Åkonge and Spangkonge on Zealand there are reported hybrid vessels that combine Late Mesolithic and Early Neolithic features such as rounded bases (Fischer, 2002).

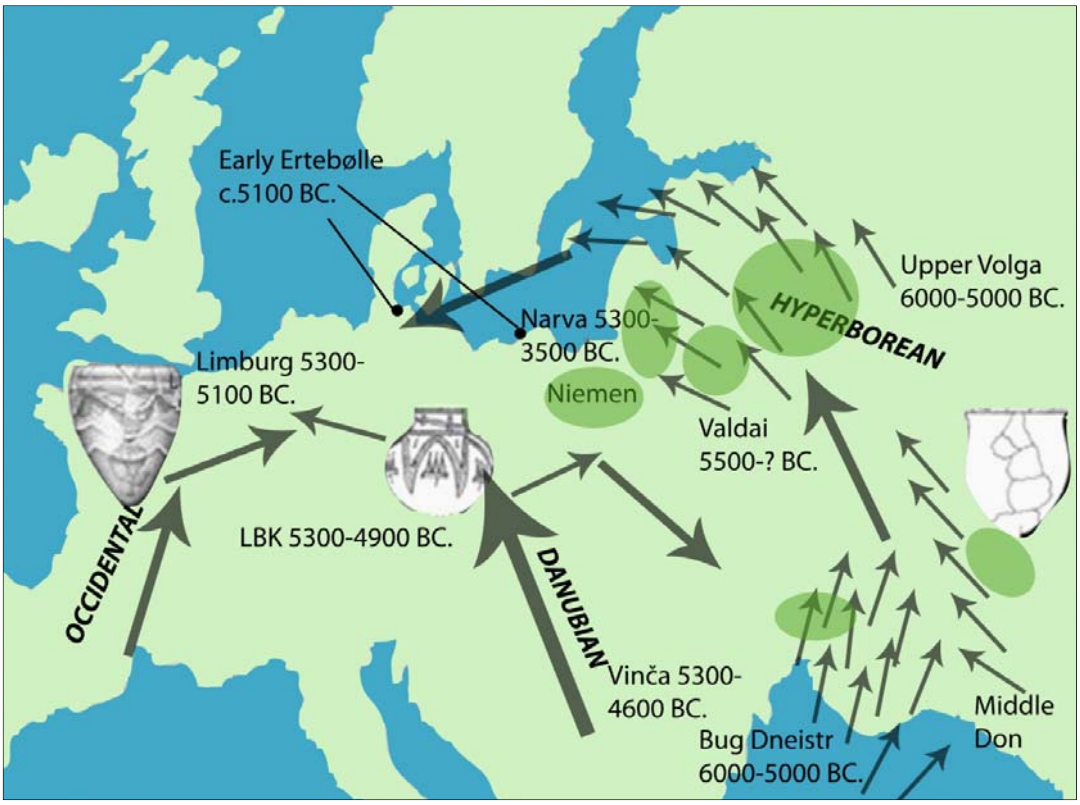

Figure 2. 6. The geographical distribution of Middle Atlantic pottery styles and the major strands envisaged as movement routes for domestication. Late Mesolithic Ertebølle pottery has been suggested as an innovation deriving from an eastern origin in Poland and Western Russia only recently (after Gronenborn 2003, pg 86).

But, the phenomenon of pointed-based vessels is somewhat of a conundrum, and recent evidence suggests that explaining Ertebølle vessels as indigenous adaptations of southern LBK ones may be a simplification of more complex processes. It has recently been asserted that Ertebølle pottery shows greater stylistic and technological affinity with traditions emanating from an *eastern* origin in Poland and western Russia (figure 2.6) (Timofeev, 1998), as opposed to a conventional southern Central European origin. Early phase vessels of the Elshan tradition which are distributed along the River Samara and the Lower Volga (8^{th}-7^{th} millennia B.C.) have straight or S-profiled walls and both pointed and flat bases (Gronenborn, 2003).

Evidence currently arriving from Russia favours at least a partly eastern origin/influence on the Ertebølle ceramic *form*. This idea also exposes some inconsistencies in traditional explanations of indigenous adaptation of LBK vessels by Ertebølle groups. If Ertebølle vessels are a *local* take on an immediate LBK farming neighbour's idea, why are remarkably *similar* traditions of pointed-bases represented across Europe and now the far eastern Baltic States? La Hoguette and

Limburg pottery (5800-5500 BC) from central Europe are considered indigenous contributions (Gronenborn, 2007), to which we can add Swifterbandt in the Dutch north-west as well as Starčevo-Körös and Szatmár (c. 6000 BC) in the Balkan East. A potentially new form called groupe de Melsele with everted rims and pointed-bases has recently been announced from Belgian Flanders too (Gronenborn, 1999).

Why specifically this form, and this technology? Their statuses as respective *local* adaptations are inconsistent with the similarity of their features at the broader scale. And yet a similarly conceived 'wave of acculturation' in advance of the Neolithic is equally untenable because there are gaps in the sequence. The transition to domestication and the Linearbandkeramik vessels occurred in central Europe quickly and decisively without a Late Mesolithic pointed-based forerunner. There is seemingly no pointed-based typological link between Bug Dneistr and the Upper Volga, *and* they are thought to be coincident by archaeological standards. This is an area that deserves more research, but as it is currently understood the Ertebølle pottery tradition is neither adequately explained as a local adoption of southern pottery ideas *or* the product of colonisation/invasion.

Figure 2. 7. Ranges for securely dated early TRB pottery from southern Scandinavia suggest a rapid adoption. Data compiled from Fischer (2002) and Midgley (1992).

On the other hand Funnel Beaker pottery could still argue for a rapid shift to a Neolithic lifeway because the earliest vessels in classic funnel beaker styles occur

synchronously throughout northern Germany and Denmark, at least by radiocarbon standards (figure 2.7). Funnel Beaker vessels show typological affinities with southern examples from the Michelsberg culture (Larsson, 2007), especially in their flat-bases. However, this works on the assumption that funnel beaker vessels are directly employed in the activity of domestication, and the specialisation of food production.

At this point some of the value-notions connected to food that characterise an invasion hypothesis can be made explicit, specifically as they relate to this idea of food specialisation by peoples with more 'advanced' outlooks and capabilities. What values is specialisation predicated on? Both the desires to organise or *manage* food to a greater extent and to *intensify* this management in the direction of a more limited number of products are key instrumental values that can bring about specialisation. But the implied *intrinsic* value that an investment in specialisation seeks to enact is obscure.

Colonisation or invasion advocates an all-out investment in specialisation, to the point where, as the 'package' would have us believe, an absolute lifestyle alteration occurs, and ancestral territories are abandoned. But there is no sense of what the *intrinsic* worth of these domesticated products is in relation to wild forerunners or counterparts, that is, what value(s) they drove past peoples to live up to, aside from an abstract impression that domestication is its own intrinsic value. In the invasion hypothesis as it is argued through specialisation, value is a function of an object's property. This is a formalist economic understanding of value (Graeber, 2001), with echoes of the ideals of neoclassical economics where the only true intrinsic value is utility.

We are left with a residual functionalist sense of domesticates; that they serve a singular purpose, the collective will to abstract 'betterment'. But the weak point of this approach to value is that the *property* of domesticated species needs to be unique enough to sustain the purported extent of the item's value capacity to bring about change. This is something that has been weakly argued.

The main reason for this is either that wild counterparts of domesticates also *possess* the valuable quality, or that the valuable quality of wild forerunners is not established. In the case of fauna it is usually the former, and in the case of flora it is

usually the latter. So it is difficult to argue that singular properties of domestic items make their value unique enough to bring about such drastic cultural changes, in the face of wild alternatives, and in the absence of intrinsic valuing.

Formalist arguments seek to make explicit the laws that guide economic activity, or in other words the maximisation of finite resources (Graeber, 2001). It is these laws that have limited the concept of value to the economic cultural dimension; value exists in a one-dimensional plane. Partly this is because of the singularity of the value equals property relationship, but concomitantly it is because the explanatory potential of this conception is self-fulfilling. Value has to conform to a language that can describe mechanistically, and realms where value could originate, but are not as easily conformist to mechanics cannot contribute. There is no room for the *belief* of value, in a more economically 'irrational' sense.

Ancient DNA (aDNA) studies in conjunction with strontium isotopic analyses have brought a revival of ideas about movements of people as the mechanism for the adoption of agro-pastoralism. A comparison of modern European mitochondrial DNA (mtDNA) to Neolithic mtDNA from cemeteries in Germany, Austria and Hungary reveals that a rare N1a haplotype- which was formerly widespread during the Neolithic- has a 150-times lower frequency in modern Europeans (Haak *et al.* 2005). The mtDNA is inherited along the female lineage so this points to an important *indigenous* Mesolithic or Palaeolithic female contribution to the modern gene pool (Burger *et al*. 2006). It is conceivable that this pattern hints at inter-marriage exchanges (Bentley *et al.* 2003; Bentley, 2007), or a social strategy of exogamy (Bickle and Hofmann, 2007).

Related work on mtDNA argues that the Neolithic genetic contribution to modern Europeans may be only around 20% (Richards *et. al.* 2000). Again, this is based on the female genetic legacy, and when Y-chromosome haplotypes or nuclear DNA (nDNA) introduce the male genetic bequest, a picture of much more Neolithic genetic input into the modern is presented. Broad clinal patterns, or gradients in genetic divergence were recognised, and when mutation models were applied to estimate population separations based on mutation rates it seemed that a Near Eastern origin area could be posited, and there was no evidence for population splits

older than 10,000 years (Chikhi *et. al.* 2002). So, from this methodological perspective the demic diffusion model of Neolithisation is supported.

Needless to say these different methodological approaches create a complicated picture of people movements that are not necessarily compatible with each other. The reality of the patterns is difficult to assess because of the small sample sizes that are collected from wide geographical areas. In the case of mtDNA studies tracing the timings of a specific haplotype is difficult to do, leading some authors to suggest that mitochondrial lineages probably result from later than the Palaeolithic. Where aDNA is concerned the timings may be estimated but the stepwise mutation models that are used (Chikhi *et. al.* 2002) must simplify and essentially predict the processes that lead to genetic variation, and the influence they may have on the rates of divergence.

Strontium and oxygen isotope analysis of human skeletons can evidence translocations over geological zones and has allowed for a more small spatio-temporal scale of analysis. In conjunction with the DNA evidence it can produce more potential detail. Most relevantly for the Baltic is the studies done on cemetery collections from the Rhine and Neckar Valleys in Germany which are proposed as 'frontier' zones between the Linearbandkeramik and indigenous Mesolithic communities from c.5500 BC (Bentley *et. al.* 2002; Bentley *et. al.* 2008; Price *et. al.* 2001). At the cemetery of Flomborn both males and females were migrants totalling 7 out of 11 individuals, whereas at Schwetzingen all of the 7 migrants were female out of a total of 21 (Price *et. al.* 2001). This accords with mtDNA evidence; indigenous female residential change arises again as an explanation of the isotope data. Although these are techniques that can generate fairly detailed analyses of movements of individuals and small groups, the situation is a numbers game; and the sample numbers are inevitably small. By implication, there seems to have been little trespass into the relationship between these *people* movements and the transference or adoption of agriculture in the wider context. There persists therefore this idea of a one-to-one relationship; as people move, so their inanimate artefacts hitchhike along by the same singular process.

2.3.2. Population Pressure: A Game of Sardines.

Demographic stress can be seen as a logical consequence of population movements; from stress generating population disequilibria originating in external sources, to an

emphasis on internal triggers. Contributions under this sub-heading have been slight and evidential observations somewhat circumstantial. For instance, the supposed increase in the quantity and size of coastal settlement finds (Andersen, 1995) as we move into the Neolithic, have not been followed up and explored (Fischer, 2002). Increasing quantity of artefact does not necessarily equate with a greater number of users.

One exception is an investigation of the rare instances of dwellings, and the way these settlements change as a precursor to the transition (Grøn, 1998). The Mesolithic displays a bipolar size distribution in the floor-space area which seems to become less marked as we cross the transition. In the Early Neolithic there is a much wider variety of floor space sizes, and an overall increase in areas with a couple of examples at 115m².

It is unfortunate that there are few regimentally transitional period examples documented. Of those actually in the data most seem quite small, c.20m² but this discrepancy could mislead us into observing a very marked difference between late Mesolithic and Early Neolithic populations. It is also inappropriate to equate floor size with population size in a one-to-one relationship, discounting the importance of the role of the dwelling in the form it takes. Explication of these variables may bring to light many more processes at play.

Ceramics make an appearance in arguments for population increase and as a cause of domestication acceptance. Testart (1982) sees ceramics as a necessary technological precursor. Storage of a food surplus, it is argued, is only possible with them. This storage is necessary to support a growing community leading necessarily to an elite strata, and greater social complexity. It is interesting however, that those foods posited as of most *importance* for dietary value such as meats with their high fat and protein content are best stored by non-ceramic means. Koch (1998) reports that Baltic vessels have very porous fabrics and their storage capabilities are limited. They are better for cooking instead.

This exposes some critically weak attitudes to ceramics too. Pottery is merely a technology of subsistence, a facilitator of diet. The mere presence of pottery technology is taken as an indication that a certain level of social complexity is achieved, or shortly to follow, i.e. storage of a surplus enables greater social

differentiation. There is no sense of how pottery manufacture and use breaks down into variations in *techniques*, or chosen ways of doing against a backdrop of discarded options, which are social phenomena (Van der Leeuw, 2002). Nor is there an adequate conceptualisation for the way the values of ceramics that derive from the techniques of their construction and use, relate to the values of foods, are mutually constructive. In other words, how ceramics help *make* a certain concept of food or cuisine, the way they shape, constrain and facilitate new ways of preparing, processing and serving.

So there is not much evidence for any sort of catastrophic population increase. Often this explanation is linked to arguments that favour economic intensification in the face of resource crises as a transitional precursor. A broad spectrum of resources are considered to have been utilised in the late Mesolithic (Price, 1996), and this is taken as a response to population pressure or subsistence stress. In this perspective ceramics facilitate the exploitation of less likely edible candidates because they allow the processing of toxins (Craig *et al.* 2007).

Expanding the culinary repertoire is almost exclusively seen as a high-risk strategy, and plays on assumptions that hunter-gatherer communities were somehow at the mercy of a fickle Nature. Fewer people view it as a positive phenomenon, perhaps a deliberate investment in culinary creativity. These sought-after woodland delicacies are framed as starvation foods; their true values to past peoples as undernourished by us as their calorific status portrays them. The underlying reason is that domestication, in hindsight, has taken on a sense of inevitability; the temporal road leads to it alone.

In truth though, there is nothing inevitable about the adoption of farming (Zvelebil, 1994). Agriculture is equally a high-risk activity on these terms, especially in the early stages of its adoption. In the case of plants only two genera of Poaceae are being managed, barley and wheat. Relatively speaking these two inhabit a narrow biological range for coping with environmental fluctuations and disease. With a *broad* subsistence base there is less reliance on one biotope should it be compromised, and a much more varied selection of consumables to choose from to satisfy taste. Although some of the earliest types of Funnel Beaker pottery have grain impressions in their fabric (Koch, 1998), actual carbonised cereal grains are few in

early contexts. The earliest recording is from Mossby, Denmark with a radiocarbon date of c.3700 BC (4925+/- 115) (Fischer, 2002). Whether this lack of findings is a feature of poor preservation or is representative of a much slower adoption of domesticated plant foods than animal foods is not adequately established.

2.3.3. Resource Availability: Cherry-Picking Species.

Justifying the stress on resources as a trigger of the transition depends on proving the inefficiency of wild foods. Whilst certain species such as the oyster (*Ostrea edulis*) have received investigation (Rowley-Conwy, 2002) to document changes in their consumption, it is difficult to judge the degree to which resource changes pushed the adoption of agro-pastoralism. This is especially true because little systematic investigation of the importance of wild *plant* foods has been possible (Zvelebil, 1994). It is an inevitable problem of preservation, but it is also important that the discipline strives to find methodologies that maximise what can be gleaned from remains.

As a result the discovery of plant remains is often reported as almost a novelty. Species are listed, and the remarkably wide range of choice possibilities noted, but the *importance* and *implications* of wild plant use has not been established. Repercussions of this research deficit could be quite profound if we consider some estimates that plants may have contributed up to 80% of a hunter-gatherer diet in northern Europe (Zvelebil, 1994, 58).

The ranking of resources according to calorific value has had a huge impact on ideas of food; namely, what food actually *is*, based on the values we ascribe to it. To rank into strata suppresses the notion of combining species to generate sufficient calories. In a purely *dietary* sense foods are better conceived as embedded within a network of choices, with calories being only one of a number of analytically recognised properties, amongst medicinal values, vitamins, minerals and anti-oxidants to name a small few.

A decrease in the size of oyster (*Ostrea edulis)* shells throughout the course of the Mesolithic, and their subsequent replacement in shell middens with more cockles and mussels have been proposed as evidence of a threshold point beyond which it was necessary to embrace domesticates. The ranked value of oyster is only around 1000-2000 Kcal/Hour compared to a speculated 14,000 Kcal/Hour for land

mammals (Rowley Conwy, 2002, 274). Whilst being a calorific pauper, it has been argued that oysters served a 'gap-filling' role in the seasonal cycle (*ibid.*).

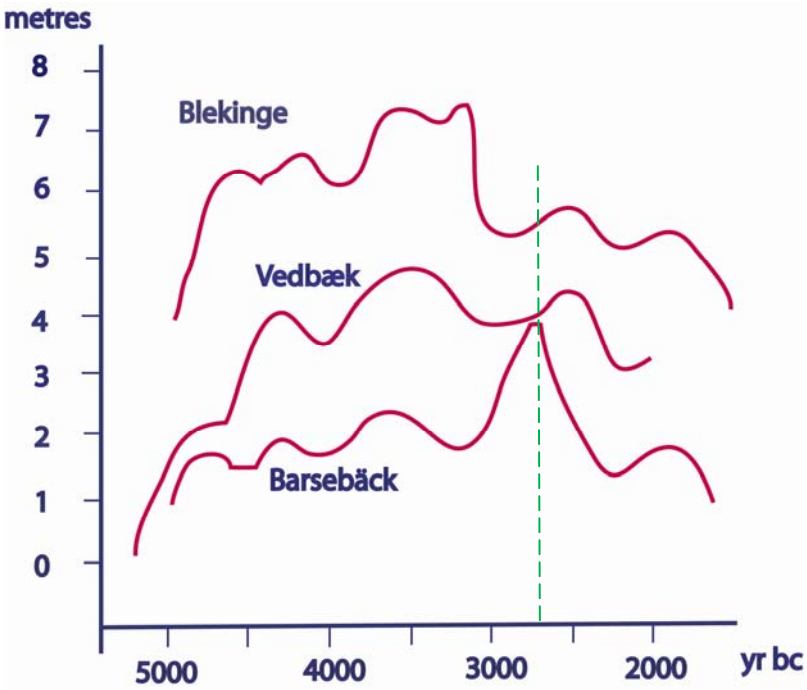

Figure 2. 8. The graph shows the complicated regressions and transgressions recorded as sea level curves from three sites. The green dashed line points to a coincident regression around 3100 uncalibrated bc (after Rowley-Conwy 1984, 315).

This seasonal reliance on shellfish may have allowed sedentism at the coastal middens. The nudge over the threshold came as a result of the Littorina regression, one of the sporadic drops in sea level which led to a restriction of salt water in the Baltic (figure 2.8). The sub-optimal brackish conditions meant a decrease in oyster growth. The dashed line on the graph points to a synchronous dip in sea level. This regression is coincident with discontinued Ertebølle occupation material at middens.

There is clear environmental evidence for regressions and transgressions, and there is also widespread documentation of the decrease in oyster size from Havnø (Andersen *pers. comm.*), Bjørnsholm (Andersen, 1991), and Ertebølle (Strand Petersen, 1986). What is at stake in Rowley-Conwy's argument is the intensity of reliance on oysters as a seasonal staple, alteration to which incited a catastrophic deficit in the subsistence base. There are undertones of a Marxist theory of value here, where the quantity of labour is the quality of value. At the point where the mode of production gets over-stressed change occurs catastrophically as a re-evaluation of the value-system, since labour cannot sustain production (Graeber, 2001).

It is this seasonal *intensity* of oyster use at these middens that is convincingly argued against by Milner (2002). In studying seasonally incremental growth layers in shells she found that whilst spring exploitation was quite highly represented, oysters were not the exclusive fare of the spring. Representation to equitable levels in other seasons suggests that oysters were not a singular staple but were part of a more complicated network of culinary choices. The catastrophic element of the oyster availability model is certainly dampened rather than supported. Whilst Rowley-Conwy's (2002) model inhibits ideas of the importance of food *combinations* because singular seasonal staples are important in his perspective, Milner's (2002) research actually points *to* the dilution of these staples and the mixing and combining of oysters with chosen foods from a networked array of possibilities.

From Rowley-Conwy's point of view the value of foods is understood hierarchically. In itself the hierarchical quality of value is very valid, and is something that has become under-emphasised as critiques of his perspective have developed along more post-structuralist lines. Having said this, to be effectively parry claims of functionalism hierarchy must entail a greater critical awareness of other features of value.

The ranking of resources is achieved according to a uniform value property: calories. The assumption is that food is a class of objects, and that class is bounded by a singular property. Attention has already been pointed to the multiple and assorted potentialities that may make up an understanding of food, each a value, and each lending a degree of incommensurability for comparison with other food objects within the identified food class. If one food is valued because it has a medicinal quality as well as being high energy, this makes it less commensurable with another food that might be high in minerals but contain toxins that require processing. The two operate in slightly different processes, and it is towards these processes that we need to look to understand the generation of value.

This is another way of saying that a singular concept of value given as property plays down the evaluation process in society. Why are certain materialities lent a power to incite change in certain directions, more than other materialities? Acknowledging the impact the concept of scale has on an appreciation of these evaluation processes is essential. If an object can be said to have multiple potentialities which are drawn

upon in the manifestation of value, evaluation is about the social selection of certain of those values to identify with the object. At a larger scale this happens when properties find synergy or conflict with activities. Values can only be instrumental when they are directed towards a possible outcome. As a result, different values of an object can manifest or be emphasised differently when engaged in different wider processes.

In addition to the evaluation process being a weakness of the resource ranking model, we must again query what *intrinsic* values the instrumental calorific values are projecting towards? From Rowley-Conwy's perspective the implied intrinsic point of consuming more highly calorific foods preferentially seems to be a sort of animalistic self-preservation, or at best a labour-driven quest for an abstract progressive ideal. The former somewhat disempowers past peoples' social creativity, and the latter harkens of our own nineteenth century progressive ideals in the technological pursuit of the cultural pleasure ground.

One of the most quoted, and yet controversial sources of evidence for a shift in diet come from isotope studies done on human bone collagen. Tauber's (1981) study revealed a rapid and dramatic shift from marine to terrestrial diet using carbon isotopes ($\delta^{13}C$) and has become a benchmark, featuring in most explanations of the transition. Based on the associated radiocarbon dates made on Tauber's samples it was suggested that the apparent dietary shift was very rapid (Tauber, 1981). From the abandonment of marine foods in favour of terrestrial it was inferred that they were replaced "most likely [by] the new domesticates that appear at this time" (Richards and Hedges, 1999; 802).

Tauber's radiocarbon dates were not corrected for the reservoir effect, a phenomenon that can cause a 200-400 radiocarbon year inaccuracy. Radiocarbon dating on

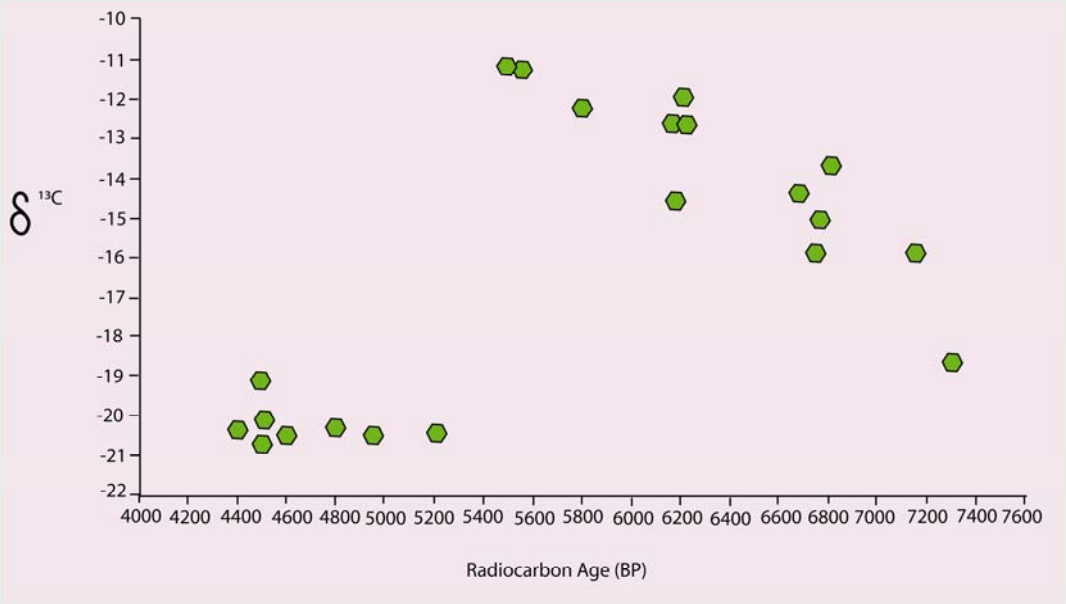

Figure 2. 9. Carbon isotopes indicate a marine-terrestrial distinction between samples of bone from Mesolithic and Neolithic contexts (after Richards *et al.* 2003a, 292).

sources that have come from a large body of water are affected, because normal calibration works to atmospheric ^{13}C and carbon is accumulated in watery masses as dissolved CO_2, carbonates and (bi)carbonates (Taylor, 2004). So, if the $\delta^{13}C$ values of the Ertebølle humans reflect a marine diet and the carbon *is* affected by marine resevoir, the late Ertebølle people may be up to 400 years too old; they may be early Neolithic (Richards *et. al.* 2003a).

Figure 2. 10. The Neolithic dolmen of Aldersro in the Åmosen, Zealand.

Reinvestigation with a larger sample number, reservoir correction of dates, and the inclusion of nitrogen isotopes (δ^{15N}) values that contribute the dominant trophic level of the diet revealed a similar story (figure 2.9) (Richards *et. al.* 2003a; Richards *et. al.* 2003b). The marine –terrestrial distinction is still maintained. The only difference is that the dates for the dietary change are pushed further back in time (Richards *et. al.* 2003a). It is a compelling pattern, and superficially quite conclusive. But far from drawing a line under discussions about the rapidity and character of changes, a

closer look reveals some unresolved issues and potential biases that make this evidentiary basis controversial.

As with any study that is attempting to represent a population the relative lack of skeletons is an obvious problem. Conservative estimates propose the sample number represents 0.000007% of the total population (Milner *et. al.* 2004). Even worse is the lack of skeletal material immediately around the transition as is visible from the graph in fig 2.9. It is a 'numbers game', and part of the reason for repeating Tauber's (1981) investigation was to include more samples. But whether the extra samples contributed fairly to the debate is contentious. From Late Mesolithic quarters the sampled locations of Tybrind Vig and Vedbæk are both coastal. Neolithic numbers are made up of individuals from the Store Åmose and megalithic tomb of Aldersro (fig 2.10), notably inland. Certainly there seems a predisposition for the *enhancement* of the original findings.

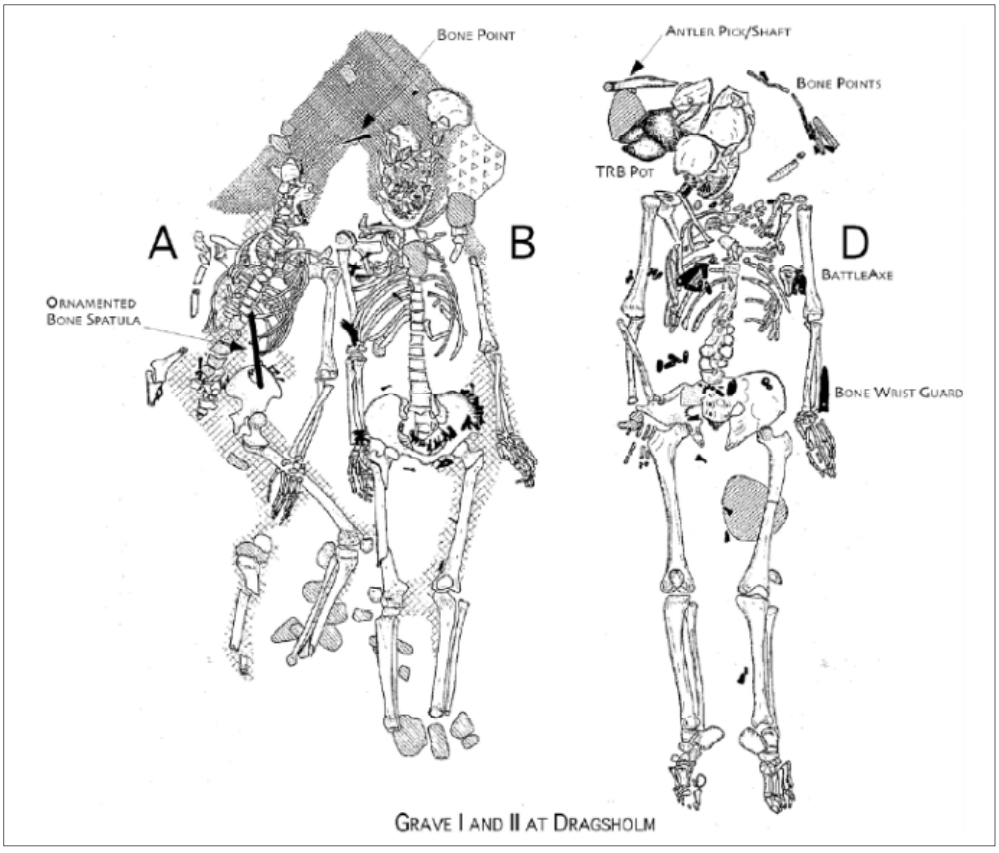

Figure 2. 11. The neighbouring graves at the site of Dragsholm, Zealand (Price et al. 2007, 194).

A small sample number also leads to the simplification of any processes being sought. Three of the samples are from neighbouring graves at Dragsholm (fig 2.11); two females (A & B), one male. The male (fig 2.11 D) is interred with TRB grave goods such as the vessel and battleaxe, and has a terrestrial isotopic signature. One of the females has a marine signature, and the dates have been interpreted to place her on the Late Mesolithic side of the transition (Richards *et al.* 2003a). This would support the sharp shift idea. However, when presented as a date *range* the same radiocarbon evidence suggests possible contemporaneity (Milner *et al.* 2004), potentially a man and his wives (Fischer 2002). This interesting reinterpretation suggests a more complicated picture of intra-community dietary variation (Milner *et. al.* 2004).

These problems of dating are only compounded by the small sample size. The likelihood of acquiring a significantly larger dataset is slim for the present. So the agenda to resolve this controversy *must* now focus on working with materials that are more numerous, but just as direct descriptors of past consumption habits. Other methodologies must be sought to resolve the dietary shift controversy, and we shall be discussing the likely candidates. What is more, if the pattern in the isotope data *is* real, and dietary shifts *do* occur abruptly, bone collagen only documents to *paleodietary* resolution; genera and species specificity is not possible. At the proposed rapidity, the bone isotopic technique is at the limits of its ability to document the actual mechanisms of the change- it cannot contribute to understanding process.

2.3.4. Social Change.

Theoretical agendas focused beyond the limits of the Baltic region have nudged explanations to consider more social reasons why the transition occurred. The knock-on effect of a marine-terrestrial shift has been the suggestion that the sea's resources became taboo (Thomas, 2003; Schulting, 1998). But it is inappropriate at this point to propose such high resolution social habits of consumption based on datasets designed to paleo*dietary* temporal standards; they are incommensurable. Again, it is important to reiterate that the detail of datasets must be greater if we want to represent social processes. By implication new methodologies must be looked at and theoretically-informed strategies for selecting samples that engage with the process*es* under study.

Zvelebil and Rowley-Conwy's (1984) 'Availability Model' does much to ameliorate the abruptness of the isotopic shift idea (Richards *et. al.* 2003a) and the oyster decline hypothesis (Rowley-Conwy, 1984). The duration of the availability phase has been taken as a function of the recognition of contact artefacts; those pieces that formally, petrologically, or mineralogically evidence a relationship between the Baltic and other regions. These artefacts are taken to evidence the exchange of desirable prestige objects for the attainment of power through what is normally termed 'display' (Zvelebil, 2006).

However, it is almost always unclear what elements of the artefacts make them suitable for display purposes. The typological focus on recognition through *form* seems to have led to an interpretive confusion over the nature of the role, or to use an unfashionable word, 'function', of the artefacts. Form *becomes* role in this view, and this is an over-simplification of the way value is generated, and artefacts become enrolled as motivators in change.

The synthesis and interpretation of shoe-last axes illustrates this point. They are the most abundant type of artefact that was imported, from speculative source areas in the Zobten mountain range of Silesian Poland, Slovakia, Bulgaria and, more recently Bavaria (Klassen, 2002). Of the 180 documented examples all are of green to olive-brown tinted amphibolite (Fischer, 2002). Displaying a consistently asymmetrical outline when viewed vertically down the surface on which the shaft has been drilled they are distinct from the more symmetrical shaft-hole axes of the south-eastern European Danube origin (Fischer, 1982).

It is these features of shape and colour, but most importantly their non-local sourcing that has resulted in a high-prestige ascription to shoe-last axes. Yet the clear evidence of use-damage in the form of edge wear, and almost exclusive discovery of broken examples (Fischer, 2002) would imply that the value of these artefacts is generated from more diverse and complex means than ethereally inhabits their form.

'Prestige' is a problematic concept in value terms. In its archaeological usage it possesses absolutist qualities; it either *is* ascribed, or it isn't. What is being ascribed might be considered as much a description of a value *state*, or hierarchical placement, as a value in itself. Although hierarchical, the strata defined are binary

and unrepresentative of the multiplicities of value structures. Farming, as part of an inflationary socio-economic process (Fischer, 2002) exemplifies this.

In the model social prestige could be gained by those with opportunity to obtain and possess things like the Danubian axes, or adorn themselves with bone combs. But initially, the benefits of consuming culinary delicacies is not balanced by the costs of acquiring or producing them, so they play little role. It is only when the 'prestige market' is effectively saturated with certain goods after a period of gradual net movement into the Baltic, that the high status goods start to become more utilitarian (Bradley, 1984). At certain points new prestige items must be found to sate the socially ambitious, and so the status economy takes on a momentum. This is especially true when farming products get drawn into the prestige realms because their durability is short because they are consumed rapaciously at feasting events, and the saturation effect is allayed.

The succession of 'prestige' artefact types illustrates how value is considered to transfer at the larger social scale. Two artefact types do not simultaneously possess prestige. The utility theory of value which explains smaller scale evaluations of objects is portrayed as the antithesis of prestige, acquired through exchange. As a result of this, the only practice involved in the (re)generation of value is exchange. And again, there exists a one-to-one relationship between value and its generator, only this time rather than being a *property* of the object, value is a function of its social structure.

In the exchange theory value is relative rather than fixed in commodity, and it is negotiated directly out of the exchange relation (Befu, 1977). For many social exchange theorists it is only at certain social nodes, or points of exchange that negotiated value can be momentarily fixed. For a lineage of Maussian scholars however, the idea of 'the gift' (Mauss, 1990) as inherent in every exchange interaction has led to the proposition that *every* social encounter involves a relinquishment of power and the establishment of obligation, regardless of prescribed time or location (Mauss, 1990).

Figure 2. 12. Baltic amber and green olnet slate is exchanged easterly in the Mesolithic (Zvelebil 2006, 13).

In the above example, social exchange is predicated on the rational choice model borrowed from formalist economics. The proposed linear succession of artefacts that adopt their 'prestigious' label exemplify a type of exchange where artefacts are deployed by farmers with perfect efficiency- and according to perfect prediction of the prestige market forces- to satisfy the cost-benefit calculations being made by hunter-gatherers.

Synthesising attempts have been made of prestige objects, and at the very least these explorations of source areas outline the staggeringly diverse areas of influence, and the huge distance of up to 1500km being traversed (Zvelebil, 2006). Green Olnets slate and flint from Karelia are distributed across Finland, northwest Russia and the eastern Baltic (*ibid.*). Amber from the Baltic coasts makes it across northwest Russia into Finland (fig 2.12) (Rimantiené, 1992). Closer to home in southern Scandinavia rare greenstone axes have a predominantly central European origin (Klassen, 2002). Of the 21 known examples only 3 have a non-Danubian source centre, and these are

from specific jadeite and eclogite loci in the Italian Alps (*ibid.*) near the French border of the Hautes-Alpes region.

Likewise copper axes can be pin-pointed to a raw material source, and occur occasionally in Late Ertebølle associations. Two flat-axe examples from Ullerupmark in southern Jutland and Bülow in Mecklenburg-Vorpommern have the same composition which is mineralogically unique to Serbia (Klassen, 2002). Nine other examples from across southern Denmark and northern Germany are made from Slovakian material (Klassen, 2002). On a typological basis T-shaped antler axes have a European-wide distribution (Andersen, 2002), but occur only in the western and southern Ertebølle areas (Fig 2.13, top). Their spread is matched by bone rings and bone combs (fig 2.13, bottom) (Vang Petersen, 1984, 15) that are tentatively sourced to the south.

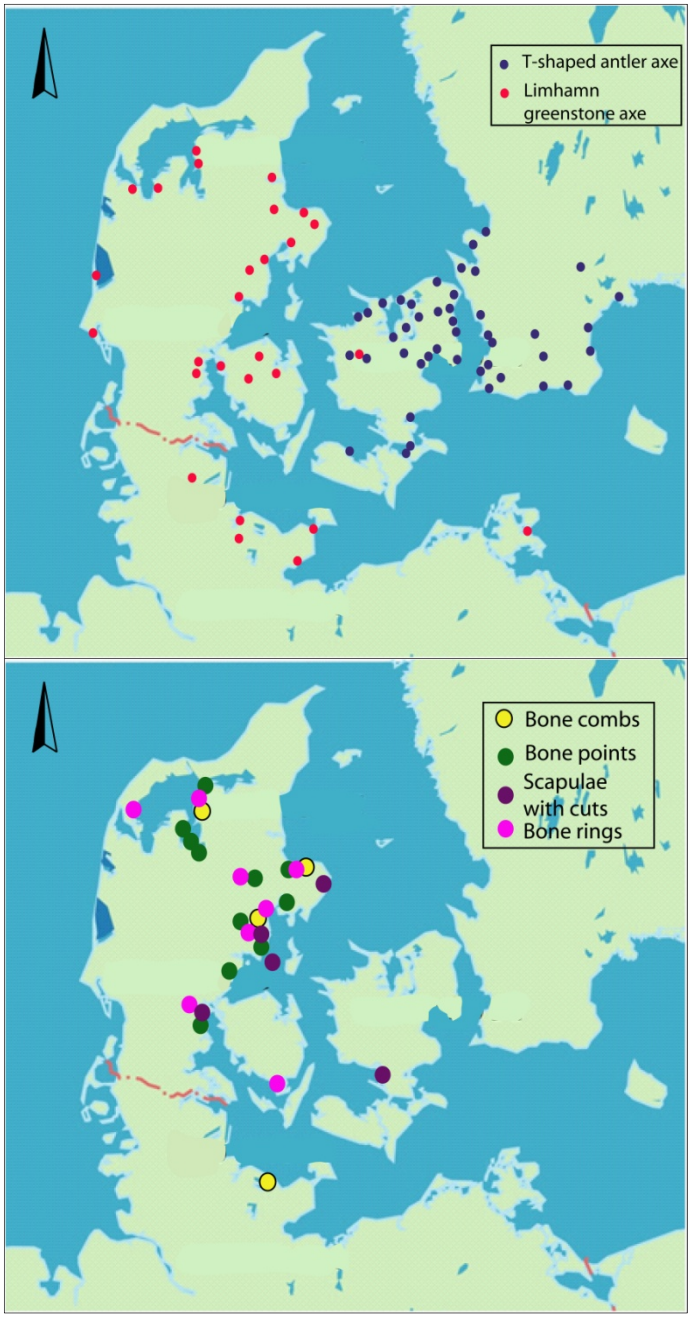

Figure 2. 13. Top, Limnham greenstone axes have a westerly distribution compared to an easterly concentration of antler axes in eastern Zealand and south-western Sweden. Bottom, many sculpted bone artefacts have a westerly distribution.

With the exception of the inflationary model of social change, an emphasis on external sources of prestige has meant food has been divorced from social considerations. We can see

this in the discreteness of status artefact syntheses. There has been an implicit assumption that consumables constitute a mundane sphere of value, in accordance with the traditional notion we've heard that food can only be implicated in wider changes if there is an alteration in the *intensity* of its exploitation. The prestige economy assumes a completely separate economic sphere, running parallel with but without relation to, the subsistence economy. If consumables depend on concentrated exploitation to make them effective agents of change, the opposite can be said of prestige items; they rely for their power on controlled absence.

As we see-saw between the two extremes a statement is being made about the abilities of our methodologies to cope with conjugations of value *content.* Research in the Baltic stone ages has implicitly recognised the presence or absence of value in processes, but is demonstrably limited in approaches that can comment on the *relative importance* aspect to values. If change is brought about by agents and collectives based on their desire to achieve certain outcomes (Giddens, 1987), value can be conceived as the materially manifest *encounter* with these politics; value is politically weighted meaning. Hence it is dynamic and in a regenerative relationship *with* materiality. But the important point to remember is that the changes brought about by past peoples' directed actions *cannot* be understood without understanding the forms and contents of values, the way they dispose certain motivated processes, and the degree of weight they lend to certain outcomes.

2.4. Ideas of Cuisine.

The food choices one makes are often considered to be something that is so individually distinct as to be unknowable. Taste has a long history amongst the senses as one of the most subjective (Korsmeyer, 1999) ways of apprehending the world. Whilst the visual and audio fields maintain a level of indirectness, a physical distance from the observer that allows for the supposedly more accurate separation of Object from Subject, such is not the case with taste.

In traditional western thought, taste entails an *incorporation* of the subject into the object through consumption. The world of Object and Subject collide, each taste encounter is a confusion of boundaries between what is human and what is not, what is culture and what is nature. This confusion has meant the relegation of taste to the periphery of tools that are helpful in the apprehension of reality, truth and fact.

There is this element to foods; they do have the mysterious capacity to elicit emotions of disgust and revulsion in some, craving and desire in others. Perhaps an aspect of our intimate encounters with foods does resist description and classification, but this only serves to highlight their powerful potency as items within value networks, influencing change. However, whilst we do have these personal responses to food, even these are set within a culturally established framework.

According to such a line of argument culturally established uses of foods have a bearing on what we consider to be our personal likes and dislikes (Ashley *et al.* 2004). Cannibalism is culturally taboo because western culture considers the eating of another person to be a desecration of the very vessel of humanity, and of what it is to be human. A western European response to eating a plate of human flesh would likely be aversion, and yet having never tried a morsel of long-pig this must be considered a response conditioned by cultural boundaries.

So there is a cultural tempering to the innumerably individual responses that food may illicit, making cultural routine and patterning a reality. This is true not only of the boundaries established *around* a culture's food choices, defining that culture, but also if we delve into the detail of those choices to look for intra-social prescriptions at the finer resolution. The decisions being made on how to combine foods and what to combine can be understood as Cuisine.

The essential elements of Cuisine as a concept are creativity and transformation. At a practical level this involves the mixing of foods in chosen combinations to create new foods. This means that fundamentally the idea of what food *is,* is changeable. Food is not the series of species' used to describe the units of what is consumed. Evident from interpretations of the transition so far, foods are value-laden.

For this reason *all* food is essentially Cuisine because a single species is composed of a mixture and combination of values. In this understanding food and Cuisine are interchangeable, with the only difference being that foods are *units* of Cuisine, laden with (pre)historically established values. Food 'units' can be blended to renegotiate combinations of values through Cuisine. The primary challenge is to understand *what values were ascribed to foods at the transition to agriculture*, or to put it into other words, what was their Cuisine? The secondary challenge is to take these representative Cuisine value understandings and explore the bearing they had on

wider social choices at the transition to agriculture. This is the research agenda of this project.

The point of departure from interpretations that implicitly take western food values as their foundation for explaining the transition is an exploration of the varied possibilities for value content relating to Cuisines. Whilst there is huge variety in these values, they often cluster around certain themes relating to consuming. Concepts like health, medicine, disease, consciousness, pollution, danger, the Self, aesthetics, and virtue are commonly features of Cuisines. There may be emphases on some aspects above others in different cultures, or they may not feature at all. There are no cross-cultural prescriptions for cuisine. The experience of consuming however might be argued to confront the agents of prehistory with the potentiality of food and Cuisine, the very nature of which creates thematic boundedness.

2.4.1. The front-line of defence: cuisine as medicine.

What in the west is called 'diagnosis', many extant tribal cultures with traditionally shamanic world views call 'divination' (Metzner, 1998). Consumables are a valuable aid in these divinations, their value often articulated as facilitating 'seeing', 'prophecy', 'intuition, or 'visioning' (*ibid.*). A key aspect of divination is its problem-solving attitude to medicine. Causes are unclassifiable because they have potentially esoteric qualities to them, as well as being simultaneously physical, spiritual and soulful. The intuition provided by often psychosomatic foods is used to allow the shaman or medicine person to *journey* to the cause of the ailment, and witness it comprehensively from its physical to its arcane spiritual forms.

Modern western medicinal practitioners consider the beneficial qualities of cuisines and foods to be a sub-discipline of medicine proper; explored through dietary health rather than on a consumption-by-consumption basis. There is an attitude that disease represents abnormality in the condition of life which shatters the security of the mundane. Disease is almost ritualised as an aspect of death; with which all encounters should be placed outside the realm of the everyday. As such, medical treatment has been removed from the spheres of food and cuisine, and been rationalised as something dealing with *abnormality*. Disease is too close to death to be allowed as a 'normal' part of life. Pills and tonics are entirely designed to appear

and often taste synthetic, as something on a par with Culture and removed from the unpredictability of Nature.

Such is not the case in New Guinean society where medicine takes a very mundane form, closely associated with everyday cuisines. Women are seen as sexually dangerous, and have the power to penetrate a male's masculinity with doses of female essence. Various controls are exerted over the types and amounts of contact that are acceptable amongst males and females. But part of the process of managing the weakening effects of female power is to eat sugarcane on a regular basis, especially after sexual intercourse (Counihan, 1999).

There are clear symbolic connotations of cane and penis. We could rationalise the value of the cane through the physical effects of sugar as a boost to metabolism. But for New Guineans it is not that sugar cane has some useful *components* in the defensive war against femininity, but that it *is* the penis, and intones directly with masculinity itself. This medicinal value has implications for how change in social structure, the type and amount of contact between males and females, and demographic controls occur.

It was not so long ago that western medicine ascribed to a very different outlook than that of its modern form. In the 17th and 18th-centuries Humorism became a fashionable topic for the educated mind, and a dominant approach to everyday management of a latent degree of disease that was endemic to ordinary life. In Humorism everything in the universe-both animate and inanimate- is considered to be made up of a combination of the four elements; fire, water, air and earth (Greenwood and Airey, 2007). The four humours are described as choleric, corresponding to yellow bile and the element of Fire; the sanguine humour, corresponding to blood and the element of Air; phlegmatic, corresponding to phlegm and the element of Water; and melancholy, corresponding to black bile and Earth (Lupton, 1996).

Just as the elements are not purely material, so the humours are not substances so much as patterns of response associated with the elements (Greer, 2000). The consumption of certain types of foods was meant to compensate for destabilizing factors such as climate, age, habits, even time of day (Lupton, 1996) that could otherwise lead to illness. Consequently Humorism cuisines were explored, even

culminating in some Humorism cookbooks such as Walter Charleton's (1659) *Natural History of Nutrition, Life and Voluntary Motion*. So, chicken flesh for example, was cooling and moistening, a good counteractive to a choleric disposition (Estes, 1996), whereas oranges were considered hot if consumed in too great a quantity (*ibid.*).

It was only with the use of dissection as a tool in autopsies and teaching in the late eighteenth to early nineteenth century that western culture began to formulate the Medicalized Body (Foucault, 1994). Medicine became systematic as each organ's role was monitored and elucidated in relation to what became viewed as the working machine of the body. The mechanical metaphors are no coincidence since industrial growth was at the forefront of cultural consciousness at this time. The systematisation of treatment went hand-in-hand with the classification of diseases and their relationships to the Medicalized body's 'parts'. This process was amplified by health surveys of the working classes during the Boer War (Lupton, 1996); more records of disease meant greater classificatory possibilities.

Corpse dissection gave a physical link between external symptoms and their interior cause, resulting in a medical view that illness was a purely physical phenomenon. Rather than an esoteric journey to witness the cause of an ailment, modern western medicine developed as an application of pattern recognition in symptoms- or causal proxies-, an exercise in rationality and prediction, from what is known to what is unknown internally.

2.4.2. Cultivating a cautious palate: cuisine as poison.

One of the outcomes of the objectification of the body was this idea that the Body belonged in a medically ritualised sphere, disease something abnormal. Rhetoric regarding the relationship between food, cuisines and disease developed out of this basis in complicated ways. It seems counter-intuitive to suggest that cuisine be expressed through ideas of poison and pollution in food. In the west (though not exclusively) these ideas seat themselves in pathological eating disorders like anorexia nervosa and bulimia.

There are many speculated social and individual explanations for why some people, mainly female (MacSween, 1995), reject food or form unusual relationships to it. The obsessive pursuit of thinness may be the result of a feeling of not having a core

identity (Bruch, 1982), and aspiring to a media-defined one instead. It may also be the opposite, a *resistance* to the prescriptions of a patriarchal society and a 'feminine' destiny, by seeking to identify with an androgynous or masculine body form (Squire, 2003). MacSween (1995) suggests nullification of 'feminine' attributes is a striving towards empowered individualism of an impenetrable masculine form, an attempt to purify the body of weakness and make it a centre of personal agency (Littlewood, 2004). Often anorexics will display childlike mannerisms, consistent with a fear of growing up (Malson and Ussher, 1997).

What all these explanations share in common is a rendering of food as a poison to 'the Self', or the projected Self of these individuals. Eating makes the realisation of the 'real' or believed Self impossible, poisons its existence. Food is also cure though; whilst the individual's 'true' identity is given *sustenance* through negation, the corporeal anorexic body is a dying one. The result of this tension is an obsessive need to control what enters the boundaries of both corporeal and projected Self. Like the ascetics of some branches of Hinduism and Buddhism (Masson, 1976), cuisine becomes highly ritualised and measured for anorexics.

In one recorded case a chronic anorexic had developed a strictly controlled eating regime. 'Margaret C' only ate at night, in the darkest hours after midnight. Her meal continued until just before daybreak. She never kept any food waste in her house or on her property, depositing it in a neighbourhood refuse area each day, and yet she *selected* rotten food to eat. Her long meal was ritually interrupted by at least three ablutions (Giles Banks, 1996). The association of food, darkness, danger and pollution are apparent in this example, and are exactingly controlled through the timing of eating episodes in relation to purification periods, the reinforcement of the impurity of food by accentuation of this fact with spoiled cuisine, and the management of all stages through from acquisition to disposal of the food product.

In western society these eating habits are viewed as *dis*-orders, but such ritualised sanctions on foods, what is 'safe' to eat, free from pollution and danger, exist as standard structures of cuisines in many cultures. This refers of course to taboos; social restraints on what is eaten, and when. But it is worth noting that taboos are the structured restraints on food values, not the value itself. Taboos can arise in response to innumerable perceived negativities.

For the Orang Asli of West Malaysia there are multiple values that structure taboos, most relate to animal protein (Bolton, 1972). Animals that are considered closely related to the spirit of humans are not eaten, such as tigers, which may have eaten a man and contain human spirit. Any animal that is reared by humans is taboo for this reason. Food considered unclean, such as leeches and lizards, that come into contact with acceptable consumables will render them unclean. Poisonous foods for the Orang Asli are not just those that produce ill-effects, but extend to some foods that elicit a foul taste, like the red-headed krait *(Bungarus flavicus*) which is said to be bitter. Finally the fear of harmful effects after consumption relegates some consumables to the sphere of taboo (*ibid.*).

This final cause is one of the most acute structuring principles on the intra-social sanctioning of foods for the Orang Asli. Animals with strong spirits, which usually means larger ones or those less frequently captured, are considered to cause *sawan* if eaten by susceptible people. High risk groups include pregnant women, breast-feeding women, children, and partners of pregnant women. Taboos overwhelmingly apply to women therefore, both in terms of the number of animal species that are prohibited, and the proportion of lifespan that these restrictions apply for. The father of a child is only sanctioned for the duration of pregnancy, whereas females may breastfeed for up to four years after birth (Bolton, 1972). Such gender/age structuring of high risk cuisine not only generates material residue asymmetries but is also likely to have more far-reaching social implications. The plasma albumin levels of females are lower than males, a difference that can become even more marked during periods of food scarcity where men eat before women and children (Bolton, 1972). This may have profound long-term effects on partiachy-matriarchy social tensions, the roles of females, and attitudes to animals in other realms of social life for instance.

2.4.3. Cuisine through the looking-glass: edible Consciousness.

> *'Drink!' she said, grabbing me by the hair and pushing me down toward her belly. It grew to a huge lake, our lake, and she cooed, 'Drink from my belly, man', and I did. The taste was something words can't tell, the taste of which is still in my mouth to this day. It's because of that taste that I live and continue to want to.*

-Testimony of Martin Prechtel's (1998, 190) visions during his shamanic initiation with the Tzutujil Maya.

The sheer act of food consumption entails an alteration in our states of consciousness. Even a meal of meat and vegetables on an empty stomach may induce a shift from resting Alpha brainwave patterns to greater concentration abilities and Beta brainwave frequency (Wang *et al.* 2004). Some consumables however, have a greater capacity to induce altered states of consciousness, such as the Fire Flower liquor (Prechtel, 1998) taken during the example of shamanic initiation experiences described above.

It has already been shown that psychoactive food has a relationship to healing, but the use of foods for the express purpose of inducing and exploring altered states of consciousness is a common feature of many cuisines. Ayahuasca (*Banisteriopsis caapi*) mestizo ceremonies are widespread across the Amazon, practised not only by the rainforest dwellers, but also nowadays in urban areas (Metzner, 1998). As well as the bark of the ayahuasca plant, other plants may be added to achieve subtly different experiential outcomes; coca, tobacco, Brugmansias, and more commonly Chacruna (*Psychotria viridis*) and Chagropanga (*Diplopterys cabrerana*) (Rudgley, 1998).

The leaves of *Psychotria viridis* and *Diplopterys cabrerana* contain halluginogenic tryptamines which are inactive when orally administered, unless they are in the presence of monoamine oxidase (MAO) inhibitors. The *Banisteriopsis caapi* bark contains harmine and harmaline MAO inhibitors (Rudgley, 1998), so when mixed together the result is a powerful psychoactive cocktail. The result is a dramatic chemically induced expansion of consciousness, which can be associated with strong emotional sensations.

What is a powerful socialising activity for traditional Amazonian tribes like the Tukanoan people of Brazil is considered an underworld, fringe movement in modern western culture, such that the value of consciousness enquiry has barely filtered from society into the academic discourses of archaeology. This is partly a result of the reaction of the Jesuit missionaries who first encountered these psychoactive cuisines, and described them as satanic activities. They are viewed as an antithesis to rationality, loosening the controls on measured experience of the world in a rapid and emotionally destabilizing way.

Traditional Christian values permeate modern discourses on the use of mind-altering foods, and have led to complicated conjugations of such values as virtue in the west. Drug-culture has developed to represent the basest of social spheres. *Anti*-social behaviour is emphasised as the only result of psychoactive ingestions. Drug induced mental health problems have become widely discussed in the media, focusing on the *impairment* that psychoactive substances cause to reasoning centres of the brain. Again, the pseudo-religious discipline of Medicine is reared to hear the confessions of those digressing from the virtues of rationality; their confessional booth the Alcoholics Anonymous meeting, or the rehabilitation clinic.

Yet perhaps from within these bounds, acceptable sub-cultures for the expansion of consciousness through food *do* exist, albeit in a less assertive state than an ayahuasca ceremony. In fusion-cuisine the assimilation of tastes from multiple cultures into one meal experience appeals to the cult of the connoisseur; a sphere of society associated with the middle classes who are widely travelled, and experienced in many cuisine sensations. On the back of this 'movement', the restaurant connoisseur has arisen as its domesticated expression. Fusion-cooking offers an experience of Other cultural consciousness through the sensation of taste, in the highly ceremonial atmosphere of the restaurant.

It may be the case then that consciousness-expanding foods transgress their peripheral fringe position in western culture, in their non-psychoactive capacity at least. It is certainly not the case that cuisines designed to investigate consciousness are peripheral to all cultures. The Huichol Indians of Northern Mexico, for example, stage a mass pilgrimage to find the rare peyote cactus for their ceremonies (Metzner, 1998). In archaeological terms, the effect on settlement patterns and the social organisation necessary to complete such manoeuvres would leave a considerable mark on material residues.

Ultimately there is knowledge to be gained from encounters with cuisines. Whilst western modernity may exclusively value a rational foundation to knowledge bases meaning mundane food consumption has little to offer, this does not have to be the case. For many cultures there is an intelligence to be found in the ingredients of psychotropic cuisines. Indigenous healers may refer to entheogenic plants as 'plant teachers' (Metzner, 1998, 6). Amongst the Bwiti cult of the Fang people from Gabon

and Zaire, the use of eboga from which ibogaine is derived, takes the initiate through a powerful death-rebirth (Fernandez, 1982). Once they have experienced this initiation they are able to communicate with their ancestors, the purpose of which is to receive advice (Fernandez, 1982). This advice *directly affects the social decisions being made by group members,* and thus directly impacts on *how* cultural change occurs.

2.4.4. Hampered food, or, cuisine as Gift.

Marcel Mauss (1990) made a famous research into the reciprocal exchange networks between Polynesian tribal societies, epitomised by the idea of Gift. As in potlatch ceremonies of the Chukchee and the Koryaka of the far northeast of Siberia (*ibid.*), gifting ceremonies are about the redistribution of wealth. However, this describes an aspect of the socio-economic contract between groups and individuals, but a similar idea is often manifest in the relationships between humans and the landscape of plants and animals they inhabit.

An ontological spectrum splays the possible relationships between the human, more than human, animate and inanimate. For the Ituri forest pygmies of the Republic of Congo it is the forest that gifts animals for successful hunting. The forest is parental and ever alive to the culinary needs of its children, like a breast-feeding mother. Asking is not necessary, because the forest is forever giving. It is only if the forest sleeps that the Ituri perform ceremonies to wake him/her up, using benevolent songs (Turnbull, 1993).

For the Ituri every episode of hunting is an act of receiving, cuisine is gift. Perhaps partly as a result the Ituri have an established system of sharing so that everyone benefits from the gift (Turnbull, 1993), since it is gifted for all. Shared cooking practices, the distribution of the body of the hunted animal to all in the group are acts of benevolence in themselves. Each process of cooking allocated parts is reinforcement of its nature as gift from the forest, and subsequent allocated gift from the group.

In more Animistic ontologies vital forces are fluid, and unbounded by material solidity (Ingold, 2000). The world is in a constant process of creation, with collisions, meetings, merging and separations; the agents of the encounters, be they animal, plant, human, or non-human, leaving these relationships altered. The Self is

blurred, as consciousnesses momentarily entwine and are flexed into different shapes or identities.

In hunting and collecting, the animal and plant offer up an aspect of their potentiality and substance so that humans may live (Ingold, 2000). This establishes an intimacy to their value in cuisine. Consciousnesses that were interwoven through hunting and collecting enter a new realm of negotiation through cooking and consumption. Identification exists with the animal or plant world; they have been extensions of the Self, temporarily subsumed and must be valued in an ethical sense. Their processing into cuisine becomes a complicated discourse between Self and Other, where death is never absolute but must be conducted with respect to the gifter, in their capacity as Same.

2.5. Value in archaeology.

It has been shown that interpretations of the transition work from certain value-assumptions, because of varying concepts of what value *is*; its attributes and the way it is structured. Value is essential to understand anthropogenically driven change, and around the transition to agriculture these changes orbit attitudes to food. Food is redolent with possibilities that cross-cut cultural spheres; having attributes that lend it positions from the mundane to more ritual contexts. There is a potency to the use and evaluation of food that makes a *single* value inherently unlikely, and a single process of change at the transition equally so.

Engaging with and better understanding the *processes of evaluation*, presents a position for identifying the values of foods that drove and motivated processes of change. It is this process of selecting and combining values, creating a motivational substance to foods that is considered here to epitomise the idea of Cuisine. More recently archaeologists have favoured *meaning* as a substitute for value. A consequence of this brand of approach has been to stall an appreciation of why *changes* happened. To tap the process of *evaluation* is to simultaneously map the motivations of change or cultural retention.

Cuisine is not necessarily about flavour alone, nor is food combination an inherent factor. It has been suggested that historically and ethnographically foods have multiple other value associations; beyond calories, food may be medicine, poison, drugs, an extension of consciousness. It is therefore proposed that *Cuisine* is the

combinations of prehistoric *values* in culturally prescribed and proscribed ways. A single food item may have been processed in a pot, but that item is engaged in a wider range of evaluative processes, and may represent multiple food values. That single item is still Cuisine. Understanding these evaluative processes means tracking the wider contexts of use, and formation processes that brought about the residual patterns we presently have; in a biographical sense, analysing social production *through to* consumption activities, as well as depositional decisions.

This chapter has critically assessed how the concept of value has been consciously and sub-consciously deployed in interpretation, with the aim of pointing the way to future improvements. In prehistoric archaeology the intuitive sense with which value is described masks a complex range of potential uses. These fall into three main categories (Graeber, 2001):

- Sociological descriptions of value: concepts of ultimate goodness and virtue, or desirable life choices.
- Economic concepts of value: the *degree* to which objects are desired based on measures of what will be relinquished to obtain them.
- Linguistic concepts of value: with roots in the structuralism of Saussure, linguistic value can be summarised as 'meaningful difference'.

Arguably only the second category has made a major impact on southern Scandinavian explanations of the transition to agriculture. The influence of paleo-economic and social prestige reasons for the adoption of domesticated plants and animals both fall under the general rubric of economic value concepts, and parody the tension between formalist and substantivist perspectives respectively. But overemphasis of one to the exclusion of the others generates weaknesses. Historically in archaeology, paradigmatic critiques can often be traced to an imbalance of these varied meanings of value. The challenge is to combine the above areas where value is used and cross-cut the seeming contradictions. As it stands the meaning of a word is considered to have something in common with the meaning of life and the price of mushy peas!

Certainly in Anglophone archaeology the economic approach gave way to the linguistic approach, but inadequacy exists in both it is argued. Many of the formalist-substantivist debates that were at the root of the economic approach identified

pertinent challenges for a workable theory of value, but these were never fully addressed. Dissatisfactions with the wider paradigm in which the debate was subsumed spawned post-modernist attempts where value equates with 'meaningful difference'.

In archaeology, this has manifested as a difficulty of practically applying linguistic meaning to archaeological problems; a weakness brought about because of disparity between conceptual time scales that processes are *visible* at, and the scale of analysis used to *render them visible*. In other words, having deconstructed meaning to its composite units with their inherently insubstantial nature, it has become impossible to understand social evaluation at the larger scale, because the supposed nature of meaning precludes *re*construction. As a result social change cannot be explained, because there is no content to meaning, no substance to which collectivities can rally around and motivate social change.

In what follows, the debate between formalists and substantivists that has played out in interpretations so far will briefly be summarised, and attention drawn to some of the weaknesses of both approaches. The issue of engaging with socially contingent evaluation *processes* persists from these debates. It will then be argued that post-processual approaches continue to overlook evaluation in the past. The reason is that there is no sense of *relative importance* in the realm of artefact studies, and as a result substantial interpretations of why changes happened stalled after the more social explanations of Fischer (2002), and Milner and Miracle (2002).

2.5.1. The Formalist-Substantivist Debate in Economic Theory.

The substantivist-formalist distinction was introduced by Polanyi (1957) to identify between economies that are separate from the social sphere (formalist), and those integrated with it (substantivist), the debate epitomises many of the qualities and tensions associated with processual archaeology. According to this distinction the formal economy derives from the logic of the means-ends relationship, and substantive derives from facts (Isaac, 2005). Formalism is closely related to neo-classical economics where the object of study is utility maximisation under conditions of means scarcity relative to wants.

The expression of formalist economics can be seen in interpretations that emphasise the *intensity* of food use as a factor in change, for example the resource ranking

model of Rowley-Conwy (1984). Formalism assumes that human behaviour is rational and bent towards utility maximisation; that utility is something akin to an intrinsic value. Over the large time-scales prehistory works with the rational pursuance of goals is questionable though. For Polanyi (1957), formalism was limited to explaining the market economy because it relies on measures of costs. The banner of formalism was taken up and subsequently the mechanistic explanations were applied to pre-industrial societies though; the lure being the ability to explain with universal laws means-ends relationships. Whilst formalists could manipulate laws to predict *certain* outcomes in a society, they have always inadequately accounted for what values *motivated that outcome in the first place* (Graeber, 2001), relying *a priori* on the value of utility instead.

Substantivism is the socially embedded counterpart to formalism, deriving from "man's dependence for his living upon nature and his fellows. It refers to the interchange with his natural and social environment…" (Polanyi, 1957, 243). The substantivist approach examines the actual process through which society provides for itself, a process entwined in relations. This essentially empirical approach takes the way things are distributed in society and works back to the principles of that arrangement (Graeber, 2001). Criticisms of substantivists focused on its tendency to produce taxonomies of value systems. So interpretations of the transition that posit different types of economy; the subsistence economy, the prestige economy, are descriptions of an arrangement of material culture. Archaeological explanation is possible in so far as social uniformitarianism holds, and this often weakens the credibility of substantivist claims.

Both substantivism and formalism weakly account for peoples motivations to (re)produce society. Substantivism has no *a priori* values to explain drive and want, falling back on vague altruistic reasoning as an optimistic outcome of social relations. Formalism has only utility, which is unable to always explain why people choose to maximise some things and not others especially where strict rationality is not in evidence; in other words, account for meaning (Graeber, 2001). Whilst both of these suffer from an inability to appreciate the contingent substance of motivations, they *do* situate the forces responsible for change at the social scale; as a component of the social contract. Although formalism claims individual actions are the unitary

measure of values, it is only in their mechanistic expression that they come to fruition; individual acts must be socially condoned to develop momentum.

This 'top-down' approach is not a weakness. The processes seeking representation, in the past must be approached at a scale of analysis that complements the time-scales they act over (Bailey, 2007). What weakens both the formalist and substantivist stance however is that they cannot conceptualise the substance of motivation- namely meaning- at this scale of analysis. For formalists this is because meaning resists elaboration into rational mechanical laws. It was along a substantive line that a paradigmatic shift into post-modernism took its point of departure; if the (re)production of society happens as a result of motivations that are themselves socially embedded, the question that was followed up on was, 'how can we penetrate this hermeneutic paradox, and understand what motivates action?' The reply was: linguistic perspectives on meaning.

2.5.2. Post-structuralism and the relationship between meaning and value.

In archaeology, post-modernist approaches can arguably be distilled down to some potent ideals. Against a backdrop of singular, generalised histories workers craved to characterise experience for people in the past, from a specific historical perspective with all its colour and vibrant substance. Even the Otherness of the past could be identified with in these ideals, because it was being represented at the scale of experience.

But the death of the 'old' paradigm meant a payment to the ferryman, and prehistory has paid an unspoken price for its new ideals. Meaning is such an intangible substance to master, inhabiting the space between substances as it does, that qualifying it with content and a form is inherently impossible for post-structuralist archaeologists. The upshot of this is that studies of how and why change occurs have suffered.

The reason for this is the reading of Post-Structuralist theses in philosophy, where particular emphases are laid on certain points to the exclusion of others. Although the ugly archaeological sister may try to squeeze a muddy foot into philosophy's pristine ontological shoe, it is perhaps better for archaeology to design philosophical perspectives that complement the unique qualities of the discipline, such as deep-

time. This tainted-reading is especially rife in the interpretations of Derrida's theories of Writing which are so crucial to the post-processual paradigm.

The Derridean position on linguistic meaning followed on from Saussure's (1959), where all systems of meaning are organized on the same principles of language (Harland, 1987). The linguistic unit of the sign is made up of the signifier and that which is signified. Denotation of the sign is decided by relations of difference that are internal to the system, but that are arranged hierarchically. Other signs in the system delimit the use of a sign by restraining it, which is how hierarchical organisations can appear. For example, 'basket' and 'ball' might be arbitrary representations of two nouns, but the meaning of 'basketball' is constrained by those more arbitrary meanings.

Lévi-Strauss (1970) expressed the most famous example of structuralist meaning in his oppositions of raw and cooked. The culinary theme is fittingly extended to an analysis of French and English cuisine where he suggests three further oppositions: endogenous/exogenous (natural versus exotic), central/peripheral (staple food versus accompaniments), marked/unmarked (savoury versus bland) (Lévi-Strauss, 1993). Such differences between cuisines derive from the manner in which each system configures a shared framework of binary oppositions (Ashley *et al.* 2004), the oppositions are cross-cultural, the *hierarchical emphases* or *delimitations* change.

For Derrida signifieds are an illusion, and meaning is inherently situated in the relationships between signifiers. Meaning is manifold and plural therefore, caught in a state of flux; always in a '*signifying'* verb state and never as static, motionless noun. Meaning inhabits the space *between* a web of signifiers. The motion of these signifiers is always in a direction away from themselves and towards other signifiers (Harland, 1987), and is usefully summed up in the concept of Dissemination (Derrida, 1981). This describes the state of meaning as perpetually unfulfilled, formless and dispersed.

So the unit of meaning is inseparable from the relations of its insubstantial composition, and yet this deconstructive concept seemingly precludes any possibility for *reconstructing* meaning to *give* it form and substance. Tautologically we seem to have hit a dead-end. And it's not an end that fits comfortably with the nature of archaeology as a subject that deals with processes acting over long time-scales;

change (or perhaps more accurately, diachrony) might be inherent in Derridean meaning, but it is hard to see how its hyper-reductionist state can describe *processes* of change at the social larger scale.

For post-structuralism, change *inhabits* the concept of meaning which is interchangeable with value, but this is to assume that all unitary measures are truthful representations of their larger-scale manifestations. In other words the paradigm holds that 'the sum of the parts equals the whole', that change at this atomistic scale is somehow essentially structured the same as change conceived at larger social scales of process. The repercussions of this for archaeological inquiry have been detrimental.

Change is appreciable through contrast, and an insubstantial essence of meaning negates the possibility of contrast. If there is not form or substance to anchor the flow of relations motionless and substantial, there is no hope of being able to reconstruct past concepts of meaning and value. What we are left with are unsatisfying 'interpretations' of phenomenon, where a 'language of meaningful relations' develops to account for flux in the absence of actual appreciations of processes of social change. Ironically this new discourse serves more to point to the theoretical position from which interpretations were made, rather than point to any 'substance-full' revelations from the archaeological record.

For instance, in an examination of wooden artefacts and their relationship to wild animals from Mesolithic Scandinavia (Price, 2009), some of the characteristics of a post-structuralist application to archaeology are revealed. The aim of the exploration was to suggest that material culture does more than reflect 'technological or subsistence strategies', material culture is 'also a manifestation of the social context of the time' (Price, 2009, 683). Inspiring aims, with the faint promise that that 'social context' will be revealed and play its fundamental role. And yet, the closest appreciation of what the social processes *were* that engaged both humans and their more-than-human materialities are statements such as, 'The different abilities with equipment and differential knowledge of animals and plants would create diverse relations and interactions between people and different aspects of the world' (*ibid.*).

Could this not be applicable to the past of a week last Tuesday, as much as the Mesolithic of around seven thousand years ago? Further statements, 'knowing how

to proceed and what is and is not acceptable, can often be based around social distinctions' (*ibid*., 684), lays out an embryonic *approach* to realising the thesis aim. Acceptability is positive meaning. In application what happens is that the mere presence of an artefact validates its social acceptability. 'It was part of the technical logic that lime was the wood that canoes should be made from, and so one made from another wood may not have been considered a 'true' canoe' (*ibid.*, 684). In essence, the canoe exists in lime wood therefore what is witnessed archaeologically is a canoe.

There are further points to draw from examples such as this one, which have become somewhat endemic to a post-processual regime. Acceptability is a measure of meaning and value in a polarised sense; items are either meaningful or they aren't, they're acceptable or they're not. There is no sense of the *organisation* of relationality. Objects are not bestowed with, or 'engaged in human-artefact relationships' that negotiate their varying valuable attributes.

The reason is this need to perpetuate a diachronic representation of meaning, to render post-structural units of meaning an archaeological reality. But this also results in interpretations that preclude situations of social change; the transition to agriculture becomes a non-entity. What is left are multiple, fractal characterisations in what is almost an a-temporal system. Amalgamations of processes are being represented as a-temporal taxonomies, with a nod to diachronic analysis being made through a sociological language; for example, 'human-artefact *relations'*.

The upshot of this is that many of the problems posed by the formalist-substantivist debate still stand; one could even argue that some have been entrenched. The position still exists that accounting for the way meaning *motivates* social change is unrealised, the type of taxonomy being generated may be of a different character but it is still a taxonomy of a social arrangement, and post-structuralism has theoretically deconstructed a way out of investigating the *process* of evaluation. What is more, this dominant approach to investigating society precludes the explanation of social change *because* of the structure ascribed to meaning; though it should be motivational, it is instead insubstantial.

2.5.3. *Re*constructing Value.

There are some pertinent tensions to take away from the former debate. Firstly, there is the problem of diachronic and synchronic analysis. Post-structuralism targets diachronic representation of meaning in theory, but render them synchronic in practical application to archaeological interpretation. Pure diachronic meaning is perhaps a matter of the time scales being represented, and archaeology does not lend itself to analysis of *change* at shorter, experiential time-scales. Certainly with a post-structuralist approach this is almost oxymoronic, as we have seen. Thus to consider the processes of social change at all, it must be with a theorised acceptance for the role of synchronic analysis: a realisation of its place in representation, rather than a rendering of it as a nasty side-effect.

The second tension is brought about by the former: attributes and relations. In post-structuralism the lack of attributes stems from a denial of the signified and a rendering of signifiers to the insubstantial relation between each other. Again, this represents a reductionist ideal of what meaning is at a unitary scale. In this view the parts are microcosms of the whole, and their sum is equal to the representation of the whole. That there are no inherent attributes or qualities to materiality is a view contended by phenomenology's concept of intention.

Finally, there is a tension in the relationship between meaning and value. Formalism understands them as two separate entities, which explains why formalist economics can incorporate mechanistic interpretations of utility value, whilst at the same time being unable to explain why people are sometimes motivated in unusual, non-rational ways. In post-structuralist archaeology the use of 'value' as a concept swings from the idea of meaning to something like importance, but the latter is usually in a state of presence or absence.

In order to plot a course that counteracts the extreme reductionism of a deconstructive paradigm that has pervaded archaeology there are several things needed for consideration. The first is a rereading of the Derridean thesis of post-structuralism to find the points of reconstructive potential, and likewise readdress Saussure's concepts of value organisation. There are powerful forces at play, dealing with potent concepts like meaning that have the potential to dominate discourses as singularly *the* most important and fundamental force for consideration.

This blinkered endorsement is dangerous, especially because these potent forces do not harmoniously blend with the potential of the archaeological record. This is not to say that they aren't useful or important, but instead that they are not *singularly* important. There are potent forces inherent in the nature of archaeology as a subject that can usefully counteract our preoccupation with this singularity: one is Time. A consideration of the characteristics of Time for the archaeologist helps us to place boundaries on how usefully meaning studies can be employed. Time perspectives like time-scales, the synchronic or diachronic unravelling of processes, and the ways for representing change in the past can regain a methodologically feasible framework for examining change as a process in which substantial social *value*s play a central role, and are knowable.

A second aspect of Derrida's thesis on the theory of Writing, and arguably its more important feature, is the idea of *diffèrence.* Although all signifiers point away from themselves (Harland, 1987) fluidly, dispersing meaning into relationships, they do so according to this process of *diffèrence.* Taken from the French *diffèrer* two meanings are important; on the one hand the term indicates distinction or discernability, on the other it expresses interposition after delay, essentially deferment (Harland, 1987). Meaning may be multiple, but deferment of one meaning in favour of another *does* occur, certain organisations of relations are emphasised even if only momentarily.

This is really important because it points to the possibility of a synchronic rendering of meaning out of what Derrida posits as its diachronic nature. For Derrida, the diachronic nature is maintained even in *diffèrence* because alternative meanings are only momentarily denied, a causal force bonds them allowing *diffèrence* to flow back along the same relation it deferred from in the first place. In a linguistic example, the French word 'mouton' can mean both 'sheep' and the meal 'lamb'. In *diffèrence* the meaning 'sheep' is still inhabited by the meaning 'lamb', with the inherently momentary nature of the shift promising the relationship, and indicating a current of sameness.

So there is a relationship between diachronic and synchronic meaning, they arguably both occupy a place in Derrida's concept of *diffèrence.* In a mechanical analogy, the force that defers one meaning for another is directional by definition. The *change* of this direction to defer to another meaning requires a substance to propel off from,

and this *requires* an instance of motionless: a substance, a content to meaning. It is this substantial aspect to meaning that is here considered to be a feature of value. Value *weights* meaning.

A condition of this weightiness and substance is that it is organisational by nature. In both structuralist and post-structuralist renderings of meaning there is a non-hierarchical organisation. This is because in both, what a thing *is* depends negatively on what it is not, either through definition at a boundary, or because signifiers always point away from themselves. Negativity is a leveller of meaning; a thing can never positively *be* something if it depends *equally* on everything else for its existence. But it has been shown how Derrida's relational understanding of meaning *requires* points of positive substance for its inherent motion. It is punctuated motion.

For Saussure (1959) the sign acquires its meaning from everything it is not in the system, so meaning works up until a boundary point where another meaning takes over, usually a binary opposite. This is what Saussure calls 'synchronic solidarity' (Saussure, 1959). Whilst weight and substance are positive features of this concept, it tends to polarize signifier and signified into a singular meaning relationship. However, the idea that other components in the system of meanings delimit the range of a meaning's possible use is very helpful, if it is conceptualised in relation to Derrida's multiple meanings.

In other words, the object of enquiry is how patterns of *diffèrence* occur, and what that means for the organisation of what shall be called meaning-value; that is, weighted meaning. An enquiry of this sort can only be performed by considering longer time-scales, something that archaeology is very suitable for. The current reductionist opinion that the whole is made up by the sum of the parts, is replaced with a view that the whole is *greater* than the sum of its parts, large scale processes have an objective reality that is not exactly the same as its constituents. In fact, understanding the small scale processes of what meaning-value *is* for peoples in the past, how it is generated through the evaluation process, and how these meaning-values motivate the trajectories of change, is something that can only be appreciated by opening up a dialogue between the various scales of time that processes act over.

There is positive substance to meaning that is inherent in the process of *diffèrence.* The more that specific relationships of meaning are selected for to the deferment of

others, the more a substantial association is made, which lends a greater impression of objectivity. This is something that can *only* be appreciated over longer time-scales, because it is repetitive choice. But although some meanings become emphasised over others, multiple signifiers still characterise the nature of meaning itself. It is just that these multiple signifiers take on unlevelled structures in relation to each other, rather than being equal components of dispersion of signifiers.

At this point a superficial reading would see us teetering back towards either a functionalist or a superstructuralist/cognitivist concept of meaning-value. As for the former, it *is* suggested that meaning-value emerges dependent on social context. But what discriminates this from a functionalist analysis which posits solely *utility* as value -with a dominant attribute constituting a purpose to fulfil utility- is that there is a preservation of the multiple meaning-values conceived by Derrida. Although unlevelled arrangements of meaning-value emerge, they are not fixed and the ever-present other meanings create imperfect resonance between the dominant meaning of the moment and the social context or process which prompts its emergence through *diffèrence.*

A benefit of multiple meaning-values is that it allows for the possibility of 'irrational' behaviour because the imperfect resonance with social process generated through multiple meanings opens the possibility of non-efficient *diffèrence* patterns emerging. Multiple meanings also necessitate viewing a single artefact as part of *multiple* social processes, with different meaning-value expressions emerging in relation to these processes. This is something studies of the transition to agriculture have been lacking; an approach that represents multiple processes, not all of which have trajectories that lead directly *to* the domestication of animals and plants, or are even directly related to it.

This leads on to the second risk of critique; suggesting that meaning-value emerges in relation to social context could be seen to imply that a social superstructure exists determining what people value, and that as a result meaning-value is cognitively *ascribed* to objects. The extreme of this idea would be to say that a society's *intrinsic* values such as concepts of goodness, virtue or evil, determine all other values. This is to miss the point that social context is composed of multiple processes, and it is more accurately these *processes* that the development of

meaning-value is implicated in, not a singular superstructure. In addition they don't *determine* a meaning-value; in fact, it is the relationship *between* the process of *diffèrence* at the small scale and the patterning of *diffèrence* at larger scales which is of interest to us.

The patterning of *diffèrence* into an unlevelled structure with causative, motivational potential describes the process of evaluation. This is the social consent that during *diffèrence* other meanings in the system delimit the *range of use* of a possible meaning-value. The range of *applicability* of a meaning-value can be increased or decreased. In *diffèrence* terms this describes a larger network of meaning-values that are patterned in a hierarchical way to lean towards certain motivations; smaller scales of *diffèrence* patterns can become subsumed and influenced by the momentum of the larger scale processes.

This scaling generates values of different abstractness, with larger scale processes *tending* to incorporate more abstract values, though not exclusively by any means. Since smaller scales of *diffèrence* patterns are subsumed, the processes are also 'playing out' at multiple smaller scales. So grossly, an intrinsic value of virtue has multiple smaller scales of instrumental value that motivate causation in the direction of virtuosity, and often have explicitly material correlates. Some of these smaller scale processes may be directly motivated towards the goal of virtue, such as praying. Others may be actions that (re)generate the boundaries of virtue whilst not being directly targeted on it, such as helping a child to tie their shoe laces; the object of which is functioning footwear, but the secondary outcome is to instill a sense of helping others, socially acceptable appearance and personal safety. Anticipating and explaining the dynamic ways that scales of processes articulate together in unexpected and often non-linear ways is a fascinating target for research.

2.5.4. Concluding remarks on value and meaning.

Out of the substantivist-formalist debate sprung many of the key issues that required resolving in order that a workable framework for understanding value could be formulated. The way value articulates with society is one of these issues; for formalists value was about utility maximisation which rendered it mechanistically deterministic of society, whilst substantivists considered value as socially embedded. Neither necessarily allowed for archaeological interpretations of what motivated

changes and social decision making, and it was on this point that post-modern approaches departed. Whilst post-structuralist archaeologies consider meaning (as inextricable from value) to be socially embedded in common with the substantivists, what has been discarded is an appreciation that the forces responsible for change are at the social scale.

Instead the dominant post-modern archaeologies have emphasised reductionism, deconstruction and interpretive fractals. The approach taken has resulted in a lack of form and content to meaning. Without this substance there is no point for contrast with other meaning, and therefore no relative importance. A distinction has been made between meaning (as formless and without content), and more useful meaning-value, which occurs with a re-conceptualised object-subject relationship perhaps originally intended by Derridean post-structuralism. Substantial meaning-value is essential for explanations of change.

If a theoretical approach is incapable of discussing *relative importance* between different artefacts this excludes possibility for discussions of the evaluation process mediated at the social scale. What makes things valuable, and how does their value bring about particular social changes to the exclusion of others? These are the objects of transition archaeology enquiry. A summary answer is that artefacts become valuable when some of their attributes are socially condoned as suitable for a particular role in place of other attributes, and other artefacts.

There is a vague discomfort about talking of artefact 'attributes' or 'properties' because it plays on functionalist insecurities. But this is to confuse positive function as the suitability of an artefact to fulfil a social role, with paradigmatic functionalism in the sense of a cultural sphere like 'subsistence economy' maintaining a social system balance by filling a productive gap where for example religion and technology leave off. Removing our affiliation with negative politics in favour of an a-political and anonymous mass of description has seen us appease many of the critical debates facing our society and our environment, but it may have done so by dampening any contribution archaeology *could* make. Dogmatism may be negative, but pluralism has condoned a neutral voice which is no voice at all, and an archaeology that cannot conceptualise value in the past is surely hindered in conceptions of its own value in the present.

2.6. Research Questions.

The values that generate the concept of hunter-gatherer food or cuisine are therefore a crux in the decisions being taken to incorporate, substitute or retain food traditions around the late 5th-early 4th millennia BC. With this in mind the primary research question posed is:

How is cuisine implicated in changes that occur during the late 5th to early 4th millennia BC in the Baltic region?

This can be broken down into a series of aims, or more concisely targeted questions that contribute to the answering of the primary question. 1) Are there regional cuisines, and do they change through time? 2) What is the relative importance of wild versus domesticated foods? 3) How quickly did the values of domesticated foods drive their adoption in a pottery context?

In order to generate the data to answer the primary research question and the research aims, a series of practical objectives must be calculated. These are primarily targeted at recovering and interrogating plant microfossil data, as absorbed lipid residue component of the dataset will be generated by wider project involvement. 1) Do plant microfossils survive in the charred pottery deposits? 2) Are these plant microfossils representative of the use of the vessel? 3) Can these microfossils be identified to taxon?

2.7. Concluding ideas.

This chapter has described the four main explanations for how domesticated plants and animals came to occupy southern Scandinavia c.4100-3900 BC; by invasion or population movement, due to social stresses such as population pressure and resource scarcity, and for more social reasons such as the desire for prestige artefacts. Critical analysis of these interpretations reveals strands of modern food values that are woven into them. Palaeoeconomic explanations measure the value of food through its utility in producing energy, calories and work to meet the requirements of a hunter-gatherer lifestyle. These are the precepts of an industrialised notion of the power of food resources. Disruption to this subsistence base explains the need to adopt a more efficient agro-pastoral regime, but early

farming practices were not practised intensively enough to produce surplus enough to counteract how high risk they were in purely utilitarian terms.

For the paleoeconomic school certain foods have been selected as of particular importance based on our hindsight view of how intrinsic they now are to an industrialised world. In this northern European context it is those foods that can be accumulated *en masse*; large mammals are posited as key dietary components across the transition, and plant foods *become* more important because cereals can be cultivated in large quantities. Quantity is the by-word of importance. As a result of decades of research *focused* on gathering evidence of these key species', the datasets inherited are designed to answer palaeodietary questions; at palaeodietary resolution, and this is a problem for cuisine studies.

There is a need to employ methods that can produce datasets capable of answering questions of the values of a wide range of food types to hunter-gatherers on the cusp of innovative new culinary choices, both as single food items and in combinations. This point can be divided into three main concerns:

1) The production of *detail* in the data. Most relevantly this regards species or commodity identification.
2) The representation of *breadth* in the data. Collating information on a limited number of species tends to concomitantly limit interpretations. In the past this tendency has manifested in single unilinear explanations, as we have seen. Rather, multiple food-related processes may have been underway at the transition, integrated together dynamically.
3) Methodological robusticity in the face of differential preservation. It is essential that the techniques be usable over a wide geographical and temporal area so that spatio-temporal extension of processes and changes can be tracked by comparable datasets. The techniques must exploit those aspects of material culture that are the most widespread in the preservation sense.

Whilst social explanations of why the transition to agriculture occurred have gone some way to bolster the waning explanatory potential envisaged for food as subsistence, they may not have gone far enough to invigorate modifications to the underlying concept of value that contributes to perspectives on food. Social

explanations continue to work from an unspecific notion of value, as prestige; value is ascribed to an object or it is not, artefacts are part of prestige networks or they are mundane. In effect, value in explanation has moved from the realm of routine utility to the ritual and the social fringe. An emphasis on meaning from post-processual quarters promised much to tackle many of the weaknesses of what is essentially a formalist-substantivist debate described above. It has been shown that meaning and value are uncritically taken to be manifestations of the same thing though, and as a consequence the *relative importance* of artefacts in interpretation has suffered. A post-structuralist concept of meaning denies substance and meaning-content because there can be no static object to describe from this perspective. Without content to meaning archaeologists are unable to comment on the arrangement of importances of artefacts and the processes they are engaged with, to explain why they were changed by human motivations.

The solution to this problem is to accept a synchronic aspect to meaning, where before only diachrony was argued for. Meaning may be dispersed in a matrix of ever-shifting signifiers, but social context brings about regularised and repeated patterns in the arrangements of signifiers in asymmetrical ways, with hierarchy. This means certain meanings from many possibilities become expressed in a moment of synchronic static, and meaning takes a form, a content, a potential to bring about change. In this way Cuisine is envisaged as the process of evaluating foods, manifesting values (or meaning contents) through repeated chosen uses. A single food item may epitomise an array of values that manifest more potently in relation to differing circumstances, a case of attribute suitability. Cuisine may negotiate purity, health, poison, medicine, pollution, disease and many more values besides.