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Were luxury foods the first domesticates? Ethnoarchaeological perspectives from Southeast Asia

Brian Hayden

Abstract

There are important reasons for considering the first domesticated plants and animals as luxury foods primarily used in feasting. Using Southeast Asian tribal society as a case study, it is demonstrated that all the domesticated animals and the most important of the domesticated plants constitute forms of wealth that are primarily or exclusively used in feasting contexts. In addition, numerous studies have demonstrated that feasting generates powerful forces that intensify and increase resource production of luxury foods as well as staples. Such forces ultimately can lead to the domestication of wild species and the transformation of luxury foods into staple foods.

Keywords

Domestication; Southeast Asia; feasting; rice; intensification; ethnoarchaeology.

Introduction

One aspect of the model of cultural change that I have espoused is that there is a built-in tendency for luxury items, including foods, to become common fare wherever technological or genetic advances can reduce production costs (Hayden 1998). This is largely due to self-interested aggrandizers attempting to maintain prestigious displays while minimizing costs. Although this strategy is beneficial to aggrandizers in the short run, in the long run it leads to the transformation of many prestigious luxury items, such as metals, glass and textiles, into cheap throwaway items. Foods that begin as luxury items often become banal mundane staples that are taken for granted. Outcomes from this process can be easily chronicled in any major food store today. White bread, which was once reserved only for the elites of Europe, has now become the Wonderbread plague. Chocolate, once reserved for Mesoamerican elites, is now the bane of the overfed multitude. Oversized, out-of-season fruits and vegetables which once only graced the tables of kings and nobles have become everyday fare. Fat-rich meats, which formerly were used only for

special occasions or for the highest ranks of society, are now commonplace for all but the poorest and produce coronary and arterial diseases on a wide scale. Wines and spirits that played crucial roles in feasts for elites (Dietler 1990) have now become the profane intoxicants of households throughout the industrial world. In short, our eating habits today largely are the result of, and reflect, the luxury foods of the past.

Thus, it seems that many foods that are taken for granted as everyday fare by today's urbane citizens really originated as costly delicacies in earlier societies. I suggest that early domesticates were developed as luxury foods and that the primary context for their consumption was in feasting. Feasts not only provide the vehicle for the use of luxury foods, but also the very reason for their existence. I shall use a number of examples from the tribal cultures of Southeast Asia to illustrate these propositions. Following the lead of earlier researchers who suggested that initial domestication was linked to feasting or the prestige use of foods (Bender 1978; Lewthwaite 1986; Runnels and Van Andel 1988), I have investigated the dynamics of tribal feasting in this region over the last eight years.

In my ethnoarchaeological approach, I and my students have endeavoured to develop models of community organization that are relevant to understanding prehistoric village life. We selected communities that were among the most traditional in terms of subsistence economy, socio-political structure, customs and ritual life. We undertook many household interviews in order to obtain a solid understanding of the subsistence economy of the communities with special attention paid to variability between households and constraints on the production of specific types of foods. We then tried to understand the basic aspects of the social and political structures of those communities from household and administrative perspectives and how these aspects were tied into subsistence production. We have conducted studies at several levels of socio-political complexity and surplus production, including studies among the transegalitarian Akha hill tribes of north-western Thailand, the (formerly) simple chiefdom-level polities of the Torajan highlands in Sulawesi and the chiefdom-level polities of Futuna in French Polynesia.

Transegalitarian societies (whether hunter/gatherers, horticulturalists or pastoralists) are those that have significant socio-economic inequalities (therefore are not egalitarian), but lack true socio-economic stratification or classes such as occur in chiefdom societies. Transegalitarian societies are characterized by private ownership of resources and produce, prestige objects, unstable socio-economic hierarchies, the production of surpluses, economically based competition and a wide range of feasting behaviour, usually including some ostentatious displays. I suggest that contemporary traditional Southeast Asian transegalitarian communities provide useful models for understanding the nature of prehistoric societies that first domesticated plants and animals and produced the first luxury foods. While improved plant varieties and technology, especially metal tools, have certainly increased the productive potentials of food production since early prehistoric times, many groups have expanded into environments that never could have been productive before the advent of metals. Thus, in contemporary marginal areas, the net productivity of communities is probably not very different from the levels characteristic of the best environments in early food-producing communities. It can be argued that the basic socio-political adaptations of marginal groups today and early groups that first domesticated plants and animals are probably similar, including feasting patterns and the use of luxury foods.

Some of the major conclusions that I and my students have developed are that feasts are critical for the conversion of surplus production into social and political ties through the creation of debt relationships and the display of mutual support (Adams 2001; Clarke 2001; Perodie 2001; Hayden 2001a). Feasting relationships are fundamental to structuring power relationships within communities, and have even been described as an institution comparable to parliamentary democracy (Clarke 2001). Typically, support networks and competition between networks operate primarily at the level of lineages or corporate kindreds (such as the tongkonans in the Torajan area), with only a loose correspondence between individual household production and feasting activity. However, in all situations, it is clear that feasting constitutes the single most important consumption activity of surpluses and that there is significant competition to display wealth at the most important feasts. Feasts can also be used to underwrite major labour-intensive projects such as house building, irrigation works, planting and harvesting (Dietler and Herbrich 2001; Dietler 1990).

Because the main goal in most alliance-building feasts is to impress guests favourably with the productive abilities of the hosts and their allies, specialty foods are a central feature of these feasts. Let us examine the luxury foods used in Southeast Asian feasts from this perspective. The major traditional luxury foods include meat from domestic animals, rice alcohol, dried fish, various types of rice, tobacco or opium and various sauces. In this article, I shall concentrate on domesticated animals and rice.

Southeast Asian luxury foods

Animals

Although Smith (2001) and Zeder (2001) have recently argued that water buffaloes, cattle, pigs and chickens were not domesticated as feasting foods, but provided protein for everyday nutritional needs, it can be pointed out that meat protein is hardly required for survival. Many societies throughout the world subsist with little or no meat protein in their diets. Even Bushman hunter/gatherers kill surprisingly few animals throughout the year, only 0.6 large animals per man per year (Lee 1979: 243). Hawkes et al. (2001: 685–7) report similar but not quite so extreme success (failure) rates among the Aché and Hadza. Meat, especially meat with a high fat content, is a special food that has always been relished. Because of this special role, it should not be surprising to find that domestic animals throughout tribal Southeast Asia are used primarily or, more commonly, *exclusively* for special occasions, notably feasts. The size of the feasting group and the importance of impressing guests largely determine the size, number and value of the animals to be sacrificed. Tribal members explicitly view the raising of domesticated animals as non-essential for subsistence, and explicitly speak of raising domestic animals as similar to putting money (surpluses) in the bank (Falvey 1977: 22–3, 38, 40, 86; Shubert 1986: 81). They use domestic animals to broker alliances, obtain marriage partners, solicit favours, create debts and impress guests at feasts. In Southeast Asia, Izikowitz (1951: 358) observes, raising water buffalo and growing rice are the major means by which people acquire wealth, and feasts are necessary to raise one's

status to that of a rich man, entitling individuals to be judges and use the most desirable swiddens (1951: 116–17, 209).

Thus, domestic animals are killed *only* in the context of feasts and sacrifices. This, in fact, is a behavioural pattern which is so overwhelmingly common in tribal and peasant cultures throughout the world, whether in New Guinea (Blanton and Taylor 1995), Crete (Keswani 1994), rural France (personal observations) or Turkey, that the onus is clearly upon critics like Zeder to explain why the situation should have been different in earlier transegalitarian societies. Her suggestion that domesticated animals would not require much labour to raise does not take into account the need for winter fodder (for which wild animals would traditionally have migrated to other areas), nor does it take into account the very significant risks of owning medium or large-sized domesticated animals – risks involving loss of investment as well as damage to other families' crops (Starr 1987; Hayden 2001b). In fact, it may well be that it was the high risk costs associated with keeping destructive animals such as cattle, pigs, goats and sheep that deterred their domestication in situations where highly productive wild stands of plants were being managed, as suggested by Willcox (1996, 1998: 33, 1999) for the Fertile Crescent during the Epipalaeolithic. If there were cost and risk impediments to raising animals, what benefits could have overcome these disadvantages?

Raising animals for feasts has these important advantages:

- 1 Animal flesh is inherently desirable in most traditional societies, whether hunter/gatherer or horticultural (Hayden 1981; Speth and Spielman 1983). The most critical aspect is the fat content, which renders meat protein digestible and delicious. Most importantly, the fat content of domestic animals can be elevated to much higher levels than among animals in the wild.
- 2 Surplus agricultural production can be invested and stored in domesticated animals, just as money can be put in the bank. Animals can subsequently be consumed to impress guests, given away or used to create debts.
- 3 Timing and the ability to amass surpluses for use at specified times are critical elements in holding alliance and competitive feasts. Procurement of wild animals is fraught with uncertainties and could rarely be used as a reliable basis for holding feasts. Domesticated animals, on the other hand, can be used whenever necessary.

From an ethnoarchaeological point of view, the case for the domestication of animals as luxury foods seems incontrovertible. The desire to quickly produce more animals suitable for feasting, in fact, appears to be one of the major motivating factors for the intensification of *agricultural* production (to feed animals) in East Africa (Hakansson 1994, 1995) as well as New Guinea (Blanton and Taylor 1995; Modjeska 1982), and also appears to play a key role in the production of maize and rice in Southeast Asia (Falvey 1977).

Rice

While the case for the feasting role of the first domesticated animals may be robust, the case for rice (and other cereals in the world) may appear more equivocal at first glance. Yet, the notion that rice may have originated as a luxury food is worth pursuing in order to see if, in fact, it can profitably be viewed from this perspective.

Rice may be taken for granted today as a basic ubiquitous staple in Asian diets (as argued by Smith 2001: 212); however, there are strong indications that this has not always been the case. The contemporary ubiquity of rice, I would argue, is the product of a long series of intensification events that have transformed rice from a highly valued special context food into one that is commonplace and often devalued, as is also the case with chocolate, bread, meat and beer. Examining the role of rice among Southeast Asian hill tribes should be particularly instructive since one locus of domestication is postulated to have been in the homeland of the hill tribes – the Himalayan foothills stretching from Burma through northern Thailand and into South China (Chang 1989). Alternatively, many hill tribes, such as the Akha, Hmong and Yao, originated from the Yangtzi River basin, which is postulated to be another hearth of rice domestication (Lu 1999: 72–3, 86–99, 115–16, 127). Early traditions of rice production and use may well have persisted among the more marginal groups in this heartland of rice domestication and among their descendants who now occupy the Himalayan foothills. Although many Asian scholars assume that wild wet rice was the first domesticate, in my estimation, it is equally or more reasonable to view wild hill rice as being the first form of domesticated rice.

What are the reasons for thinking that rice was at the outset a highly valued and relatively expensive crop to produce (in terms of time and effort) – a luxury crop that might well have been used primarily in feasting contexts? First of all, it is a cereal grain, and, as with wheat or maize, the inherent balance of lipids to protein and starch seems to exert a natural appeal to people's palates similar in nature to the innate attraction of rich and fast-burning foods. Thus, rice has a natural good taste, especially the less refined varieties such as the hill rices.

Second, people plant as much rice as they can, but they rarely have enough for daily meals throughout the year. They are limited in the amount that they can produce by soil fertility and the amount of manpower that can be assembled at key bottleneck periods (notably planting and harvesting: Falvey 1977: 55; Condominas 1977). The same appears to have been true for early wheat producers in Europe (Gregg 1988: 156, 161).

Third, and perhaps most important, growing rice is not really necessary for survival in the region. The poor, who have little or no rice, survive by harvesting wild forest products or growing other, less labour-intensive crops such as manioc. At times of rice and other crop failures, most people survive by reverting to the collection of wild forest products. Up until recently there were relatively widespread, albeit dispersed, hunter/gatherer groups in the mountains of Southeast Asia, such as the Mlabri, who survived off wild forest produce and perhaps represented marginalized former horticulturalists. Archaeologists should focus on these models of societies when considering early agriculture.

Fourth, rice, like wheat and maize, is widely used for the production of alcohol, which is one of the most important constituents of all feasts in grain-producing regions (e.g. Katz and Voigt 1986; Dietler 1990; Dietler and Herbich 2001). As others have noted (Katz and Voigt 1986; Stevens 1987; Dietler 1990), alcohol production is entirely based on surplus grain and thus is largely restricted to those who are relatively well off and can afford to use up their surpluses in this fashion.

Fifth, like other important grains (wheat and maize), rice holds a special place in the ritual and ideological life of Hill Tribes. There are special planting, maturation and harvesting rituals for rice that do not exist for any other plants. There are special varieties

of rice (sticky types) that are sacred and must be used in rituals. Rice is the only plant that has a soul like human beings (Izikowitz 1951: 244). The same also seems to be true of pre-industrial wheat in Europe as well as maize in Mesoamerica where it was given a deity status.

Sixth, my investigations have shown that rice is an absolutely required central element in all feasting rituals among Southeast Asian hill tribes (see also Fox 1992: 77; Gunawan 1998: 18).

Seventh, even today in the hill tribes and related traditional communities, there is a strong emic value put on the consumption of rice. I have seen rice avidly sought after by guests (especially the poor) at feasts as though it was of extreme value. It is also worth noting that the poor frequently do not have rice, or certainly not enough rice to last them throughout the year, and not as much rice as they want. In some areas such as the Torajan Highlands of Sulawesi, I was told that, before modern hybrids were introduced, only the rich had rice in any significant quantities. In the Philippines, too, rice was a high-status food served primarily at feasts (Junker 2001: 289).

Eighth, rice can always be exchanged for other commodities due to its high prestige value, whereas other food crops cannot always be confidently exchanged for commodities. Therefore, areas that could produce surpluses of rice in most years did so, as was the case with the Lamet (Izikowitz 1951). Even in some areas that produce surplus rice, like Sumba, people eat as much maize and root crops as possible for daily meals in order to save rice for feasts or to trade rice for water buffaloes and horses (Gunawan 1998: 23). It seems entirely probable that in former times, before industrially grown rice became available, the exchange rate for rice would have been much higher than its current value, just as the availability of commercial salt has impoverished many traditional communities that had control over lucrative pre-industrial salt sources.

Ninth, and finally, the special role of rice in traditional economies of the area is highlighted by the fact that other crops are more reliable and provide more calories than rice. Manioc is perhaps the most interesting example, since I have been told that hill tribe families can never starve in the region due to the ease and reliability of growing manioc (Maneeprasert, R. pers. com.); and, in fact, starvation seems to be a very rare occurrence, although failures of the rice crops are relatively commonplace.

Thus, while rice is highly desired and prestigious, it also requires a high labour investment compared to other foods like manioc. In addition, as with the raising of cattle, there are many risks involved in growing rice. These include droughts, inadequate temperatures, insect infestations, depredations by rodents, incursions by wild and domestic animals and birds, and diseases. As Bogucki (1999: 197) has argued, domesticates by nature are high-risk, unstable products, and this is especially true of rice. Thus, one may ask why people cultivated rice to begin with. I suggest that growing rice really only makes sense initially as a prestige crop grown to impress guests at feasts. It may have also been highly valued for its ability to produce alcohol and to increase the growth and reproduction rates of cattle or swine, as is the case among the transegalitarian cattle raisers studied by Hakansson (1994, 1995). In the societies studied by Hakansson, irrigation was developed to increase millet production or acquisition so that cattle production could be increased. In Southeast Asia, feeding pigs maize is similarly critical (Hayden 2001b). These socio-political models of forces driving the intensification of rice

production in Asia might well be taken into consideration in future evaluations of rice intensification.

It is clear that the increases in labour costs (represented by the initial cultivation and domestication of rice and its subsequent augmented productivity via irrigation) must have been outweighed by the increases in wealth, power and socio-political fitness that successful growers and users of rice experienced via their deployment of rice in exchanges, feasting and related socio-political struggles.

In sum, I think a good case can be made that rice has traditionally held a highly valued position in Southeast Asia, that it was a relatively costly and high-risk plant to cultivate, and that it was initially used in special contexts such as feasting and drinking. This seems likely for regions of low productivity today such as the mountains, but I think it is also likely to have characterized the initial phases of domestication of rice no matter what the geography. Limited technology (the lack of irrigation or metal tools for clearing forests or spading dense wetland root systems) and the lower yield of the initial varieties of rice must have made early production much more precarious and costly than today, even in favourable environments. By way of comparison, Mexican maize farmers today do not consider it worthwhile to farm land with less than a 200–250 ton yield per hectare. Yet, according to estimates, initial domesticated varieties of maize yielded only about 60–80 tons per hectare (Flannery 1973: 297–8). If early domesticated forms of rice exhibited similar low levels of productivity, they would certainly not have been worth cultivating as staples. Moreover, the widespread similarity in emic importance and rituals surrounding rice and its use in feasting throughout tribal Asia strongly argue for an early role of rice as a prestige feasting food throughout the area. While technological improvements such as irrigation have made it possible to intensify rice production in highly productive areas, the advent of metal tools and cheap iron has only recently made rice cultivation marginally feasible in the areas of lower productivity. It is in these regions that the older patterns of rice cultivation and use may have persisted.

Implications for the transition from foraging to farming

It is worth pausing to determine whether the widespread contemporary view of the common, ‘mundane’ role of species that were first domesticated is perhaps not overly ethnocentric or obscuring of past realities. On the basis of research in Southeast Asia, it seems likely that many of the domesticated foods that we take for granted today as being staple subsistence items probably originated as luxury foods among transegalitarian hunter/gatherers and horticulturalists. The specific context in which these foods repeatedly appear ethnographically is that of feasts. This phenomenon has long been remarked upon by anthropologists working in Southeast Asia with regard to animal domesticates (e.g. Leach 1954; Isikowitz 1951; Falvey 1977). Equally good arguments can be advanced for a similar luxury food role for rice and alcohol. Although we are still in the exploratory stages of understanding how and why this situation emerged, there is no compelling reason to believe that it was different in prehistory. A number of alternative scenarios within the feasting-and-surplus model for the domestication of luxury (and non-luxury plants) are possible. It is far too early to tell which of these may best fit the actual archaeological record

or to dismiss any of them out of hand. What is required is an ongoing dialogue and openness to theoretical and research exploration. The basic scenario of feasts supported by surpluses and the drive to produce ever more in order to impress potential or actual allies (Hayden 1990, 1995a, 1995b) is very different from the traditional climatic or population pressure stress models of domestication.

In terms of the Eurasian Neolithic, the feasting model implies that all domesticated animals were consumed in feasting contexts; however, archaeologically, faunal remains may be relatively uniform between households due to households taking turns in hosting feasts, gifting of major cuts of meat and scavenging. Nevertheless, household food preparation or serving-vessel sizes should reflect feasting activities and there may be prestige displays of feasting remains such as the bucrania in Çatal Hüyük households. On a larger scale, feasting remains should be relatively apparent at major ceremonial sites such as causewayed enclosures or tomb sites. Special attention should also be paid to the Neolithic role of cereals since these may have been used primarily for making beer or bread for feasts (both labour-intensive preparations). The enduring minor importance of domesticated cereals in the overall subsistence of a number of early Neolithic communities seems to imply such a role, leading some analysts to argue that these were essentially hunting and gathering economies (Thomas 1991: 25; Lidén 1995: 411; Willcox 1999: 494; Hauptmann 1999: 78; Cauvin et al. 1999: 101; Esin and Harmankaya 1999: 115; Özdoğan 1999: 234–5; Stafford 1999: 13, 134–5). However, even substantial consumption of cereals at later times may be related to the growing of cereals for brewing since many societies obtain up to 20–30 per cent of their calories in the form of beer at feasts (Dietler 2001: 81–2).

Because domestication is often viewed as one outcome of resource intensification, it is worth emphasizing that ethnographers of transegalitarian societies have repeatedly observed that the primary force behind intensified subsistence production is not food shortage, but the desire to obtain social and political advantages – to obtain the most desirable mates, to create the most advantageous alliances, to wield the most political power. This pattern is documented in Southeast Asia (Isikowitz 1951: 341, 354), New Guinea (Modjeska 1982; Blanton and Taylor 1995), the Philippines (Junker 2001: 295ff.), the Northwest Coast (Perodie 2001), Europe (Jennbert 1984, 1987), East Africa (Håkansson 1994, 1995), Polynesia (Earle 1977), Coastal California (Blackburn 1976: 242) and elsewhere (e.g., Runnels and Van Andel 1988 for Greece). As Håkansson (1994: 264) observes for East Africa, in a vein reminiscent of Isikowitz, labour is the main bottleneck in these transegalitarian societies, and, thus, there is constant pressure for more wives and higher bride prices. There are never enough cattle for brides or other socio-political goals, and people constantly try to obtain more wives via the exchange of surpluses or valuables for cattle or by means of raiding. It is common in these situations for families to go heavily into debt for competitive displays, once again creating powerful pressures to increase production by whatever means possible in order to pay off the debts.

Whether defence, procurement of brides, political advantage or other goals were the major adaptive driving forces, it is clear, as Håkansson (1994: 271) has noted, that these demands pushed the economic systems to their limits in a relentless juggernaut of pressure to intensify production. As he and I have noted, the resulting facts and scenarios do not support population pressure models of intensification at all.

If domestication had occurred but once in human history, the population pressure approach might be credible. However, the fact that domestication occurred multiple times in multiple locations throughout the world in the short span of a few thousand years indicates that very fundamental changes and forces were at work. Many of the first domesticates in most regions of the world are clearly luxury foods or prestige items (e.g. gourds, dogs), while other initial domesticates may have been luxury foods or staples used either directly in feasts or indirectly to underwrite feasts. Both Smith (2001) and Zeder (2001) reject this feasting model of domestication and claim that none of the early domesticates can be viewed as luxury foods. They also argue that early food-producing communities were not socially or economically complex enough to support intensifying feasting systems. From the ethnoarchaeological and archaeological data that I am familiar with, their assessment seems far too premature, perhaps resulting from too narrow a focus on archaeological objects as objects. Surely, we need to concentrate on the human behaviour and culture that those artefacts represent, and ethnoarchaeology provides a valuable key in that undertaking.

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References

- Adams, R. 2001. Ethnoarchaeology of Torajan feasts. Unpublished master's thesis. Burnaby, British Columbia: Simon Fraser University.
- Bender, B. 1978. Gatherer-hunter to farmer: a social perspective. *World Archaeology*, 10: 204–22.
- Blackburn, T. 1976. Ceremonial integration and social interaction in Aboriginal California. In *Native Californians: A Theoretical Retrospective* (eds L. Bean and T. Blackburn). Socorro, N. Mexico: Ballena Press, pp. 225–43.
- Blanton, R. and Taylor, J. 1995. Patterns of exchange and the social production of pigs in highland New Guinea: their relevance to questions about the origins and evolution of agriculture. *Journal of Archaeological Research*, 3: 113–45.
- Bogucki, P. 1999. *The Origins of Human Society*. Malden, MA: Blackwell.
- Cauvin, J., Aurenche, O., Cauvin, M-C. and Balkan-Atli, N. 1999. The pre-pottery site of Cafer Höyük. In *Neolithic in Turkey* (eds M. Özdoğan and N. Başgelen). Istanbul: Arkeoloji ve Sanat Yayınları, pp. 87–104.
- Chang, T. T. 1989. Domestication and the spread of the cultivated rices. In *Foraging and Farming: The Evolution of Plant Exploitation* (eds D. Harris and G. Hillman). London: Unwin Hyman, pp. 408–17.

- Clarke, M. 2001. Akha feasting: an ethnoarchaeological perspective. In *Feasts: Archaeological and Ethnographic Perspectives on Food, Politics, and Power* (eds M. Dietler and B. Hayden). Washington, DC: Smithsonian Institution Press, pp. 144–67.
- Condominas, G. 1977. *We Have Eaten the Forest*. New York: Hill & Wang.
- Dietler, M. 1990. Driven by drink: the role of drinking in the political economy and the case of early Iron Age France. *Journal of Anthropological Archaeology*, 9: 352–406.
- Dietler, M. 2001. Theorizing the feast: rituals of consumption, commensal politics, and power in African contexts. In *Feasts: Archaeological and Ethnographic Perspectives on Food, Politics, and Power* (eds M. Dietler and B. Hayden). Washington, DC: Smithsonian Institution Press, pp. 65–114.
- Dietler, M. and Herbich, I. 2001. Feasts and labor mobilization: dissecting a fundamental economic practice. In *Feasts: Archaeological and Ethnographic Perspectives on Food, Politics, and Power* (eds M. Dietler and B. Hayden). Washington, DC: Smithsonian Institution Press, pp. 240–64.
- Earle, T. 1977. A reappraisal of redistribution: complex Hawaiian chiefdoms. In *Exchange Systems in Prehistory* (eds T. Earle and J. Ericson). New York: Academic Press, pp. 213–29.
- Esin, U. and Harmankaya, S. 1999. Asikli. In *Neolithic in Turkey* (eds M. Özdoğan and N. Başgelen). Istanbul: Arkeoloji ve Sanat Yayınları, pp. 115–32.
- Falvey, L. 1977. *Ruminants in the Highlands of Northern Thailand*. Thai-Australian Highland Agronomy Project. Chiang Mai: Tribal Research Institute, Chiang Mai University.
- Flannery, K. 1973. The origins of agriculture. *Annual Review of Anthropology*, 2: 271–310.
- Fox, J. 1992. The heritage of traditional agriculture in Eastern Indonesia: lexical evidence and the indications of rituals from the outer arc of the lesser Sundas. In *The Heritage of Traditional Agriculture among the Western Austronesians* (ed. J. Fox). Canberra: Australian National University, pp. 67–88.
- Gregg, A. 1988. *Foragers and Farmers*. Chicago: University of Chicago Press.
- Gunawan, I. 1998. *Hierarchy and Balance: A Study of Wanokoka Social Organization*. Canberra: Australian National University.
- Hakansson, N. T. 1994. Grain, cattle, and power: social processes of intensive cultivation and exchange in precolonial western Kenya. *Journal of Anthropological Research*, 50: 249–76.
- Hakansson, N. T. 1995. Irrigation, population pressure, and exchange in precolonial Pare, Tanzania. *Research in Economic Anthropology*, 16: 297–323.
- Hauptmann, H. 1999. The Urfa region. In *Neolithic in Turkey* (eds M. Özdoğan and N. Başgelen). Istanbul: Arkeoloji ve Sanat Yayınları, pp. 65–86.
- Hawkes, K., O’Connell, J. and Blurton Jones, N. 2001. Hunting and nuclear families. *Current Anthropology*, 42: 681–709.
- Hayden, B. 1981. Subsistence and ecological adaptations of modern hunter/gatherers. In *Omnivorous Primates* (eds R. Harding and G. Teleki). New York: Columbia University Press, pp. 344–421.
- Hayden, B. 1990. Nimrods, piscators, pluckers, and planters: the emergence of food production. *Journal of Anthropological Archaeology*, 9: 31–69.
- Hayden, B. 1995a. A new overview of domestication. In *Last Hunters – First Farmers* (eds T. Price and A. Gebauer). Santa Fe, New Mexico: American Research Press, pp. 273–99.
- Hayden, B. 1995b. Pathways to power: principles for creating socioeconomic inequalities. In *Foundations of Social Inequality* (eds T. Price and G. Feinman). New York: Plenum Press, pp. 15–86.
- Hayden, B. 1998. Practical and prestige technologies: the evolution of material systems. *Journal of Archaeological Method and Theory*, 5: 1–55.
- Hayden, B. 2001a. Fabulous feasts: a prolegomenon to the importance of feasting. In *Feasts:*

Archaeological and Ethnographic Perspectives on Food, Politics, and Power (eds M. Dietler and B. Hayden). Washington, DC: Smithsonian Institution Press, pp. 23–64.

Hayden, B. 2001b. The dynamics of wealth and poverty in the transegalitarian societies of Southeast Asia. *Antiquity*, 75: 571–81.

Izikowitz, K. 1951. *Lamet: Hill Peasants in French Indonesia*. Uppsala: Goteborg.

Jennbert, K. 1984. *Den Productiva Gavan*. Lund: Acta Arcaeologica Lundensia, No. 16.

Jennbert, K. 1987. Neolithisation processes in the Nordic area. *Uddevalla*, 21–35.

Junker, L. 2001. The evolution of ritual feasting systems in prehispanic Philippine chiefdoms. In *Feasts: Archaeological and Ethnographic Perspectives on Food, Politics, and Power* (eds M. Dietler and B. Hayden). Washington, DC: Smithsonian Institution Press, pp. 267–310.

Katz, S. and Voigt, M. 1986. Bread and beer: the early use of cereals in human diet. *Expedition*, 28(2): 23–34.

Keswani, P. 1994. The social context of animal husbandry in early agricultural societies. *Journal of Anthropological Archaeology*, 13: 255–77.

Leach, E. R. 1954. *Political Systems of Highland Burma*. Boston, MA: Beacon Press.

Lee, R. 1979. *The !Kung San: Men and Women, and Work in a Foraging Society*. Cambridge: Cambridge University Press.

Lewthwaite, J. 1986. The transition to food production: a Mediterranean perspective. In *Hunters in Transition* (ed. M. Zvelebil). Cambridge: University of Cambridge Press, pp. 53–66.

Lidén, K. 1995. Megaliths, agriculture, and social complexity. *Journal of Anthropological Archaeology*, 14: 404–17.

Lu, T. 1999. *The Transition from Foraging to Farming and the Origin of Agriculture in China*. Oxford: British Archaeological Reports, International Series 774.

Modjeska, N. 1982. Production and inequality: perspectives from Central New Guinea. In *Inequality in New Guinea Highlands Societies* (ed. A. Strathern). Cambridge: Cambridge University Press, pp. 50–108.

Özdoğan, M. 1999. Concluding remarks. In *Neolithic in Turkey* (eds M. Özdoğan and N. Başgelen). Istanbul: Arkeoloji ve Sanat Yayinlari, pp. 225–36.

Perodie, J. 2001. Feasting for prosperity: a study of southern Northwest Coast feasting. In *Feasts: Archaeological and Ethnographic Perspectives on Food, Politics, and Power* (eds M. Dietler and B. Hayden). Washington, DC: Smithsonian Institution Press, pp. 185–214.

Runnels, C. and Andel, T. van. 1988. Trade and the origins of agriculture in the eastern Mediterranean. *Journal of Mediterranean Archaeology*, 1(1): 83–109.

Shubert, B. 1986. *Proposals for Farming Systems-Oriented Crop Research of Wawi Highland Agriculture Research Station in Northern Thailand*. Berlin: Center for Advanced Training in Agricultural Development, Technical University of Berlin.

Smith, B. 2001. The transition to food production. In *Archaeology at the Millennium* (eds G. Feinman and T. Price). New York: Kluwer Academic/Plenum, pp. 199–230.

Speth, J. and Spielmann, K. 1983. Energy source, protein metabolism, and hunter-gatherer subsistence strategies. *Journal of Anthropological Archaeology*, 2: 1–31.

Stafford, M. 1999. *From Forager to Farmer in Flint*. Aarhus: Aarhus University Press.

Starr, M. 1987. Risk, environmental variability and drought-induced impoverishment: the pastoral economy of central Niger. *Africa*, 57(1): 29–50.

Stevens, W. 1987. Does civilization owe a debt to beer? *New York Times* 24 March: 20.

Thomas, J. 1991. *Rethinking the Neolithic*. Cambridge: Cambridge University Press.

Willcox, G. 1996. Evidence for plant exploitation and vegetation history from three Early Neolithic pre-pottery sites on the Euphrates (Syria). *Vegetation History and Archaeobotany*, 5: 143–52.

Willcox, G. 1998. Archaeobotanical evidence for the beginnings of agriculture in Southwest Asia. In *The Origins of Agriculture and Crop Domestication* (eds A. Damania, J. Valkoun, G. Willcox and C. Qualset). London: International Center for Agricultural Research in the Dry Areas, Food and Agriculture Organization of the UN, pp. 25–38.

Willcox, G. 1999. Agrarian change and the beginnings of cultivation in the Near East. In *The Prehistory of Food* (eds C. Gosden and J. Hather). London: Routledge, pp. 478–500.

Zeder, M. 2001. Feast or forage, the transition to agriculture in the Near East. Paper presented at the annual meetings of the Society for American Archaeology, New Orleans.