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Gatherer-hunter to farmer: a social perspective

Barbara Bender

Introduction

Technology and demography have been given too much importance in the explanation of agricultural origins; social structure too little. Flannery conceded as much in 1973 but, unfortunately, did not elaborate. This paper examines some of the properties of social organization among gatherer-hunters, and tries to show how developing social relations may promote economic change.

It begins with a formulation of the problem, proceeds to the examination of recent explanatory models, proposes an alternative approach, and reviews some archaeological data in the context of this alternative.

Formulation of the problem

It is often assumed that food production and agriculture are the same thing: that a discussion of one will be appropriate to the other. The assumption is incorrect. Food production is a question of techniques; agriculture a question of commitment (Bronson 1975).

Higgs and Jarman (1972) are among those who equate the two. They urge that the development of food production should not be reviewed in isolation, that food production is just one among many forms of intensification. Some forms lead to domestication; others – either because of the techniques of planting and harvesting used, or because of the genetic make-up of the resources – do not. Since the people involved could not foresee the long-term consequences, there is no reason to make an artificial divide: the entire range of intensive practices should be examined and the question of origins should be posed in terms of ‘Why intensification?’ rather than ‘Why domestication?’

This formulation is fine as far as it goes. It permits a more precise analysis of the development of food producing techniques. Its limitation is the assumption of technological causality: that certain changes in technique lead to a commitment to agriculture. But technological change, while it may constitute a necessary precondition of agriculture, has no inherent developmental properties. So-called ‘incipient agriculture’ need have nothing ‘incipient’ about it. The reason for this is that commitment is not primarily a question of technology, but of changing social relations. If all one wants to do is examine

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the origins of food producing *techniques* one can concentrate on the question of 'Why intensification?' If one wants to understand why these techniques came to be dominant, and why man came to depend on them, the focus must shift to evolving social relations, and to the demands that these generate.

The above statements require justification. An examination of the properties of intensification provides a convenient starting point, demonstrating why intensification, unlike commitment, need neither cause nor result in social or demographic change.

The *Oxford Dictionary* defines intensification as 'increasing productivity per given area': a rather narrow definition but sufficient for the purposes of the argument. Two points need to be stressed.

First: increased productivity is not the same as increased production. It can be, but need not be. When archaeologists write that there was wide-spread intensification of gatherer-hunter strategies in the European Post Pleistocene, they mean that gatherer-hunters took more from a given unit of land. The unit was more productive. But the gatherer-hunters could choose to exploit a small area and the output could remain the same as before. Increased productivity, as Sahlins (1972: 86) noted, 'might only shorten the period of necessary work, the gains absorbed rather by an expansion of rest than of output'. The Australian Yir Yiront provide a good illustration - increased productivity associated with the introduction of the steel axe was not invested in 'the improvement of the conditions of life . . . but in sleeping' (Sharp 1952).

Second: increased productivity need not involve increased labour cost. The widely-held contrary belief owes much to Boserup's insistence that the trajectory from swidden to multi-cropping, from extensive to intensive farming practices, involves an unfavourable change in the ratio of labour input to yield output (1965). In the context of both farming and gatherer-hunter systems this assumption requires modification. Intensification may involve increased labour at certain junctures in the operation which are more than off-set at other junctures. A harvester of wild grasses may make an elaborate flint-inset sickle, investing more time and labour than for a cruder tool. But in the use and re-use of this tool he reduces his operating time. Overall there is a *lowering* of the labour input.

It is important to be clear on these points. Otherwise it is easy to assume that intensification is synonymous with increased production and that, since no one produces more or works harder unless they have to, intensification must be explained in terms of pressure.¹ Cohen (1977: 21), for example, assumes that intensive practices found among present-day gatherer-hunter groups - among the Australian aborigines, or the Menomini of Wisconsin, the Pauite, or the Pomo - are all caused by increased pressure on resources, and the only reason they have not resulted in a commitment to food production is because the plant or animal species were not genetically responsive. Such reasoning fails to account for frequent cases of gatherer-hunters who cultivate high-yielding domesticates, could settle and commit themselves, but do not. The Nambikwara of Brazil (Lévi-Strauss 1955: 359), the Siriono of Bolivia (Holmberg 1950: 28), the Southern Paiute of South Utah and northern California (Steward 1938: 180), the Penobscot indians of Maine, and the Southern islanders of the western Torres straits (Harris 1977) all fall into this category. Intensification may simply be about improving accessibility, reducing travel time, or making returns more predictable. It need not be about food resources in

particular, but about access to plants used for poison or for medicinal purposes or for cordage, or to animals used for ritual etc. (Bronson 1975).

Where intensification is about increased productivity but not increased production it need not be associated with social or demographic change. It may have little or nothing to do with pressure and may have no bearing on the problems of a commitment to food production. It becomes significant only when associated with increased production. The focus should be on gatherer-hunter groups who intensify to meet demands for more food per head of population. Herein lies a potential trajectory towards farming: such demands made on a gatherer-hunter procurement system may come up against ecological constraints, the demands may outrun the regenerative capacity of the wild resources, and in this context manipulation and eventual domestication of high-yielding plants and animals may become significant.

The enquiry into agricultural origins is not, therefore, about intensification *per se*, not about increased productivity, but about increased production and about why increased demands are made on the economy.

Current explanatory models

The frequent lack of precision in formulating the problem need not have had major theoretical repercussions. Since intensification has generally been assumed – incorrectly – to mean increased production rather than productivity, the question ‘why intensification?’ has often been reformulated as ‘why increased demand?’ Explanations offered in the last decade could thus have been apposite. This section attempts to show why they were not.

Most of the interesting recent theorizing on origins comes from America, in particular from the Processual archaeologists (Binford 1968; Flannery 1969; Cohen 1977). It is their approach which is analysed here.

American archaeologists, unlike their European counterparts, operate within an anthropological framework and readily incorporate both anthropological theory and ethnographic data into their developmental models. The ethnographic material in the writings of, for example, Birdsell (1968; 1977), Lee (1968: 1972a, b) and Sahlins (1972), demonstrates that contemporary gatherer-hunters rarely approach starvation even in marginal environments; that the work hours of the !Kung and the Australian aborigines compare quite favourably with those of horticultural and swidden practitioners (but see note 2); that gatherer-hunter attitudes to food-sharing, as well as the requirements of mobility, militate against accumulation of surplus or material possessions; that gatherer-hunters do not suffer from any ‘puritan ethos’ (leisure is leisure and requires no excuse); that gatherer-hunters tend to operate close to the optimal, and well below the maximal, carrying capacity; and that they have many and varied methods for maintaining low birth-rates.

This body of ethnographic information is used by the Processual archaeologists to reject any sort of vitalist explanation, that change is inherent in human nature. The search therefore is to find recurrent phenomena that might cause pressure on the system and force economic intensification. *On* the system. There has been an almost universal

tendency for the source of pressure to be located outside the system. The reason for this is quickly apparent.

The American Processual archaeologists operate within a systemic framework, specifically General Systems theory. The variant adopted is an ecosystemic approach, focusing on the relations between the sub-systems and the environment. They also tend to accept that the system is basically in equilibrium and that most aspects of the system work to maintain the equilibrium, encouraging negative feedback and homeostasis. There is also a strong techno-environmental bias. Recently Flannery (1972a) attempted a more balanced orientation, insisting that the ecosystemic approach involves not only the exchange of matter and energy (techno-environmental interactions) but equally information (social regulation), and that the output of a system is socially rather than technically determined. However, while ideology and social institutions become sub- rather than super-structures, they are still considered to be functionally adaptive.

Friedman (1974) summarized the advantages and disadvantages of the systemic approach. The advantages are that it concentrates on relations – certainly an advance on endless listings of apparently autonomous traits – and that it allows the analyst to appreciate the limits imposed on some sub-systems by others and the possibility for contradiction between sub-systems. The disadvantage, in the variant used by the archaeologists, is that the possibility of internal contradiction is negated by the insistence that everything operates to maintain the stability of the system. There is no room for features that are not adaptive, ‘nature and culture become a homogenous whole’ (Friedman 1974).

This is not the place for a discourse on why cultural systems should not be considered as homeostatic. The arguments have been well summarized by Burnham (1975) and Bennett (1976). Briefly: when organisms are subjected to environmental stress beyond the tolerance of their homeostatic mechanisms, they die; cultural systems do not die, they change. Why? How? Because the cultural system has self-transforming properties, because variability is not geared simply to adaptive functioning. A given structure can have internal properties which are only resolved over time. Rather than societies being in equilibrium they are always in a state of becoming (Faris 1975).

To return to the specific systems models offered in the context of intensification: change is due to pressure from outside the system, and the suggested source is demographic pressure. The pressure is seen as external to the system in the sense that the threat is to the survival of the population as a whole rather than to the specific cultural system. Binford (1968), the earliest proponent of this model, suggested that the pressure resulted, directly or indirectly, from the effects of sedentism; that with sedentism the need for wide birth-spacing declined, numbers shot up, and the tendency, found among nomadic gatherer-hunters, to stabilize well below carrying capacity, was reversed.

The Binford model has many inconsistencies, some of which have been tackled by other writers (Flannery 1969; Meyers 1971). An obvious question is why sedentism occurred. Binford falls back on a techno-environmental explanation: that it resulted from the availability of ‘optimal’ environments in the early Post Pleistocene in conjunction with the necessary technological know-how. This pre-supposes that sedentism is an easy option, which is not necessarily true. Lee (1968) and Woodburn (1968) stress that the problem of sedentism is not so much the increased ecological degradation that goes with

continuous occupation, as the social problems involved in continuous contact – gatherer-hunters have few mechanisms for controlling strife other than splitting up and moving on. Problems may be compounded by labour costs involved in building more substantial shelters and storage facilities, by the probability of disease, both from increasingly unhygienic conditions and from prolonged proximity to stagnant water, and by the threat of food loss through rotting or rodents, and the increased danger of expropriation (Cohen 1977: 78). Other indirect complications may occur if sedentism is associated with changes in procurement strategies. A greater dependence on a smaller range of resources may result in nutritional deficiencies and an increased risk of famine, variety previously having acted as a buffer. Where seasonal crops become more important there may be unwelcome changes in work and consumption patterns: labour may be highly concentrated for short periods rather than more evenly dispersed, and returns may be increasingly delayed.

A techno-environmental explanation of sedentism is unacceptable – however favourable the conditions, there are many good reasons why the option would not be picked up. Cohen, recognizing this, tries for longer-term demographic pressure, preceding and enforcing settlement. He suggests that we take less heed of ethnographic findings of mobile gatherer-hunters stabilizing well below carrying capacity, or of physiological and biological controls on population numbers, and instead opt for a straightforward ‘Malthusian’ model – demographic pressure as a continuous process, inevitable increase in numbers leading to a reduction in annual territories and people therefore forced to settle. The worldwide sedentism and food-production in the early Post Pleistocene is the outcome of worldwide demographic saturation. A refutation of this argument is in press (Bender 1978). Empirical evidence is in short supply, but where available it offers no support. In South-West Asia there is no evidence of population growth in optimal areas such as the Lebanese woodlands, only in more marginal areas like the Negev (Flannery 1973); in South-West North America intensification and a commitment to agriculture coincide with a decline in population (Plogg 1974: 120); and in the Central Valley of Mexico the ratio of population to productive resources remains constant right through a period of economic intensification (Brunfiel 1976).

The assumption that sedentism automatically correlates with rapid population increase also needs questioning. Ethnographic examples confuse the issue, for they document a situation in which sedentism is associated with more assured food supplies, new food-stuffs and better medical attention. Earlier sedentism would not have had such advantages. Lee (for the !Kung) and Spencer and Gillen (1927, I: 221) (for the Australian aborigine) consider that long lactation is practised to off-set a lack of suitable food-stuffs for early weaning rather than as an intentional form of birth control geared to the needs of mobility. Such constraints may continue to operate after settlement – the sedentary Oriomo Papuans suckle their babies for long periods because sago, the staple crop, is unsuitable for early weaning. The effects of sedentism on birth-spacing should not be confused with the effects of a change of diet.

Demographic pressure should be demoted from prime-mover. It should be seen not as a direct expression of population numbers *vis-à-vis* resources but rather as an expression of how these, the numbers and the resources, are culturally organized (Sahlins 1972: 131). Demography is the result of a hierarchy of causes, of which the most important

are the relations of production. At the same time demography feeds back into the system, affecting the functioning and evolution of societies (Godelier 1975). Put another way, demographic pressure will be perceived when the social structure comes under threat rather than in terms of population survival – it may therefore have nothing to do with an increase in numbers (O’Laughlin 1977; Bronson 1975).

An alternative approach

Demolition is easy; construction less so. This section concentrates on analysing primitive social organization, in a search for potential internal pressure that might make increasing demands on production. It will take some time before we return to the specific economic resolution to these demands embodied in the commitment to food production.

First, however, there is a general point which needs to be made, although this writer cannot elaborate on it. Account must be taken of the trajectory of physical evolution and the qualitative breaks that occur along it. Almost the only similarity between gatherer-hunters four million years ago and gatherer-hunters of the late Pleistocene is a dependence on wild resources. Because of the techno-environmental bias in prehistoric studies this common feature has been over-emphasized. It is at least as important to recognize that, in terms of mental capacity and, related to this, physical dexterity, there have been qualitative leaps. Though the social evolution of *Homo sapiens* owes much to earlier Hominid societies, it seems probable that it was the particular mental and physical changes that occurred 40,000 years ago that made the development of more varied and more complex societies possible. Prehistory should not be viewed as an endless slow unfolding; important changes in social relations (with attendant effects on resource utilization) may have been a relatively rapid and belated development (Bennett 1976: 243; Faris 1975).

The following account of primitive tribal organization makes no assumptions about pre *Homo-sapiens* society, but does assume that anthropological findings will be of considerable relevance to the study of societies from the Late Palaeolithic onwards. It begins with a description of band organization, then moves to the larger system.

The Domestic Mode of Production formulated by Sahlins in the context of peasant farmers is equally applicable to gatherer-hunters. The ‘household’ is the basic unit of production – ‘household’ not necessarily in western terms, it may be a family or extended family, persons of a particular age-group, or it may be organized on principles of lineage. This unit is the dominant production institution with, to quote Sahlins (1972: 76), ‘an appropriate technology and division of labour, a characteristic economic objective or finality, specific forms of property, (and) definite social and exchange relations between producing units’. Essentially it produces for use; either direct use or for use in reciprocal exchanges of essential commodities. Its objective is to reproduce itself; not to accumulate wealth.

This production for use explains the essential ‘under-productivity’ of the system: the technological maxima, the amount that can be produced, do not correspond to the economic optima, the amount that is produced. If such units were really self-sufficient there would be no way in which demands for increased *per capita* production could be

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generated. But of course the domestic units cannot maintain total autonomy. There is frequent failure at the level of the individual unit. They survive because, meshed into a larger structure of kinship and other relations, they are subsidized by the more successful units (Sahlins 1972: 102).

This could be called 'surplus' production: production to cover social obligations. And, as well as this mutual support system, there are other social obligations which require 'surplus' production; material flows associated with marriage, ceremonial and trade alliances. There is therefore a larger system, and therein lies the potential for increased demand. Attention must focus, not so much on the local systems, the labour processes operating at household level, but on the larger system of social relations and social processes.

The following analysis of these social processes borrows from the alliance theory of Lévi-Strauss and the modifications proposed by Sahlins. Its claim to originality is the insistence that much that has been written in the context of peasant food-producers is relevant to gatherer-hunters; that, as so often, an over-emphasis on subsistence modes has blurred the underlying similarity of the social structures. There seems to be no justification, in the *Homo-sapiens* period, for formulating an evolutionary divide between gatherer-hunter 'bands' and 'tribal' food producers. Present-day gatherer-hunters are tribal societies, and, as will be demonstrated, prehistoric gatherer-hunters were not only tribal societies but were more varied and often more complex than those that remain today.

Gatherer-hunter bands cannot be autonomous. They are dependent on wild resources which fluctuate from season to season, year to year, and area to area. They operate with limited techniques and limited co-operative units. There is a need for groups to move across the landscape, to have ready access to different resources, to be demographically flexible; it is therefore essential to have reciprocal social relations (Godelier 1975; Wilmsen 1973). This need for flexibility and reciprocity runs counter to the fear of the stranger, those outside the group, and it is mediated by alliance. 'As against war, exchange. The transfer of things that are in some degree persons and of persons in some degree treated as things, such is the consent at the base of organized society' (Sahlins 1972: 169). The alliance invokes reciprocity: the obligation to give, to receive and to repay. And it involves material flows – and so makes demands on the individual domestic unit.

Alliances, which maintain social relations and serve both political and economic ends, are embedded in the kinship system; it is this that provides the social rules, and the terms to describe the relations of co-operation and non-violence (Godelier 1975; 1977, pt. I: 1). These kinship systems are flexible and varied. They may be simple, involving loose affinal and consanguinal relations, or elaborate, with relations reinforced, and to some extent cross-cut, by pan-tribal institutions such as dispersed clans, age-grades, trade-partners or secret societies.

Corresponding to the type and complexity of the alliance systems, greater or lesser demands are made on production. Sometimes the kinship system and associated marriage rules may involve hierarchization. Thus moiety organization, while permitting a wide-flung network of kin relations, also defines and restricts marital choice. In some cases – for example among the Australian Yir Yiront – certain groups become wife-givers, others

wife-takers, and the differential status is marked by increased flow in bride wealth. It is probable that present-day gatherer-hunter systems are only impoverished versions of earlier systems. Nowadays moiety organization is found only among groups who have remained relatively isolated from contact with farmers, such as the Australian aborigine, the Gê of southern Brazil and the Californian indians. These may be the remnants of more widespread, more elaborate prehistoric systems that operated before acculturation and impoverishment set in.

Present-day ceremonial exchange may also only document truncated versions of earlier more intricate systems. Even so, the Arnhem Land aborigines provide evidence of a concrete totemism that involves groups in considerable work, craft specialization and trade (Sahlins 1976: 101; Thomson 1949), while the potlatch ceremonies of the Northwest Coast indians show the variety and scope of ceremonial exchange. Rosman and Rubel (1971: 1–9) have discussed how potlatch operated, not – as the economic functionalists insist – to even out unequal resources (which it notoriously does not), but to establish and maintain alliances between groups and to reinforce the authority of the leaders.

Again, while present-day gatherer-hunter trade and exchange may only partially reflect the scope of prehistoric systems, there is evidence from all parts of Australia of extensive networks. The Arunta, for example, operate within a central exchange system that extends beyond the tribal boundaries. Specialized production by different groups both within and outside the tribe does not reflect ecological variability but rather operates as a means of entry into the system. Objects may circulate over a hundred and fifty kilometres from source. Beyond this exchange system is a still wider network which brings in shells, flint tools and ground-stone axes from the North (Spencer and Gillen 1927, II: 527–36). Similar networks have been described for the Yir Yiront (Sharp 1952), and for the Northeast Arnhem Land groups (Thomson 1949: 67). In California shell ‘monies’ are exchanged along a north–south axis one thousand kilometres long, from San Francisco Bay to the headwaters of the Sacramento, with dentalia shells moving southwards and clam-shells northwards (Kroeber 1922; Goldschmidt 1951: 33–6 for a description of the Nomlaki group operating within this system).

This ethnographic detail should serve to underline, first, the lack of autonomy of the individual band; second, the importance, strength and variety of the different alliance networks that bind the tribal segments together; third, the potential for demands to be generated over and above the ‘subsistence’ requirements of the individual band; and fourth, that the intensity of the demand varies according to the type of alliance and exchange.

Thus far alliance and exchange systems have been described in terms of interaction between groups. The role of the individuals within the system is equally important, for it is via the individuals, particularly those in authority, that the demand for increased production is channelled.

Many tribal societies are egalitarian, everyone has access to the means of production and to the fruits of their labour. Many tribal societies also have positions of authority, a degree of status differentiation. There need be no incompatibility. A position of authority is often attained through individual merit, perhaps in terms of wisdom accrued through age, or prowess, or oratorical skills. The leader thus promoted remains bound by the

same principles of reciprocity as his followers. His strength is based, not on his ability to accumulate individual wealth, but on his ability to redistribute. Giving, he creates obligations; failing to give, he is likely to lose his position. If the leader of the Brazilian Nambikwara group is not generous enough, his followers take off and find someone better qualified (Lévi-Strauss 1955: 403).

The position of the leader, his status and power, depend upon the particular social system and the degree of development of the alliance systems. This is neatly illustrated by different degrees of authority among various coastal Eskimo groups. In some cases leadership is fairly transient, and derives from being the respected captain of a whaling crew; in others the whaling captain also functions in a ceremonial context within the men's house and has more power. In yet others, for example among the North Alaskan groups, the leader plays both these roles and operates prominently within the trading network between the coastal whaling communities and the inland caribou hunters. He controls the circulation of valuables, has much to distribute and considerable power, yet, bound by the ethos of reciprocity, he continually gives away all that he gains, cannot refuse a request for help, and is often poorer in material possessions than his followers (Spencer 1959: 154; Damas 1968).

Power increases as the individual takes on more roles. In some instances status is directly enhanced by the control of the circulation of valuables; the monopoly of trade relations allows the redistribution of prized objects and the build-up of a following. In others, valuables define rather than promote status (see Friedman and Rowlands 1978, for, *inter alia*, an analysis of the control and role of valuables in the development of ranked societies). As Meillassoux (1960) has emphasized, authority may reside in the monopoly of social knowledge, i.e. knowledge of the rules of alliance that hold the tribal elements together, customs, genealogies, history, regulation of marriage; or of artificial knowledge, i.e. magic and divination. Institutional barriers can delay access to such knowledge. Among the Australian aborigines initiation ceremonies continue until the age of twenty-five or thirty. Only the fully initiated can marry, so marriage and the economic independence derived therefrom are also delayed. The initiate, beholden to the elder who circumcises him and usually provides a daughter in marriage, provides him with food-stuffs and other gifts (Berndt and Berndt 1964: 107). The elder thus not only retains his monopoly on social knowledge but, through this monopoly, gains economic power. This is further enhanced by his ability to take several young wives, who also provide him with food-stuffs. (A similar case of authority vested in the expanded household is found among the Northwest Tolewa group on the Oregon/California border (Suttles 1968)).

Meillassoux (1972) says of the Australian elders that they control, not the means of production, but the means of reproduction: an important conceptualization, for it has often been assumed that gatherer-hunter systems differ from farming systems (the band/tribe dichotomy) because only with the latter do land and tools take on a value, and only then can access to the means of production be curtailed, individuals take power, and society become less egalitarian. But even among farmers control of the means of production need not be significant, land may be plentiful, tools simple (indeed, often simpler than among gatherer-hunters). Control of labour and of the fruits of labour may be more important and, independent of the mode of subsistence, may lead to increased power and

ranking. Among the Australian aborigines the men are at least all eligible to become elders and can, belatedly, enjoy the fruits of their labours, but among the Californian Nomlaki only certain men are initiated, and only these are allowed to specialize in various activities, to become traders and acquire prestige goods (Goldschmidt 1951: 327). Here is a gatherer-hunter society in the process of becoming less egalitarian.

Finally, having established the direct link between evolving social institutions and increasing pressure on production, the more indirect link, through which these institutions promote sedentism, which in turn escalates demand, must be examined.

'Surplus' production involves delayed return: in response to the requirements of alliance and leadership seasonally abundant foodstuffs and other material items will accumulate in quantities over and above immediate requirements. Redistribution may follow quickly, but there will be many occasions when delays are involved.³ What happens then? The goods can be packed in transportable containers or left in caches en route (Service 1966: 94 on the Great Basin Indians), but clearly there is a pay-off in staying put and creating permanent storage facilities. Moreover delay in returns provides an incentive for greater group cohesion – more reason to stay around. But this requires social regulation: some means of resolving the conflicts that arise through prolonged face-to-face interaction. Here leadership plays a vital role. The leader both draws people to him and acts as a mediating focus for different units within the group. The leader both promotes and permits sedentism (Lévi-Strauss 1955: 404).

The effect of sedentism will vary and will depend on the particular tribal structure and on environmental factors. It enhances tendencies already present within the society. It permits the accumulation of material objects; permits permanent storage; facilitates increased production. The ability to store and to accumulate makes the control of labour and the fruits of labour – whether by polygamy or by the control of cadets through delayed marriage – more desirable. As labour takes on value there is more reason to increase numbers (and the increase becomes possible because of the ability to store food against the lean seasons).

Not only labour but land increases in value, for the location of the settlement depends on the availability of certain, usually circumscribed, resources. The land has to be protected and the leader augments his role by taking on the defence of the community (Forge 1977: the New Guinea Asmat). It becomes increasingly possible to control access to particular resources. Many of the Northwest Coast chiefs maintain rights to stretches of beach, berry patches and fishing sites (Rosman and Rubel 1971: 35, 77, 129), and in parts of the Plateau-Basin country of western North America seed plots and pine-nut areas are owned and inherited by individual families (Steward 1938: 52, 105). Control may thus begin to extend beyond labour to the means of production. Controlled resources provide an inheritable commodity and make ascribed leadership more viable.

The list could be extended. Suffice it to show that on the one hand, sedentism, through concentrating labour in a more circumscribed area, tends to encourage increased productivity, and, on the other, through feeding back into the system and promoting hierarchization, encourages increased production. Intensification, therefore, in both senses of the word often, though not always, results in technological innovation. As Godelier (1970: 120) has said: 'although . . . there is no mechanical relationship between the development of the forces of production and the development of social inequality . . .

social competition in primitive societies, as in class societies, provides the major incentive for the production of surplus, and in the long run indirectly brings about the development of the productive forces.' There are times when intensification may simply involve increased labour expenditure – more people working, people working more. But more often it involves technological change. In areas where resources are bountiful, as along the Northwest Coast, it may lead to increased investment in durable facilities, weirs, dams etc. (further enhancing the leader's status since he organizes the construction and controls access). In other areas, where potential domesticates are available, it may lead to an increased commitment to food production.

This account has chosen to emphasize the social properties of gatherer-hunter systems; to show how alliance structures, and the individuals operating within these structures, make demands on the economic productivity of the system; how demography and technology are products of social structure rather than independent variables. More time could have been spent on discussing techno-environmental constraints, but these have been adequately dealt with by other writers. More time should have been spent on more precise charting of the different trajectories that lead from acephalous tribal societies to chiefdoms, for this is clearly relevant to a discussion on how increasing demands are generated. (For a close analysis of one such trajectory see Friedman and Rowlands 1978, and for a discussion of the attributes of acephalous societies and chiefdoms, Godelier 1977: pt. 1, 3). But the paper is already too long.

One line of resistance by archaeologists to the approach in this paper will be the assumed difficulty of finding evidence of social processes for past societies, but as Adams (1974) has said, 'we should not be constrained by what we conceive to be the limitations of our data in our formulations of hypotheses; frequently this simply sets up a vicious circle'. As we shall see in the final section, much evidence has been missed or dismissed because of the techno-environmental bias of past theories.

Archaeological evidence

This section does no more than annotate archaeological evidence from selected areas in order to demonstrate equivalent prehistoric social structures in the Late Pleistocene and Post Pleistocene to those found among present-day gatherer-hunter groups. Attention is concentrated on evidence of how demands are generated rather than how they are met; on evidence of trade and exchange (foreign objects; evidence of specialization); of ceremonial undertakings (votive offerings, special buildings, specialized contents); and status differentiation expressed in burials (grave type/location, grave content) or in house size/style/location and contents. The problem is not dearth of evidence but type of evidence required. Delineation of overall settlement patterns, complete stripping of house-floors, excavation of burial areas beyond the settlement are all essential.

In South-West Asia findings have complemented changing theoretical perspectives. It has been assumed that Late Pleistocene and early Post Pleistocene gatherer-hunters, whether mobile or semi-sedentary, existed at the level of band organization – egalitarian and self-sufficient – and that early farming communities were small and somewhat less self-sufficient (as indicated by the beginning of the trade networks). Only very recently

has the second part been questioned and the large sites of Jericho and Çatal Hüyük integrated into a scheme of early settlement hierarchization and specialization (Todd 1976: 135). Even so, this development is assumed to depend upon the change in the mode of subsistence – upon farming and sedentism.

A different interpretation can be offered. While it is clear that the amount of obsidian in circulation increases in the Neolithic, trade and exchange go back much earlier and are more closely correlated with increased sedentism (and the social developments that that signifies) than with a change in the subsistence base. Obsidian is found in the Baradostian level of Shanidar (33,500–26,750 B.C.) and at several Natufian sites in the Levant, *c.* 10,000 B.C. Moreover obsidian is not the only exotic material in circulation; shells, for example, were already moving around the Levant in the Late Pleistocene. Dentalia shells from the Mediterranean are found at Ain Gev, associated with a very early settlement of round huts, and at Nahal Zin, both Late Kebaran, 13,750 B.C. (Mellaart 1975: 28).

There is evidence of exchange networks among gatherer-hunters and also of positions of authority. At Eynan in Israel, in a level with about fifty round huts and many storage pits, there is a large, well plastered domestic building close to a cleared central place: probably the village chief's house (Flannery 1972b). And among the burials is a fine double inhumation in a carefully constructed grave (Perrot 1966). There are 'elite' goods – dentalia and obsidian – and evidence of a skull cult (the antecedent to similar cults at Jericho PPN A, Abu Hureyra, Çatal Hüyük) suggesting ancestor worship and some emphasis on descent.

Evidence from Jericho is less direct, but the substantial nature of the Natufian levels suggests continuity of settlement, a degree of organization and authority. The latter may have been augmented by a ceremonial role – if Kenyon's interpretation of a 'ritual structure' is accepted (1969). Again, at Mureybit I (8500 B.C.), in Syria, at a traditional crossing-place on the Euphrates, the Natufian level has a bucranium inset in a clay bench – the forerunner of the great bull cult at Çatal Hüyük (Mellaart 1975: 42) and an indicator of rituals that gave cohesion to the community and possible status to the leader.

The evidence is incomplete but suggestive of fully tribal societies, possibly already with some evidence of descent; with exchange networks, ceremonial institutions, positions of authority that made increasing demands on production and that may have provided, in the more marginal areas, an incentive for a shift to food production. It would not be surprising if eventually evidence was found of still more highly developed gatherer-hunter societies. What underlies the excavated levels of Çatal Hüyük? What is the economic base of the large, unexcavated aceramic site of Aşıklı Hüyük that pre-dates Çatal Hüyük? What lies below Nineveh and Kirkuk? The fortified township of Jericho PPN A has some evidence of food production but it is unclear whether this played a substantial role in the economy. Not only social hierarchization but settlement hierarchization may have preceded the change in subsistence base. Authority may not only have resided in economic control – monopoly of raw material sources or of distribution of manufactured objects – but in the monopoly of ceremonial institutions. The 'bull cult' may have been important long before cattle were domesticated.

In Europe, in the Late Pleistocene, there is evidence of increasingly extensive networks and of permanent settlements. In southern France there are large sites, and evidence of

Mediterranean shells being exchanged over 150–200 km., as far as Périgord (Mellars 1973). On the Moravian loess of Czechoslovakia and in the great river valleys of the Ukraine are large settlements based on specialized or broad-based economies (Bhattacharya 1977), and at the Ukrainian sites there are imports of amber (150 km. from source), obsidian (300 km.) and marine shells (680 km.) (Klein 1973: 88). An extensive circulation of fine chocolate-coloured flint from the Holy Cross mountains in Central Poland is recorded. The flint is found as much as 400 km. from source, northwards to the Vistula, southwards across the Carpathians, with obsidian and jasper coming back across the Carpathians (Schildt 1976).

Unfortunately there is little direct evidence of ranking, mainly for want of information on burials or of analysis of internal variation at sites. But the substantial nature of the sites mentioned suggests a considerable degree of leadership, which may often have been associated with ceremonial roles – involvement in rituals of which the Spanish/French cave art and the rich mobile art of the rest of Europe are an expression. In many cases the ritual involved craft specialization, evidence for which is found, for example, at Gönnersdorf on the Rhine (Bhattacharya 1977: 241).

The frequent assumption that these tribal institutions fell into disarray in the early Post Pleistocene, that groups became fragmented, impoverished and increasingly mobile, has recently been queried (Newell 1973; Clarke 1976). Much of the evidence of more settled communities along coasts and rivers has been lost through rising sea-levels and alluvial deposition, and it seems possible that many of the more marginal inland sites represent only truncated portions of more extensive annual territories. At Tévéc and Höedic, islands off the Breton coast, there are cemeteries in which certain individuals are singled out and are associated with depositions of antler; at Tévéc some of the bodies are placed in quite substantial stone-built graves (Duday 1976). On the Tagus estuary, in Portugal, there are great shell middens, sometimes associated with hut-floors and storage pits (Moita do Sebastião), and at the other end of Europe, at Lepenski Vir and Vlasac on high terraces above the Danube, there are permanent gatherer-hunter settlements with fine trapezoidal habitations. At Lepenski Vir a couple of houses are larger than the rest, and there is evidence of a fish cult (Tringham 1971: 54).

There is little recent work on Post Pleistocene exchange systems, but Clark (1952: 244–5) records two Scandinavian networks, demarcated by distinctive hardstone tools and weapons.

These are the merest hints; while Newell (1973), Clarke (1976) and Tringham (1973) insist on the need for a re-analysis of the economic base, it is clear that the social organization has not even undergone a preliminary analysis.

Far better information is available for North America, and the material from the eastern part of the continent is particularly interesting. By 4000 B.C., in the Riverine Archaic, gatherer-hunter groups established summer base-camps and more substantial winter settlements, probably with granaries. There were status burials containing local and foreign valuables – copper from the Great Lakes, shell from the Gulf coast, exotic cherts from Illinois and southern Indiana. Contacts extended over a thousand kilometres, to the Plains Archaic to the West and Northwest, the Coastal and Piedmont Archaic to the South and East and Lake Forest Archaic to the Northwest, and a similar pattern of group stability, associated with ranking and extensive trade and ceremonial networks, is

found in many of these Archaic societies. Recent evidence from the northern Maritime province seems to push this developed tribal configuration back to the mid-sixth millennium (Tuck and McGhee 1976). The possibility of ascribed rather than achieved ranking in some of these societies has been mooted by Winters (1968) who notes a high proportion of pre-adolescent burials in the Indian Knoll culture of Kentucky. He has also suggested that fluctuations in shell imports correlate poorly with down-the-line exchange and are perhaps indicative of contact between inland sites and coastal redistribution centres (an interesting parallel to the situation postulated for South-west Asia).

Later, 1000–700 B.C. (Adena/Early Woodland), pressure to increase production leads, in parts of the Riverine province, to a limited domestication of both indigenous and imported crops; and later again, in certain localities in the major valleys of the Great Lakes-Riverine system, the elaboration of the Late Adena and Hopewellian cultures is associated with a greater commitment to agriculture. While Struever (1968) may be right to correlate this intensification with external developments in southern Ohio and the Gulf coast, it is clear that the effectiveness of the contact, and the type of changes that occur, are directly shaped by the existing social formation.

Finally, there is coastal Peru, an area where a basically marine-orientated economy underwrites a social complexity beyond even that of the American Northwest Coast Indians. The setting, economy, demographic correlates and achievements have been well described by Moseley (1975). His account starts with a Late Lithic pattern, *c.* 3500 B.C., of small mobile inland groups, perhaps already practising a little seasonal cultivation, and charts the development, by the early Cotton Preceramic 2500 B.C., of small coastal settlements, largely dependent on marine and littoral resources, but again with seasonal cultivation of non-staple or non-edible crops in the lower valleys, and then the emergence, *c.* 1900 B.C., of a hierarchy of settlements with small coastal and mid-valley sites and large coastline settlements.

Moseley stresses both the virtual dependence on marine resources (the large settlements are often not sited close to agricultural land and either have no domesticated staples or only small quantities), and the social complexity that this economy underwrites. The large sites are functionally differentiated. El Paraiso, despite its huge masonry mounds, lacks substantial midden deposits, and was probably an administrative and redistribution centre rather than a residential settlement (Patterson 1973: 61); other sites to the north have great residential terraces and/or ceremonial structures – terraces or platform mounds with summit buildings. Quite clearly the size, elaboration and differentiation of these settlements indicate strongly developed and compartmentalized authority. Burial evidence is far from complete but seems to show both status variation between cemeteries (in-settlement, outside-settlement and individual midden burials) and within cemeteries (at Asía status variation is sexual, with women under-represented, and individual, with certain inhumations accompanied by more cloth and other grave-goods) (Moseley 1975: 75). There is also evidence of considerable craft specialization – of bone, lapidary, wood-working, gourd pyro-engraving, and most particularly of textile manufacture.

There needs to be more work on the social elaboration that must have preceded the establishment of the large settlements. The institutions of authority and the social matrix from which they draw their power, must ante-date the visible social and settlement hierarchization. We need to know more about the organization of the earlier small

settled communities, about the form and extent of the wider contact with the highlands and ultimately the tropical lowlands – areas from which the domesticated crops originated – and about the role of cotton production and textile manufacture. Foods-staples may not have been significant, but cotton production, found already at the small settlements, may have had a very important function as a controllable ‘elite’ commodity.

These brief case-histories have intentionally not been restricted to societies where intensification leads to a commitment to food production. Evidence for prehistoric societies has been re-analysed so that the emphasis falls, not on the economy or the technology, but on the development of the social systems. While every region requires a separate and detailed study and every society has its own evolutionary trajectory which can only be understood in terms of complex systemic interactions, there is a hierarchy of causality that remains the same for all societies. Ultimately it is the social relations that articulate society and set the evolutionary pattern.

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Notes

- 1 The notion that no one works harder unless under pressure is an ethnocentric one, based on a concept of the alienation of work. But, as Sahlins points out, ‘in tribes production, polity and piety are not as yet separately organized’ (1968: 15).
- 2 The various labour-time statistics used by archaeologists (for example Cohen 1977: 29–32) are often marred by a lack of comparability – some figures include fuel-gathering, food preparation etc., others do not. Where comparable figures are used they undermine the contention that primitive farming invariably involves more work than gathering-and-hunting. Figures for gatherer-hunters quoted by Sahlins (1972: 15) and Glover (1977) range between 28 and 35 hours a week; figures for swidden/horticultural groups are more varied, but are often similar: Hanunoo, Philippines, 24 hours; Kapauku, New Guinea, 42 hours; Hawaiians, 28 hours (Sahlins 1972: 56). Of seventeen African groups listed by Boserup (1970) thirteen are at or below the 28-hour figure, and only two above the 35-hour figure. In many cases increased labour costs involved in clearance, weeding etc., for food production are off-set by the reduction in travel time and greater resource productivity.
- 3 Many authors have analysed the impact of delayed returns but have assumed that they occur *after* the onset of food production and sedentism, and are associated with the requirements of the agricultural cycle. They are seen as a result, not a cause (Hindess and Hirst 1975: 52). But, first, farming and sedentism are separate phenomena. Second, while both enhance the potential for delayed return, neither inaugurate it. The ‘instantaneous production’ of the gatherer-hunter, with immediate return, immediate sharing and no obligations beyond one’s fellow hunter (Meillassoux 1972; 1973) is a myth, and like the earlier myths of the desperate, half-starved hunter should be laid to rest.

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Abstract

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Gatherer-hunter to farmer: a social perspective

The theoretical approach to agricultural origins in the last decade has concentrated on techno-environmental and demographic causality. This paper attempts to show that both are dependent upon the social structure, and that this is where the enquiry should begin. The social properties of a tribal system are examined; first, in an anthropological framework using ethnographic illustrations, and then in an archaeological framework using prehistoric data. The ability of such systems to generate increasing demands on production, which under certain conditions may be resolved by a commitment to agriculture, is stressed.