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ABSTRACT

It is argued that attributes which have been widely used to typify hunter-gatherer societies are inadequate for several reasons. One is that they fail to capture the full extent of the diversity of these societies. We suggest some additional attributes which should be taken into account in characterizing these societies. Linear (unidirectional) models of the development of prehistoric societies are criticized and multi-linear models are discussed. Currently, three main stereotypes of the nature of hunter-gatherer societies exist. While these indicate that they were diverse, they fail to capture the full extent of their diversity. It is suggested that this diversity increased with the passage of time and was shaped by the varied local eco-geographic conditions (local resource endowments) in which these societies existed. This raises the question of whether this development had the same basis as speciation in the biological theory of natural selection. This is discussed and then particular attention is given to Adam Smith's vision of the evolution of human societies. In conclusion, it is suggested that the evolutionary path of modern societies has diverged from that of prehistoric societies.

Keywords: Biological diversity, biological evolution, hunters and gatherers, prehistoric societies, social diversity, social evolution.

JEL Classification: O1, P00, P4, P5.

Hunter-Gatherer Societies:

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1. Introduction

The study of human societies and their evolution raises many unanswered questions, even when these societies seem to be very simple as in the case of hunter-gatherer societies and early agrarian societies, like those that existed in the prehistoric period. The literature contains diverse and conflicting hypotheses about the nature of hunter-gatherer (HG) societies. Despite this, many authors have failed to recognize this diversity, and they have stereotyped HG societies as having a very similar nature. At one extreme are stereotypes in which HGs are portrayed as living an idyllic life in which they are fully satisfied and are in harmony with nature. This viewpoint has, for example, been portrayed by Gowdy (2004) and by Sahlins (1974). At the other end of the spectrum are writers such as Hobbes (1651) who see HGs as having societies in which life is 'solitary, poor, nasty, brutal and short' and Service (1966) who considered HGs to be poor, forced to roam and live in small groups in order to survive. Because of their lack of control over the environment, they were at the mercy of nature.

In our opinion, the considerable diversity of HG societies needs to be explicitly recognized. Furthermore, when account is taken of a wider range of social attributes than have been previously emphasized in discussions of HG societies, this diversity is even greater than is commonly recognized. We analyse critically a variety of attributes that can be used to define HG societies and point out the drawbacks and limitations of using their mode of subsistence to define them. Theories of development of societies which portray this as a linear process involving discrete stages of evolution are shown to be wanting.

We also consider factors that significantly determine the evolution and development of HG societies, particularly their increased diversification with the passage of time. Contrary to the view expressed by Easterly and Levine (2003) downplaying the role of ecological conditions and available natural resources in influencing economic and social development, we contend that variations in these features played a major role in the diversified development of HG societies and in determining the economic well-being of members of their societies. While these factors seem to be much less important for the development of contemporary societies, they were very important for the development of early societies.

We first of all pay attention to how different types of societies have been defined giving particular attention to how HG societies have been identified. The view that societies followed a definite linear sequence of development is considered and rejected. This is contrasted with the view that the development of HG societies followed diverse paths and that they evolved diverse social structures and economies. Subsequently, the reasons for this diversity are considered taking into account biological theories of evolution by means of natural selection.

2. Criteria Used to Define Human Societies: Adding Extra Dimensions

Nowadays, few societies are comprised of hunter-gatherers and the global population of hunter-gatherers accounts for an infinitesimal fraction of the global population. In prehistoric times, however, hunting-gathering societies were the only forms of societies until the Neolithic period.

The Mode of Subsistence Criterion

Since HG societies are assumed to be the starting point for the evolution of human societies, it is interesting to consider how the hunter-gatherer society can be defined. Broadly speaking, in such a society, people get their food from activities such as hunting, gathering, fishing, fowling, and collecting. Mostly, HG societies have been defined by their mode of subsistence, i.e. by the way people obtained their food. Of course, several variations of this definition exist in the literature(see Finlayson, 2009), but without loss of generality, we can consider the following one provided by Panter-Brick, Layton and Rowley-Conwy, (2001) as being typical: "*Hunter-gatherers rely upon a mode of subsistence characterised by the absence of direct human control over the reproduction of exploited species, and little or no control over other aspects of population ecology such as the behaviour and distribution of food resources*". The basis of this definition is the mode of subsistence. This definition does not distinguish the main activities of humans in HG societies from those of other animals and seems to suggest that HGs were animal-like.

Another possible reason for using the mode of subsistence as a criterion used to define and classify human societies is that this criterion is an economic one; and many scholars consider (especially in the Marxist tradition, but not exclusively) that social structures are determined by the nature of the economy. Despite this, this characterization of early HG societies is too narrow because it fails to take account of non-food economic activities engaged in by HG societies such as the making of tools, weapons, handicrafts, food containers, clothes, baskets (…), the building of dwellings, watercraft, and the construction of dams, wells, fortifications and pits (Svizzero, 2014). It should be noted that all these activities imply economic production. Whatever the period considered, whether it occurs in prehistory or in more recent times, the economy, as a whole, consists of three groups of activities: obtaining food, transforming and conserving some of this food, and producing non-food items. All of these

activities were engaged in by prehistoric HG societies. The mode of subsistence criterion only relates to the first of these three groups. It is, therefore, doubtful whether one can deduce the nature of a whole society from a criterion which applies to only a part of the economy.

Additional Relevant Criteria

Other relevant criteria (different from the mode of subsistence criterion) could have been used to define prehistoric societies. Consider two alternative criteria.

The first one depends on the type of tools made and used by humans. During the early times, tools were made of stone and it was only at the end of prehistory that tools made of metal were introduced. For the prehistoric period, varied stone tools can be distinguished. For example, Lubbock (1865)identified rough tools for the Paleolithic period, microliths for the Mesolithic and polished tools for the Neolithic. Similarly, metal tools can be classified accordingly to the type of metal used. Chronologically, we have copper age (or the Chalcolithic period), the bronze age and then iron age. This definition of early human societies has the advantage that all these tools (either made of stone or of metal) are non-perishable and therefore have been well documented in the archaeological records.[1] Despite this advantage and the seminal work of Lubbock (1865), this attribute has not been widely used to define human societies.

A second possible attribute that could have been used to define human societies is their geographic mobility, i.e. the distinction between nomadic and sedentary communities. Whatever their mode of subsistence (food procurement (e.g. HG) or food production (e.g. farming)) some societies are nomadic whereas others are not. Indeed, usually it is thought that hunter-gatherers are nomads and that food producers are sedentary. However, counter examples can be found in past as well as in present times: herders, pastoralists, (Bedouins, Mongols, Masaï) and horticulturists (Yanomani of Amazonia) are nomads but they produce

their food. Complex hunter-gatherers got their food from the wild but were sedentary during the Mesolithic period (for instance, the Natufians in the Levant, the Ertebolle culture in South Scandinavia, the Jomon culture in Japan, Capsian in North Africa) and even in more recent times Indians from the North-West coast of America, such as the Kwakiutl, were still sedentary after the European discovery of the New World.

The advantage taking account of the mobility attributed is that it can be applied to societies with different modes of subsistence. Due to their way of life, nomads usually have a population with a low density and therefore the structure of their society is based on kinship. Societies, where people are organized in bands, are egalitarian (display little inequality). They represent a form of “primitive communism”. On the other hand, the sedentary way of life is often associated with communities having a very large population and the structure of the society is normally more hierarchical and less egalitarian, based on groups or social classes related to job occupations or inherited ranks.

Once again this criterion has not been used as the main one to differentiate between human societies. This could be because there exists a continuum of intermediate situations (Kelly, 1992) between “pure nomadism” and “pure sedentism”. However, this problem also exists for the mode of subsistence definition. This definition fails to take account of the fact that the boundaries between agriculture and its absence are imprecise. Indeed, many activities developed by hunter-gatherers constituted a form of proto-agriculture(Pryor, 2004) such as fire-stick agriculture, the tending of tubers, watering fields, soil aeration, semi-sowing (…). In other words, a continuum exists between “pure foraging” and “pure farming”. While, it is clear from archaeological records that foraging chronologically preceded farming, for many millennia both systems were used simultaneously by many communities. Given the presence of these mixed economies, the standard dualistic definitions of societies based on their mode of subsistence have serious limitations. In order to maintain this criterion, one might add to it

an arbitrary threshold such as a percentage of total food provided by hunting and foraging[2] above which the society is considered to be a HG society. However, this further exposes the weakness of this dualistic criterion.

An additional attribute of a society of potential relevance to its social structure is its ability to produce a significant and storable economic surplus. As suggested later, those societies having a large storable economic surplus in prehistoric times tended to be hierarchical whereas those with little or no surplus tended to be egalitarian.

3. Evolution of Human Societies by a Definite(Linear) Sequence of Stages of Development

As we have pointed out above, two types of societies have been considered in the literature using the mode of subsistence as the criterion to define human societies. On the one hand, there are hunter-gatherer societies in which, food is not produced. On the other hand, there are societies where food is produced, that is, agro-pastoral societies. This dualistic classification of societies is, however, misleading although it is true that HG societies preceded those which were completely agrarian or virtually so.

Inappropriate Distinctions Between the Nature of Hunter-Gatherer Societies and Agrarian Ones

In order to reinforce this linear sequence of evolution, the literature has stressed excessively the differences between HG and agrarian societies. Indeed, until the 1960s, HG societies were mainly seen from Hobbes' perspective. Hobbes(1651) claimed that before the appearance of modern governments and states, life was "solitary, poor, nasty, brutish and short". This vision was also adopted by some other authors; one of the most famous of whom is E.R. Service

(1966). In his view, the economy and society of HGs (subsequently called "simple HG") are described by four features. People were poor. They roamed all the time to get food and their technology, used for hunting and gathering, resulted in a low level of productivity. Their technology also constrained them to pursue a nomadic way of life in order to avoid starvation. Since they were nomads, it was impossible for them to have more than one child per family every four or five years. As a result, their population density was low and they were organized in small groups or "bands": each band consisting of at most 100 people. Finally, since their method of food procurement provided no surplus due to their deficient technology and the lack of division of labour, their society was assumed to be egalitarian.

Until the 1960s, most people agreed with this vision for many reasons. The main one probably was that it helped to reinforce the view that the Neolithic revolution brought about a shift from societies of simple HGs (or primitive savages) to superior ones involving civilized agro-pastoralists, the type of societies in which these views were being propagated. It provided a basis for feelings of superiority of those agriculturally-based commercial societies which had evolved in the 17th, 18th and 19th centuries in Europe and which underwent further development with the advent of the Industrial Revolution. During the 18th and 19th centuries, many famous authors, economists (Turgot, 1750; Smith per Meek et al., 1978) as well as anthropologists (Morgan, 1877), adopted this linear vision to describe the evolution of human societies. For instance, Adam Smith (1776; Meek et al., 1978; and also Turgot, 1750) described the economic development of human societies as a sequence of four-stages: the age of hunting and gathering, that of pastoralism, that of agriculture and finally that of commerce, the latter involving among other things foreign trade and manufacturing.

Lack of Ability to Explain Socio-economic Transition

As illustrated by Hobbes' vision, the idea of an evolutionary process was present in social sciences before it was introduced later into the life sciences by the contributions of A. R. Wallace (1870) and C. Darwin (1859). For Hobbes, in the first type of human society (that of hunter-gatherers), humans are considered to be animals. Their only objective is to get food and to have children; the cultural dimension of human life is missing. Since they are not able to domesticate plants or animals, hunter-gatherers are dependent on the whims of nature. In others words, the same type of logic as was introduced later in biological evolution theory was present, i.e. the survival of hunter-gatherers depended completely on the state of their natural environments.

However, the vision of the evolution of human societies, introduced by Hobbes and developed further by many authors, has two main shortcomings. This vision presents only two distinct stages in social development, the occurrence of hunting and foraging societies and of farming societies, and stresses sharp differences between both. Furthermore, it is unable to explain the shift from the first stage to the second one. In the world described by Hobbes, hunter-gatherers are always close to starvation. Their survival is on the razor edge. Any negative shock, such as a sudden climate change, having negative consequences on ecosystems and food resources, could lead to the extinction of human populations. First, one can, therefore, wonder how given their precarious existence, hunter-gatherers survived for at least two hundred millennia.[3]The relevance of this question is reinforced by the fact that many major climate changes have occurred during the last 200,000 years, and even recently, during the Holocene era in which for instance, the Younger Dryas[4]occurred. Secondly, one may also wonder how such basic hunter-gatherers were able to shift to another economic system, namely to agriculture when they were in such a primitive state. If Hobbes' perception was

correct, they would not have had the competence and the means to become agriculturalists, as some HGs were able to do successfully.

4. Evolution of Human Societies by Diverse(Multi-linear) Sequences of Stages of Development

To avoid the two shortcomings previously mentioned, the evolution of human societies should be considered to consist not of a linear sequence but of a multi-linear[5](diverse) sequence of stages of development. In other words, the dualistic approach of Hobbes and Service should be abandoned. From a presumed unique society of hunter-gatherers existing during the "initial" phase of human existence, diverse hunter-gatherer societies evolved. We believe that this was largely, a consequence of the different natural resource situations HG societies faced and relied on for their survival in different geographical locations. In a second phase, natural and social (or cultural) selection processes occur which allowed some human societies to dominate the others by shifting to the next stage of development, i.e. by shifting from foraging to farming. The remaining hunter-gatherers societies were not necessarily eliminated immediately by this selection process; many survived for a while, but eventually, they represented backwards societies.

To some extent the diversity of HG societies was recognized in the literature by the identification of affluent HG societies, from the 1960s onwards and complex HG, from the 1980s onwards. However, these are stereotypes and do not portray the full diversity of HG societies.

Affluent Societies of Hunter-Gatherers

In the 1960s, Hobbes-Service's vision was challenged by the results of ethnological studies of HG societies(see Lee and DeVore, 1968). Indeed, it appeared that some modern HG societies (mainly of the !Kung and the Hadza, both located in Africa) were very different from Hobbes-Service's description of hunter-gatherers. Indeed, these societies did not experience scarcity of food and individuals had to do little work to satisfy their limited ends. Therefore, they were labelled as the "original affluent society" (Sahlins, 1974).

Many interpretations and ethnological analogies between modern and past HG, arose after the discovery of these presumed "affluent societies". As argued by Finlayson (2010, p. 20), "*there are several fundamental flaws in the prehistoric use of hunter-gatherer analogies*" of this type. Let us consider problems.

The first possible shortcoming was to assume that these affluent HG had not changed over time, and therefore, they are like "living human fossils". They were supposed to be exactly unchanged in their nature to that in the past. Given this assumption, life was not short and brutish, as Hobbes assumed, but was easy for HG, even in prehistoric times. However, if all HG societies were affluent, why did some shift from foraging to farming? Even if we consider that the !Kung and Hadza are currently affluent, there is no evidence that this has always been the case. Over time their societies may have changed, especially because they had contacts with people belonging to farming or herding societies.[6] Therefore, their current situation could be the result of a selection process; they might have been displaced by other groups and thereby forced to adapt themselves to the natural environment to which they migrated which was only capable of supporting hunting and gathering. Moreover, and even if these societies hadn't changed since prehistoric times, there is no reason to assume that all prehistoric HG societies behaved like them.

An additional query is why have these affluent HG not changed over time? Some writers have assumed that this is because human behaviour in affluent HG societies is unlike that today. Some authors(for example, Gowdy, 2004) claim that affluent HG are not selfish and behave differently from *Homo oeconomicus*. They seem to act as 'satisficers' rather than maximizers. In their economic system, there is no link between production and distribution, and there is a lack of private ownership of property and a high level of dependence on common-property. Their society is egalitarian, and this includes gender equality. Their economy and society are therefore viewed as an example of what societies were like before the advent of market systems and capitalism.

Concerning external pressure, i.e. from their relationships with ecosystems, affluent HG are seen as adopting sustainable technologies and uses of the natural environment. These technologies and uses were adapted to different bioregions and resulted in diverse hunting and gathering practices. Once again, this third interpretation can be challenged.[7]There is no reason to believe that all (or most) HG societies satisfied the principles associated with affluent HG. More fundamentally, their environments undoubtedly changed during millennia. Furthermore, these HG have not adapted passively to their natural and social environment; they may have (to some extent) chosen their situation, i.e. they have chosen to remain HG knowing that some of their neighbours had shifted to farming or herding.

Complex Societies of Hunter-Gatherers

In the 1980s, ethnological studies of past and recent HG societies have shown that if simple HG had existed, they may have been the exception rather than the rule. Some HG societies were able to have a substantial economic surplus. These societies have been labelled "complex HG" (Sassaman, 2004). To obtain a surplus, these societies had relatively complex technologies and kept substantial inventories of items (Testart, 1982). The construction of

some of their items was complicated. Complex HG operated an intensified subsistence economy which sometimes exploited a wide range of species and habitats and in many cases, concentrated on a few staple species.[8] As a result of their technologies and their ability to store food, they showed considerable sedentism. They displayed long annual occupations of specific sites, even permanent occupations, larger and more internally differentiated settlements. Due to their sedentary way of life and their greater amount of available food, their population had a higher density and these tribes sometimes had up to 5,000 members. As a correlate to the distribution of the economic surplus and the increased division of labour, their societies displayed a non-egalitarian allocation of wealth. Status and authority were signalled by the presence of hereditary ranks, incipient classes, or wealth distinctions. In other words, complex HG societies are at the opposite end of the spectrum to simple HG ones and they share all the features of agrarian societies, except that food is not produced. Therefore, complex HG have been widely referenced in the evolutionist literature as providing a bridge between simple HG societies and agrarian societies (see for example, Finlayson, 2009). Some of them, especially the Natufians (who were located in the Levant) appeared to have played a transitional role in the evolution towards agrarian societies. The Natufians, as complex HG, gathered wild cereals and, after a while, they domesticated cereals to satisfy their needs, i.e. they introduced agriculture.

One central, and often implicit assumption about the emergence of complex HG, is that it depends on the local abundance of some food resources. Since HG adapt themselves to their natural environment, they exploited these abundant food resources, even if there was only one abundant resource and even if it was only seasonally abundant. In order to exploit intensively these resources, HG built specific tools (sickles, mortars, fishnets, fish traps, dugout canoes) or facilities (dams, water ponds). By incurring all these investments, the HG shifted from an immediate-return economy to a delayed-return economy according to the terminology used by

Woodburn (1982). In the latter, more economic and social management and organization are required and therefore economic inequalities and social stratification occur.

The study of affluent as well as complex HG societies leads us to the following conclusion: it may well have happened in the pre-agricultural period the HG societies became more diverse in their social structures with the passage of time. Therefore, some type of speciation occurred. However, after the development of agriculture, social structures and economies may have eventually become less diverse globally, a process which is still continuing (Tisdell, 2013).

5. The Evolution of Hunter-Gatherer Societies and Biological Theories of Evolution

Several authors have argued that the nature of and prospects for the development of prehistoric societies was heavily influenced by the surrounding ecological and environmental conditions faced in different localities by human populations. Early scholars proposing this hypothesis included Machiavelli (1519), Montesquieu (1748), Turgot (1750), and Adam Smith (1776; Meek et al., 1978). More recently, Diamond (1997) added his support to this point of view. Although these authors differed to a significant extent in the particular types of environmental and natural resource endowments which they believed to be important in influencing this evolutionary process, they believed these endowments to be of the utmost importance in determining the evolutionary and development paths of early societies. More recently, Easterly and Levine (2003) rejected the view that environmental and resource endowments are a major influence on economic development. However, this rejection seems only to be warranted (if it is warranted) in relation to contemporary societies. Natural resource endowments and associated environments geographically played a major role in determining the economic fortunes and possibilities open to prehistoric societies, but as a result of

economic development and eventual globalization, their importance in this respect has been considerably reduced.

Given the high degree of dependence of prehistoric societies on their surrounding eco-geographic conditions, one would expect some parallels to exist between patterns of development of prehistoric societies and patterns of biological evolution. These similarities can be expected despite the processes involved in socio-economic development differing substantially from those involved in biological evolution under natural conditions

Biological evolutionary theories originated by Darwin (1859) and Wallace (1870) (and as further developed since then) imply that under natural conditions random mutations in germplasm as well as other biological events result in modified organisms which (depending on their surrounding environments) can prove to be fit enough to survive and reproduce. As a result of this process, speciation occurs and different species (types of organism) start to occupy different niches, and genetic diversity increases in the absence of major environmental events which seriously disrupt this process of speciation. The scope for speciation and biological diversity depends on the nature and variety of the available niches which could potentially be occupied by new species as well as the nature and frequency of mutations and other relevant biological events. The biological process of speciation (evolution) is essentially a random process. However, empirically it is known that with the passage of time, organisms of increasing complexity, such as mammals, emerged. Nevertheless, at the same time, new species of simpler organisms (such as unicellular ones) continued to evolve. Furthermore, some species which were once more complex (such as many parasites) have evolved to become less complex because they have adapted in the evolutionary processes to environments which no longer require them to use some of the specialized organs of their ancestors (Piper, 2013, p. 12, Box 6). These organs became redundant and a type of evolutionary reversal occurred in these cases. Note that increasing diversity of organisms as a

result of natural evolution not only results in increased speciation of complex organisms but also of less complex ones (Piper, 2013, pp. 11-25).

The subsistence of HGs depended heavily on their local natural environments, and globally these showed a considerable degree of variation. While there was some trade between different HG social groups, this was limited by the technologies in these times. So each tribal group had to adjust to its local set of natural resource endowments. In some localities, supply of food from the wild was regular and abundant and able to support settled communities. In other places, it was irregular and mobility of tribal members was needed to ensure their survival. Given that many diverse regions were settled by HGs, this resulted in considerable diversity in their social structures, the level of their economic well-being, the capital (equipment) used by them for obtaining and storing food supplies and so on.

This social diversity did not arise from random mutation of germplasm but was a result of conscious adaptation of HGs to their particular surroundings. Human adaptation was not random but a result of observation and trial-and-error. It probably contained a random element but this diversity arose by a different process to that involved in biological evolution even though it reflected the diversity of environments in which HGs were able to settle.

In addition, it was possible that the extent to which HGs were able to obtain an economic surplus influenced their social structures. In places where a considerable economic surplus could be obtained and stored, this was probably conducive to the development of hierarchical social structures whereas in its absence, more egalitarian structures seem more likely to emerge. This accords, for instance, with the Marxian view that economic patterns and structures have a major impact on the type of social structures that emerge in communities.

The extent to which HG societies were diverse is not fully captured by the recognition of these three types in the relevant literature, namely (1) simple HG societies, as imagined by

Hobbes and Service; (2) affluent HG societies and (3) complex HG societies. This (as explained in Section 2) is a result of failure to consider a wide enough range of attributes of these societies.

Not only did a diverse range of prehistoric societies emerge but their evolution was not always unidirectional. Some tribes, for example, after having adopted farming reverted to hunting and gathering. For example, the Pawnee, Cheyenne and Arapaho Indian tribes relinquished agriculture to revert to hunting using horses after these were re-introduced to North America by European settlers (Smith, 1993, pp. 17-18).[9]

Adam Smith's Sequential Model of Evolution

Adam Smith's views on the stages and nature of development of human societies have been distilled primarily from a copy of his lecture notes to students on the subject of jurisprudence (Meek et al., 1978) Also see the discussion by Brewer (2008). Smith divided the chronological development of societies into the four sequential stages shown in Figure 1. Probably to make it easy for his students to grasp this pattern he described these stages as ages. He assumed that each stage followed the other in the sequence indicated in Figure 1 but that not all societies would evolve past the early stages. Their prospects for transiting to stages later than that of HGs depended on their natural resource endowments. He did not, for example, expect the tribes of the Central Asia (whom he called the Tartars) to evolve beyond pastoralism.

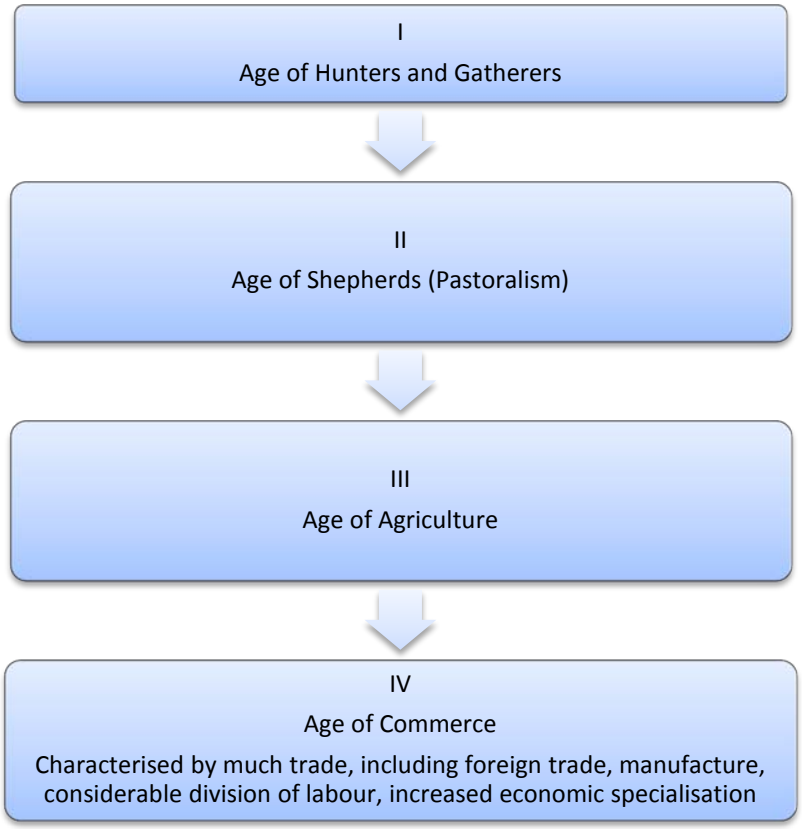

Figure 1: The stages of the development of human societies as envisaged by Adam Smith based on their modes of subsistence.

To Smith, it was clear that one stage preceded the other even though given the available archaeological evidence at the time, this had to be a conjecture. For example, Smith believed that in every society, pastoralism (the keeping of livestock) preceded the development of agriculture. Brewer (2008, p. 9) states: 'In the four stages story, the hunting stage is followed by the domestication of animals and a whole stage of social development in which people live from their herds of animals, before the start of what Smith calls agriculture, the domestication of food plants'. In West Asia, Egypt and Africa it does seem that the domestication of some species of livestock (sheep and cattle) preceded the cultivation of crops (Renfrew, 2007) although Brewer (2008, p. 9) suggests that simultaneous development was the case. However, in other places (such as Mesoamerica), agriculture preceded livestock domestication

(Renfrew, 2007). The pattern of development of early HG societies varied with the geographical location of HGs. The pattern of evolution of later HG societies most likely differed from the trajectory of early HG societies which had already evolved to become agricultural societies. Some later HG societies in their transition may have moved from HG to combine simultaneously the keeping of livestock and the growing of crops because they had some knowledge of the practices of societies that had already adopted agriculture as a way of life.

It is clear that diverse patterns of evolution of the HG societies occurred. In the beginning these patterns appear to have been greatly influenced by local natural resource endowment, for example, the extent to which animals suitable for domestication were present locally, the availability of wild plants suitable for cultivation, climatic conditions and so on. Possibly Australian Aborigines did not advance beyond the HG stage because of the lack of wild animals in Australia suitable for domestication, the presence of few wild plants suited to cultivation and climatic conditions unfavourable to agriculture.

Although Smith's theory of the evolution of societies as presented in Figure 1 involves a series of discrete changes, actually he was aware that socio-economic change was more gradualistic and that different modes of subsistence could exist in the same society. Possibly, he used the term 'ages' to help his students memorize the substance of his theory of socio-economic development.

Note that given the pattern of development shown in Figure 1, societies become more complex as they develop. Just as biological evolution eventually resulted in the evolution of species with greater complexity (specialized organs), socio-economic evolution resulted eventually in the appearance more complex human communities in the diverse mixture of human societies, even though the genesis of these developments differed. Whether or not

these more complex entities are in some way superior to their predecessors has been the subject of much debate.

6. Conclusion

The way in which HG societies have been defined (primarily by their mode of subsistence) has created a narrow perception of their nature and has resulted in the extent of their diversity not being appreciated. For example, the caricature of HG societies developed by Hobbes and Service was a negative one which failed to take account of their diversity. Nevertheless, in the closing decades of the 20th century favourable images of HG societies emerged. Some of these societies were seen as simple but affluent and in equilibrium with nature. Other HGs were found to live in complex settled communities and were also relatively well-off. Thus, it became clear that HG societies were diverse, not uniform. We suggest that this diversity was actually greater than is commonly recognized in the literature and that the diversity of HG societies increased with the passage of time as they settled new eco-geographic regions and adjusted their livelihoods to the differing natural endowments of these regions. A type of speciation occurred but this did not have the same genesis as that underlying biological evolution.

Although Easterly and Levine (2003) criticize eco-geographic theories of economic development (such as that put forward by Adam Smith), these theories seem to have merit as far as the development of prehistoric societies are concerned. However, they appear to be of much less relevance today because with the extension of markets and trade (increased globalization), communities are much less dependent on their local resource endowments for their economic activities and humans have significantly increased their control over that local environment as a result of technological change. Consequently, in the modern era, social

structures appear to be converging (Tisdell, 2013) rather than becoming more diverse as in prehistoric times. The speciation parallel between social evolution and biological evolution (by natural selection) has been broken. The global diversity of human societies may well be following a reversed U-form as a function of time. Nevertheless, it ought to be noted that today biological evolution is no longer dominated by natural selection but is increasingly a result of human actions and genetic selection. This has resulted in a decline in global biodiversity in modern times and so the actual trajectory of biological diversity has also assumed a reversed U-shape.

7. Notes

1 We must, however, admit that prehistoric stone tools are very scarce in Asia; in this continent, it is likely that bamboos were abundant, easy to shape as knifes, spears, harpoons (…) and used as easily as stone tools. However, bamboos are perishable and have left no or very few archaeological evidence.

2 For instance, if more than half of total food resources is provided by agriculture, the society is often considered as an agrarian one despite the fact that a non negligible percentage of food resources is still provided by foraging.

3 This is so, if we restrict human life to its last species, namely *Homo sapiens*, who appeared in Africa about 200,000 years BC.

4 A dry and cold period that spanned from 11,000 to 9,500 years BC.

5 After the seminal work of Steward (1955).

6 It is well known that the !Kung have, and have had, contacts with Bantus, i.e. with people belonging to a society in which food is produced.

7 For example, it is believed that Australian Aborigines after settling in Australia extinguished several species of large marsupials by hunting them. Blainey (1976, p.58) states: “Certainly there is no justification for the assumption –widespread in the 1970s – that the aboriginals [Australian Aborigines] lived in complete harmony with the natural environment”. Furthermore, Maoris after arriving in New Zealand, hunted moa (large flightless birds) to extinction (Day, 1981). Several other examples exist (see, for example, Tisdell, 1989; 1990, Ch. 2).

8 In some cases, these were marine resources (e.g. for societies along the North-West coast of America, for the Scandinavian Mesolithic people and for adopters of the Jomon culture in Japan), wild cereals (for the Natufians in the Levant), or acorns (in California).

9 However, they did tame and breed horses and therefore, they did engage in some animal husbandry.

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