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Economic evolution, diversity of societies and stages of economic development: A critique of theories applied to hunters and gatherers and their successors

Serge Svizzero^{1*} and Clement A. Tisdell²

Abstract: Theories of the economic evolution of societies and their diversity are critically examined, paying particular attention to the evolution of hunter-gatherer societies. An interdisciplinary approach drawing on anthropology and economics is adopted. 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 argued that this diversity increased with the passage of time and was shaped by the varied local eco-geographic conditions in which these societies evolved. 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 economic evolution of human societies. In conclusion, it is hypothesized that the evolutionary path of modern economies and societies has diverged from that of pre-historic societies—they have become less diverse. Modern societies may also have become more ultrasocial, a process which accelerated following the commencement of agriculture.

ABOUT THE AUTHORS

Serge Svizzero and Clem Tisdell have been involved in co-operative research for more than a decade. Initially this research focused mainly on subjects using discipline-based economic approaches and was ahistorical in nature. Their joint research in recent years has become more interdisciplinary with increasing attention to historical and institutional aspects of the socioeconomic development of societies. So far they have concentrated primarily on the socioeconomic evolution of ancient societies. Their coverage has included the evolution of hunting and gathering societies, influences on the commencement of agriculture and the role of ancient palatial economies in contributing to economic development.

PUBLIC INTEREST STATEMENT

Drawing on anthropology and economics, theories of the evolution of societies and their diversity are critically examined, especially the evolution of hunter-gatherer societies. While the three main stereotypes of hunter-gatherer societies indicate they are diverse, they fail to capture the extent of their diversity. Variations in local eco-geographic conditions increased the diversity of these societies with the passage of time. Did this diversification have the same basis as speciation in biological evolution? This is discussed and attention is given to Adam Smith's vision of the economic evolution of human societies. Subsequently, it is hypothesized that the evolution of modern economies and societies has diverged from that of ancient societies—they are less diverse due to the increasing dominance of the Western market-based system. A worrying result is that the embedding of individuals within this system (increased ultrasociality) could result in them having little control over its future development.

Subjects: Anthropology - Soc Sci; Economic History; Economics and Development

Keywords: Biological diversity; economic development; hunters and gatherers; prehistoric societies; social diversity; social evolution

JEL Classification: O1; P00; P4; P5

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 (Kelly, 1995; Lee & Daly, 2004 being among the exceptions), 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 (1651/2010) 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 has been previously emphasized in discussions of HG societies, this diversity is even greater than is commonly recognized. We analyze 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 anthropologists (e.g. White, 1959) as well as by economists (Easterly & 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. For instance, Richerson, Boyd, and Bettinger (2001) have demonstrated that there were several periods of warming after the evolution of modern humans, but none except the Holocene led to agriculture.

The paper is organized as follows. In Section 2, we pay particular attention to the criteria used to define the economic nature of human societies. While the criterion defined by the mode of subsistence is commonly used to characterize HG societies, we propose additional criteria such as tools, the degree of geographic mobility or the nature of property rights. Then we outline in Section 3 the “ladder” form or unilinear form of evolution of societies. We find that this vision has several shortcomings. These are highlighted in this article. For example, it does not take account of the extent of the variety of HG socioeconomic structures which evolved, it suggests an abrupt transition from one stage of socioeconomic development to the next and does not allow for the socioeconomic retrogression of some societies, for example, from dependence on agriculture and return to hunting and gathering, or from cropping to pastoralism. Furthermore, not all societies proceeded through all stages posited by linear theories of development, for example, those suggested by Adam Smith and others. Section 3 outlines the view that HGs were primitive savages having an animal-like existence and considers its implications for socioeconomic evolution. It also introduces the four-stage unilinear concept of the stages of socioeconomic development. This was commonly subscribed to in the

eighteenth and nineteenth centuries but has persisted in some quarters. Section 4 focuses on the diversity of HG communities and supports the proposition that their development was multilinear. The applicability of biological theories of evolution to the economic evolution of hunter-gatherer societies is discussed in Section 5, paying particular attention to the influence of varied local environmental and natural resource endowments on this evolution. Social structures play a role in the socioeconomic evolution of human societies and in some circumstances, could be more important than local environmental and natural resource endowments. Views differ on how important social embedding is as an influence on socioeconomic change. The relevance of the concept of ultrasociality for the evolution of human societies is considered in Section 6. The discussion returns in Section 7 to give greater consideration to Adam Smith's sequential linear model of development. It is used to illustrate the limitations of such models taking into account the preceding analysis.

2. Criteria used to define the economic nature of human societies: Adding extra dimensions

Since HG societies are assumed to be the starting point for the evolution of human societies, it is interesting to consider how a 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. HG societies have been remarkably persistent despite the fact that few now remain who rely entirely on hunting and gathering for their livelihood (Svizzero & Tisdell, 2015a). It has been estimated that they occupied about one third of the globe in AD 1500, even though at that time their population may have only constituted one percent of the global population (Zvelebil & Pluciennik, 2003). Nevertheless, the authors just mentioned found that by 2000 they only accounted for only 0.001% of the global population. In prehistoric times however, hunting-gathering societies were the only forms of societies until the Neolithic period. In the Neolithic period, agriculture and pastoralism began to develop. Some of the reasons why this occurred are explored in Svizzero and Tisdell (2014a).

2.1. The mode of subsistence

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, Laydon, and Rowley-Conwy (2001): "Hunter-gatherers rely upon a mode of subsistence characterized 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 behavior 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 concentrating on 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, e.g. Brenner (1976), 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 other economic activities related to non-food resources 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, during prehistory or in more recent times, the economy, as a whole, consists of three groups of activities: how to get food resources, how to transform and conserve some of these food resources, and how to produce non-food resources. All of these activities were engaged in by prehistoric HG societies (Winterhalder & Kennett, 2006). The mode of subsistence is a relevant criterion only for the first of these three groups. It is therefore difficult to deduce the social structure of the whole society from a criterion which applies to only a part of the economy.

Other relevant criteria—different from the mode of subsistence—could have been used to define prehistoric societies. Let us give three suggestions of alternative criteria.

2.2. Tools

The first one is about 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, various stone tools can be distinguished, as Lubbock (1865) did: rough tools for the Paleolithic period, microliths for the Mesolithic and polished tools for the Neolithic. Similarly, metal tools can be classified with respect to the metal used: chronologically, we have Copper age (or the Chalcolithic period), Bronze Age and then Iron Age. Such alternative definition of human societies presents a singular advantage: all these tools, either of stone or of metal, are non-perishable and therefore have been well documented in archeological records.¹ Despite this advantage and the seminal work of Lubbock (1865), this attribute has not been used to define human societies.

2.3. Geographic mobility

A second possible attribute that could have been used to define human societies is their geographic mobility, i.e. the distinction between nomadism and sedentism. 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, Masai) 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 Northwest coast of America, such as the Kwakiutl, were still sedentary after the European discovery of the New World.

The advantage provided by the mobility attribute—when the latter is taken into account—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 associated often 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. Indeed, given this definition (Panter-Brick et al., 2001) mentioned previously, food is not produced in hunter-gatherer societies by cultivation of crops and animal husbandry, i.e. there is no agriculture and no animal rearing. 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 archeological records that foraging chronologically preceded farming, for many millennia both systems were used simultaneously by many communities (Smith, 2001), and (to a limited extent) they still are used simultaneously (Svizzero & Tisdell, 2015a). 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 foraging² above which the society is considered to be a HG society (see e.g. Murdock & White, 1980). However, this further exposes the weakness of the 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 (Testart, 1982). 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.

2.4. Property rights

A third criterion, linked to the previous one, can be suggested, and in fact has been used, at least implicitly, by many thinkers of the enlightenment, including Adam Smith (Barnard, 2004). Because hunting and gathering are by definition economic activities, it was considered that any notion of hunting and gathering society should therefore be an economic notion. In fact, for many thinkers of that period, including Adam Smith and his “famous” theory of (four) stages of development (see Section 7), their understanding of the stages of progress is embedded in a theory of property. In simple HG societies, few resources and objects were personal property. In other words, common property is the rule in simple HG societies and therefore for many authors (from Morgan, 1877; Lee & DeVore, 1968) their economy is characterized by a situation of “primitive communism”. When food resources become locally abundant (in the geographical sense) and/or become storable, exclusive property rights are introduced, leading to major economic and social changes. For instance, exclusive property is possible in herding societies and consists of livestock, but because herders have to be nomadic in order to feed their flock, the extent of exclusive property is restricted to herds (and to personal belongings). When food resources are locally abundant—as it is for complex HGs or for farmers—and possibly are also storable, exclusive property rights can be extended, especially to land. Finally, in societies based on trade, common property resources shrink to zero since it is negatively related to the extension of markets.

Thus, when the nature of property rights is the criterion used to define societies, simple HG societies appear to be at one end of the spectrum, where exclusive property is restricted to its minimum. When we depart from this situation, one gets what White (1959) depicted as the “great divide” in human cultural evolution, i.e. as the change from societies based on kinship, personal relations, and status (*societas*) to those based on territory, property relations, and contract (*civitas*). In the first type, relations of property are functions of relations among humans; in the second, relations among humans are functions of relations among items of property. According to North and Thomas (1977, p. 230), it is not the type of economic activity (such as foraging, herding, foraging) so much as the kind of property rights that were established that accounts for explaining the Neolithic revolution. Indeed, these authors claim that “The key to our explanation is that the development of exclusive property rights over the resource base provided a change in incentives sufficient to encourage the development of cultivation and domestication” (North & Thomas, 1977, p. 230).

While pre-Neolithic foragers were living in a world of common property resources, nowadays foragers are encapsulated within a large system in which the market forces have penetrated their subsistence and small-scale exchange-based economies (Lee, 2004). It seems that few possibilities exist, for linking to the market economy and the bureaucratic state, that allow former foragers to avoid the total transformation and dissolution of their common property and sharing-based way of life. This implies a trend toward a post-foraging world, which will be the other end of the spectrum (ranging from totally common to totally exclusive property rights).

3. Theories of the economic evolution of human societies by a definite (linear) sequence of stages of development and the failure of some theories to allow for transition

As we have pointed out above, two distinct 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 non-overlapping classification of societies is, however, misleading although it is true that HG societies preceded those which were completely agrarian or virtually so.

3.1. Excessive stress and socioeconomic differences between stages of development

Following Tylor (1881), White (1959) has defined evolutionism in its most irreducible form as a temporal sequence of forms, for no stage of civilization comes into existence spontaneously, but grows or is developed out of the stage before it. Thus he proposed the “ladder” form or unilinear form of

evolution of societies. 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—or exclusively—seen from Hobbes' perspective. Hobbes (1651/2010) 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 Service (1966). In his view, the economy and society of HGs—thereafter 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 had a low density 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 labor, 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 agropastoralists, the type of more developed economies in which these views were being propagated. It provided a basis for feelings of superiority of agriculturally-based commercial societies which had evolved in the seventeenth, eighteenth, and nineteenth centuries in Europe and which underwent further development with the advent of the Industrial Revolution. During the eighteenth and nineteenth centuries, many famous authors—economists (Smith per Meek, Raphael, & Stein, 1978; Turgot, 1750) as well as anthropologists (Morgan, 1877)—have adopted this linear vision to describe the evolution of human societies. For instance, 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. This approach is discussed in detail in Section 7.

3.2. Lack of ability to explain socioeconomic 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 Wallace (1870) and 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 other 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 (Morgan, 1877; Steward, 1955; Tylor, 1881; White, 1959), has two main shortcomings. More precisely, this vision presents only two stages, hunting, foraging, and farming, and stresses the differences between both, but it is unable to explain the shift from the first stage to the second one. It is unable to explain this evolution (Yoffee, 2004, Ch. 1). 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 these so fragile hunter-gatherers survived during at least two hundred millennia?³The relevance of this first question is reinforced by the fact that many major climate changes occurred during the period considered (i.e. from 200,000 years BC onwards), and even recently, during the Holocene era in which for instance the Younger Dryas⁴ is included. 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 have hardly had the competence and means to become agriculturalists, as some HGs were able to do successfully.

4. The economic 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 not as a linear sequence but as a multi-linear⁵ (diverse) sequence of stages of development. Social evolution is regarded as “multilinear” since divergent lines of evolution were occasioned by distinctive local environments and subsistence patterns. In this, Steward (1955) opposed White (1959), who simply disregarded local ecological situations. In fact Steward (1955) developed an approach which he called cultural ecology. This focused on the interaction of specific cultures with their environments. Therefore, 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 diversity of 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 (Bird-David, 1990). The remaining hunter-gatherers societies were not necessarily eliminated immediately by this selection process; many survived for a while, but henceforth, they represented backwards societies.

To some extent the diversity of HG societies was recognized in the literature by the recognition 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.

4.1. 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 & DeVore, 1968). Indeed, it appeared that some modern HG societies (mainly! Kung and Hadza, both located in Africa) were very different from Hobbes-Service’s description. Indeed, these societies did not experience scarcity of food and individuals had to do little work to satisfy their limited ends. Therefore, they were labeled as the “original affluent society” (Sahlins, 1974).

Many interpretations and ethnological analogies between modern and past HG, all influenced by biological evolution theory, 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*”. Let us consider each interpretation or analogy and its associated criticism.

The first was to assume that these affluent HG had not changed over time, that they are like “living human fossils”. They were supposed to be exactly identical in 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 constrained 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 believe that HG societies adapted themselves, but their internal as well as external environments remained unchanged. They remained in steady-state equilibrium. In order to explain why there is no internal pressure or socioeconomic competition in their society, it has been assumed that human behavior in affluent HG societies is unlike that today. Some authors (e.g. Gowdy, 2004) claim that affluent HG are not selfish and behave differently from *Homo oeconomicus*. In their economic system, there is no

close 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 decided to remain HG knowing that some of their neighbors had shifted to farming or herding.

4.2. 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 labeled “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 (e.g. complex HG living on the Northwestern coast of America). As a correlate to the distribution of the economic surplus and the increased division of labor, these societies displayed a non-egalitarian allocation of wealth. Status and authority were signaled 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 HGs have been widely referenced in the evolutionist literature as providing a bridge between simple HG societies and agrarian societies (see e.g. Finlayson, 2009). Some of them, especially the Natufians (who were located in the Levant) appeared to have played a transitional role in the evolution toward 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 may 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 that 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. Biological theories of evolution and the economic evolution of hunter-gatherer societies

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 they faced in different localities. Early scholars proposing this hypothesis included Machiavelli (1519/1987), Montesquieu (1748/1989), Turgot (1750), and 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, however Easterly and Levine (2003) rejected the view that environmental and natural resource endowments are the major influence on economic development. However, this rejection seems to be more likely to be warranted (if it is warranted) in relation to contemporary societies rather than past societies. Indeed, while hunter-gatherers (and *early agriculturalists*) were very dependent on local natural resource availability in developing their economies, a few ancient societies were able to reduce their economic dependence on local natural resources considerably as a result of trade, by use of their institutions and skills, for example, the early Aegean civilizations (Svizzero & Tisdell, 2015b). 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 socioeconomic development differing substantially from those involved in biological evolution under natural conditions (Nelson, 2006).

Biological evolutionary theories originated by Darwin (1859) and Wallace (1870) (and as further developed since then) claim that under natural conditions random mutations occur in germplasm resulting in modified organisms of which (depending on their surrounding environments) only the fittest survive and reproduce (Weismann, 1893). 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 episodic events which seriously disrupt the 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. 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) and methods 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. It was a result of observation and trial-and-error. While this adaptation probably contained a random element it 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 (Nelson, 2006). Uniting two previously developed anthropological approaches of general/universal evolution (White, 1959) with specific/multilinear evolution Steward (1955), Sahlins and Service (1960) proposed a combination of the two that used both of these methods as useful in understanding evolution. On the one hand, evolution creates diversity through adaptive modification and thus differentiates and becomes adapted to more local environments (specific evolution). On the other hand, it becomes progressive, it creates new forms that surpass older ones (general evolution).

In addition, it is likely that the extent to which HGs were able to obtain an economic surplus influenced their social structures. If a considerable economic surplus could be obtained and stored, this was probably conducive to the development of hierarchical social structures (Svizzero & Tisdell, 2014b) 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 diverse nature of HG societies is not fully captured by the three types identified 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 (Bellwood & Oxenham, 2008, p. 29). 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

6. Ultrasociality and the evolution of human societies

The discussion of the evolution of human societies can be viewed differently by introducing the concept of ultrasociality and its applicability to human societies (Gowdy & Krall, 2013, 2014). Indeed, when societies become ultrasocial the processes of the evolution of human societies depend purely on social structures—they are driven by ultrasociality—and they lead to an evolutionary process which is believed to be Darwinian or blind, i.e. completely out of the control of humans. Ultrasociality involves the strong embedding of or lock-in of individuals into a social system which results in their values and behaviors being largely determined by the structure of this system itself. The evolution of such a system is highly path-dependent and it is difficult (or impossible) for individuals or groups to alter it. There are several different ways in which social embedding can occur (which cannot be detailed here) but which are the subject of ongoing current research, for example, by the World Interdisciplinary Network for Institutional Research.

According to Campbell (1983), there is a parallel between some insects (e.g. ants, bees) and human societies because both of them share a common trait, namely ultrasociality: “Ultrasociality refers to the most social of animal organizations, with full time division of labor, specialists who gather no food but are fed by others, effective sharing of information about sources of food and danger, self-sacrificial effort in collective defense. This level has been achieved by ants, termites and humans in several scattered archaic city-states” (Campbell, 1982, p. 160). Indeed, some scholars believe that human society functions like a single organism dedicated to the purpose of producing an economic

surplus. This ultrasociality of human societies is claimed to have begun with the introduction of agriculture (Gowdy & Krall, 2014) but was also possibly present before the Neolithic period, i.e. in complex HG societies. In fact, Polanyi (1944) has proposed the opposite thesis to that of Gowdy and Krall, namely that social embedding (ultrasociality) is more pronounced in ancient than modern societies. Further future investigation of this subject is needed. However, social embedding appears to be strong in modern economics (Tisdell, 1999, Ch. 6).

Two main questions raised by ultrasociality are of great importance for human societies, including hunting and gathering societies. The first central question is what mechanisms facilitate the spread of the necessary norms and institutions that enable humans to cooperate in huge groups or societies? The second one is how does ultrasociality help to explain the evolution of human societies?

Social scientists have proposed a number of theories to explain the emergence of large-scale societies. They have emphasized various factors such as population growth, information management, economic specialization, long-distance trade, and warfare. For instance, Gowdy and Krall (2013) consider that the same economic forces which have favored the evolutionary emergence of ultrasociality in social insects have also done so for humans, i.e. increased productivity from the division of labor, increasing returns to scale, and the exploitation of stocks of productive resources. In a complementary theoretical approach Turchin (2013) predicts that selection for ultrasocial institutions and social complexity is greater when warfare between societies is more intense. This is because costly ultrasocial institutions can evolve and be maintained as a result of competition between societies in which the victors obtain the spoils of warfare. For sure, population growth, economic factors, and warfare seem to have played a major role in the growing ultrasocial level of HG societies.

What are the consequences for the evolution of human societies of their hypothesized growing ultrasociality? One possibility is that once societies become large “superorganisms” of an ultrasocial nature—the social dynamics of their development then becomes largely independent of the wishes of individuals. In fact what individuals want may be largely determined by the system itself. Moreover, if one adopts the view that human beings no longer control the evolution of their societies, this is equivalent to adopting the Darwinian view that evolution is a blind process and the evolution of human organization and economic activity of a similar nature to that for other species. When two human societies come into competition with one another, the one that has the fittest (but not necessarily optimal) ultrasocial institutions dominate the least fit, according to the thesis of Gowdy and Krall (2013). In social conflict, only the fittest human societies are likely to survive. With increasing globalization, Western market-based ultrasocial socioeconomic systems have increasingly come into conflict with other socioeconomic systems and have progressively dominated or eradicated other systems. This has reduced global socioeconomic diversity.

Ultrasociality made possible by increased division of labor and specialization eventually led to the demise of most HG societies. Those societies that did not or could not adopt increased ultrasociality were eventually dominated by those that did. This seems to be confirmed by what has happened after the introduction of agriculture because the HG societies that have persisted were less diverse than the ones that existed before the Neolithic, and this process of reduced diversity has continued to this very day (Lee, 2004). This could have occurred either quite rapidly, just after the Neolithic revolution or, as hypothesized by Richerson et al. (2001), in the long run because agriculture becomes compulsory owing to the “competitive ratchet” of inter-group competition. What is certain is that while the entire earth belonged to HG until the Neolithic revolution, HG societies have all but disappeared within the last 10,000 years. They formed 1% of the population in AD 1500, and they accounted for 0.001% in 2000 (Zvelebil & Pluciennik, 2003). Although some current HG societies—such as the !Kung and Hadza—are widely studied and frequently viewed as living examples of “Stone Age peoples”, they are also considered to be representatives of a vanishing way of life.

An interesting question is whether reduced diversity of human societies when combined with ultrasociality is likely to increase the likelihood of humankind being unable to avert an impending anthropocentric threat to its existence. Will it, for instance, be able to avert a major global ecological disaster or a major global nuclear war?

The main reason why human societies have been able to become increasingly ultrasocial following the emergence of agriculture and subsequently industry has been the emergence and global spread of the market system. There is a high degree of social lock-in to this system for reasons identified by Tisdell (1999, Ch. 6). This embedding has negative consequences for environmental and natural resource conservation and can be a significant source of psychological stress and unwanted social effects. This system was extolled by Adam Smith (1776) but he possibly had little appreciation of the eventual challenges it would pose for humankind in avoiding the possible eventual collapse of such societies. Smith had a simple (but not unique) model of social evolution to which we now turn.

7. Adam Smith's sequential linear model of evolution used to illustrate the limitations of such models

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 (like many thinkers in the eighteenth and nineteenth centuries) 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.

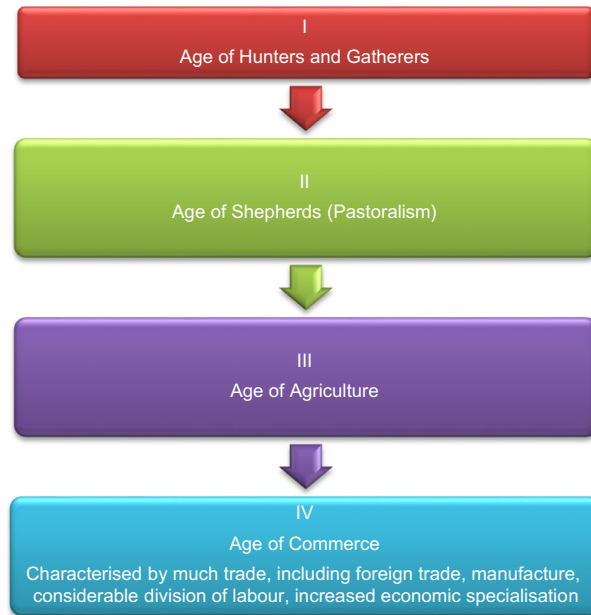
To Smith, it was clear that one stage preceded the other even though given the available archaeological evidence at the time, this had to be a conjecture. For example, Smith believed that in every society, pastoralism (the keeping of livestock) preceded the development of agriculture. Brewer (2008, p. 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". As mentioned above, this unilinear model of development was not unique to Smith. However, scientific evidence accumulated since the eighteenth and nineteenth centuries has shown this theory to be wanting in several respects.

In West Asia, Egypt, and Africa (for example) it seems 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). Another example is the establishment of gardens in New Guinea around 9,000 years before the present (Renfrew, 2007) in the absence of the development of pastoralism. In fact, the only livestock to arrive there were pigs which arrived around 6,000 years before the present or later (Flannery, 1995). 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

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

Note: Many scholars in the eighteenth and nineteenth centuries adopted this type of unilinear “step-ladder” model.



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 unfavorable to agriculture.

Although Smith’s theory of the evolution of societies (also subscribed to by many scholars in the eighteenth and nineteenth centuries) as presented in Figure 1 involves a series of discrete changes, actually he was aware that socioeconomic 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 socioeconomic development. Despite this belief in the type of step-ladder theory of socioeconomic development (illustrated in Figure 1) this persisted in some quarters as pointed out by the social historian Henry Reynolds (Reynolds, 1989).

In summary, the types of shortcomings of the step-ladder approach to socioeconomic development illustrated in Figure 1 are:

- The sequence of development has not always followed the stages shown;
- Transition from one stage to another is unexplained;
- The diversity of socioeconomic structures in each stage is not accounted for, for example, the presence of simple, complex, and affluent HGs;
- There is a failure to appreciate the presence and importance of exchange of commodities in some ancient economies. For example, the Phoenicians were highly dependent on long-distance trade for their welfare (Markoe, 2005). This was also the case for some other ancient economies, and even most HGs engaged in some long-distance trade.

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), socioeconomic evolution resulted eventually in the appearance of 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.

8. 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 twentieth century favorable 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 (mainly as a result of the competitive advantages afforded by ultrasocial structures to societies adopting these) appear to be converging (Tisdell, 2013) rather than becoming globally more diverse as in prehistoric times (and for some time after the commencement of agriculture). 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.

Societies and their economic systems have changed greatly since prehistoric times. This article examined the adequacy of theories portraying the stages of their evolution and found that they can be misleading because they do not capture the diversity of this evolution. Examples of this diversity particularly (but not exclusively) for hunting and gathering societies were given. An important matter considered is the extent to which local environmental conditions and the availability of natural resources has shaped the nature of the socioeconomic evolution of communities. It was observed that in theories of biological evolution, variation in these factors has a major influence on the genesis of biodiversity. It is found that in the earliest stages of the development of human societies, their global diversity increased with the passage of time and was significantly determined by disparity in local environmental conditions and natural resources availability—a similar result to that predicted by biological theory. However, more recent stages of economic development have resulted in increasing globalization and as a result social institutions have become increasingly important (and local environmental factors less so) in determining the evolution of human societies. This has resulted in reduced global socioeconomic diversity as Western-type market-based systems have increasingly dominated all others. A worrying result is that the embedding of individuals within this system (increased ultrasociality) could result in them having little control over its future development.

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Cover image

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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 knives, spears, harpoons and so on, and used as easily as stone tools. However, bamboos are perishable and have left no or very few archeological 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. 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! 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, e.g. Tisdell, 1989, 1990, Ch. 2). However, the overkill hypothesis has been recently discredited and Australian extinctions are more likely related to climate change.
8. In some cases, these were marine resources (e.g. along the Northwest coast of America, or for Scandinavian Mesolithic people or for the Jomon culture in Japan), wild cereals (for Natufians in the Levant), or acorns (in California).
9. However, they did tame and breed horses and therefore, they did engage in a degree of animal husbandry.

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