

Environmental Crisis in Prehistory: Hunter-Gatherers and Mass Extinctions

By Martin Spence

1. The Nature of the Problem

A key unspoken assumption that underpins the critique of much of the green/environmentalist movement is that the destruction or degradation of the environment is a relatively recent phenomenon, associated with the rise of “industrial society” or capitalism. This often goes hand in hand with a vague notion that at some earlier point in history people tended to live “in harmony with nature.”

Capitalism Nature Socialism has never endorsed these comforting myths. On the contrary its contributors have laid much emphasis on patterns of environmental degradation and crisis triggered by pre-capitalist and non-capitalist social formations such as the New World empires of the Maya and Incas;¹ and in the Roman Empire and feudal Europe.²

However all of these were urban civilizations which arose within the last 3,000 years. This is a tiny fraction of the period during which humans have lived upon, and acted upon, the planet. A comprehensive view of the relationship between human society and the natural environment needs also to encompass the experience of the non-urban, non-literate societies of the Stone Age.

Nor is this a purely academic issue. There is a well-established and academically respectable view that Stone Age humans were directly

¹J. Donald Hughes, “The Classic Maya Collapse,” *CNS*, 10, 1, 1999; and “Conservation in the Inca Empire,” *CNS*, 10, 4, 1999.

²James O’Connor, “Part 1: History and Nature,” *Natural Causes* (New York: The Guilford Press, 1998).

responsible for wiping out hundreds of species of large mammals — megafauna — in Australia and America.³ If true, this has major moral and political implications. It can be used to justify a range of reactionary positions. It can be seized upon by “deep greens” to justify their moral pessimism and anti-humanism, and to bolster their argument that people as such are the problem. And it can be turned to good account by corporate cheerleaders, who can argue for “business as usual” on the grounds that we are conditioned by evolution to degrade the environment so we might as well carry on and turn a profit while we’re at it.

There is therefore a real political incentive to understand the environmental dynamics of prehistoric societies.

2. Method

The approach in this article is firstly to propose that we make use of the analytical tools of Marxism, and specifically the concept of modes of production, as a framework for understanding the laws of motion of hunter-gatherer society. As eco-socialists we use the capitalist mode of production, and its fundamental categories such as value and the commodity form, as points of departure in our efforts to understand the environmental crisis of industrial capitalist society. We need an equivalent framework if we are to investigate the environmental impact of prehistoric, and specifically hunter-gatherer, societies.

The next step is to sketch out a chronological account of the emergence of the hunter-gatherer way of life, drawing primarily on findings from the Palaeolithic (Old Stone Age) era in Europe and western Asia where the data are most extensive.

Finally, we will focus more closely on Australian and American prehistory, and specifically on the circumstances surrounding the first human arrivals in these continents, and on humans’ possible role in causing megafauna extinctions.

This is a short essay, with a single purpose, which is to explore the potential of hunter-gatherer societies for environmental degradation or destruction. However we are dealing with subject matter which constantly threatens to lure us off down other inviting paths, and to examine issues such as the origins of language, or the fate of the Neanderthals, or the case for very early human arrivals in Australia or

³On Australia see Jared Diamond, *Guns, Germs and Steel* (London: Vintage, 1998). On America see Paul S. Martin and Richard G. Klein, eds., *Quaternary Extinctions* (Tucson: University of Arizona Press, 1984).

America. Fascinating as these questions are, this is not the place to deal with them in detail. The best that we can do here is to note them and move on.

3. A Hunter-Gatherer Mode of Production?

Can Marxism help us understand hunter-gatherer societies and their potential for environmental impact?

It will serve no purpose to go back to the masters, to seek guidance from Marx and Engels, or to try to build upon their speculations on “primitive communism.” Marx and Engels were forced to rely largely on the work of one man, Morgan, for any anthropological insights; and they had no access at all to archaeological data, because when they were writing the scientific discipline of archaeology did not yet exist. Their concept of “primitive communism” was a courageous innovation based on limited information. But from the vantage point of the 21st century, it is simply irrelevant: it cannot hope to capture the range of rich detail now available to us in our understanding of human prehistory.

Nor is modern eco-Marxist theory of any use. In his “second contradiction” hypothesis, for instance, O’Connor attempts to tackle the phenomenon of capital-induced environmental crisis by developing a new category of “conditions of production,” and by redefining the notion of capitalist contradiction.⁴ But the whole thrust of his work is to find ways of tackling the environmental crisis of capitalism in the late 20th and 21st centuries. Whether or not his categories or the general thrust of his argument stand up to interrogation,⁵ they cannot help us grasp the experiences of people who lived tens of thousands of years ago.

There have been various attempts to apply the concept of a mode of production to hunter-gatherer, pastoral and other “primitive” societies. Followers of the French school of structuralist Marxism, strongly influenced by Althusser, were active in this area in the 1970s.⁶ At the same time, working in a different tradition, Sahlins developed a rather different model. He argues that a range of non-industrial social forms, including simple agriculturalism, pastoralism, and hunter-gatherer societies, can be seen as variants of a “Domestic Mode of Production.”⁷

⁴O’Connor, “The Second Contradiction of Capitalism,” *op. cit.*

⁵Martin Spence, “Capital Against Nature,” *Capital & Class*, 72, 2000.

⁶Barry Hindess and Paul Q. Hirst, *Pre-capitalist Modes of Production* (London: Routledge and Kegan Paul, 1975).

⁷Marshall Sahlins, *Stone Age Economics* (London: Tavistock Publications, 1974).

His analysis starts from the observation that the basic economic unit of all these societies is the family group or household; and that left to their own devices, individual households have an inherent tendency to under-production — that is to say, their productivity is well below its potential. However, in practice individual households are rarely left to their own devices. Instead, they are pulled into a matrix of external obligations imposed upon them by “higher-level” social structures such as kinship networks, institutions of political authority, systems of trade or gift-giving which create bonds of reciprocity, tribal affinities, religious and ritual duties, and so on. The effects of these higher-level structures are complex. They raise the overall level of social production, and in doing so create the conditions for higher population densities, and they set up mechanisms for conflict resolution. But at the same time, they may increase the likelihood that conflict will occur.

There is therefore a tension built into the Domestic Mode of Production. Sahlins refers to this as a “contradiction,” but it is not a contradiction in the classic Marxist sense of posing the possibility of a transition to a new mode of production. The choice here is simply between finding a way of living with the tension, so that family groups remain the essential economic units while conceding a degree of their autonomy to higher-level institutions; or allowing the higher-level structures to fail, which implies a collapse so that the *only* functioning social units are the family groups. This latter possibility Sahlins describes as fission, a breaking up of the social fabric into its constituent atomic parts.

We should expect these different social possibilities, unity or fission, to be associated with different degrees of environmental impact. Where higher-level structures are relatively strong, we should expect higher population densities and higher levels of production overall, implying greater environmental impact across a wider geographical area. Where higher-level structures are weak, and family-groups or households are more autonomous or isolated, we should expect population densities to be lower, production to be closer to basic subsistence, and environmental impact to be lower and less extensive.

Sahlins therefore gives us a model or hypothesis with which we can work and which we can put to the test as we come to grips with the reality of hunter-gatherer societies.

4. Origins of Hunter-Gatherer Culture

The phrase “hunting and gathering” is sometimes used as if it described a timeless way of life stretching back to the dawn of humanity. But a little thought should show how meaningless this

usage is. It implies that there is no essential difference between the early hominids whose footsteps were recorded at Laetoli 3.6 million years ago, and the painters who created works of art in the caves at Lascaux a mere 16,000 BP (Before Present). It denies the reality and the meaning of human evolution itself.

Hunter-gatherer culture is not a timeless way of life, but appeared at a specific point in time and in specific circumstances.⁸ We will trace the emergence of this way of life by looking primarily at Europe and western Asia. This is not meant to imply that hunting and gathering emerged uniquely in these regions. It simply reflects the fact that they were continuously inhabited throughout the relevant period; and that their prehistory and archaeology have been intensively investigated for many years, so that there is a relative wealth of data.

The hunter-gatherer lifestyle first appeared in Europe around 30,000 years ago — Gamble is more specific, identifying 33,000 BP as the key transition point. This period, the Upper Palaeolithic, is usually defined by reference to aspects of material culture such as new types of stone tool; and to paintings, figurines, and engraved bones and antlers which carried symbolic meaning. Equally important, many of these artifacts, or their raw materials, were obtained from great distances, and were clearly embedded in extensive networks for trade or reciprocal gift-giving (whether we describe these acts of exchange as “trade” or “gifts” is probably unimportant, because for the people concerned they served both functions). These hunter-gatherers thus created a “social landscape” criss-crossed with pathways, boundaries and meanings; a ritual landscape in which certain sites acquired special status as gathering-places where social bonds were re-stated, celebrated and sanctified.⁹ And in order for these social networks and exchanges to function, there were necessarily social institutions which bound people together above and beyond the immediate level of the family group; higher-level institutions based on kinship or tribal affinity, and reinforced by structures of political authority and shared religious belief.

⁸Foley for instance describes the hunter-gatherer way of life as “...an evolutionarily-derived form...that appeared toward the end of the Pleistocene...as a response to changing resource conditions,” Robert Foley, “Hominids, Humans and Hunter-gatherers: An Evolutionary Perspective,” in T. Ingold, D. Riches and R. Foley, *Hunters & Gatherers* (New York: Berg, 1988).

⁹Clive Gamble, *The Palaeolithic Societies of Europe* (Cambridge: Cambridge University Press, 1999).

The full significance of all this becomes clear by comparison with the culture of the previous, Middle Palaeolithic period. From about 90,000 BP in western Asia, and 40,000-50,000 BP in Europe, the Middle Palaeolithic population was made up of two separate human species: the Neanderthals, who were native to the region; and our own species, anatomically modern humans, spreading out from our African homeland. Both Neanderthals and “moderns” were resourceful people, hardy, with formidable skills. They had fire. They must have had language, although different in nature from modern languages: more affective, less analytical, focused primarily upon the immediacy of social and personal relationships and interactions.¹⁰ These people were survivors — but they were not hunter-gatherers. They did not have access to far-flung social networks, and they did not obtain tools and raw materials from far away. They lived in separate and self-sufficient family bands, each one scavenging and foraging for food over a restricted and familiar territorial range, a “landscape of habit.”¹¹

There was nothing inevitable about the emergence of a hunter-gatherer culture from this Middle Palaeolithic background. On the contrary, there seems to have been a prolonged period of ebb and flow during which odd elements of the hunter-gatherer way of life flickered into existence, and then died out again. If we look beyond Europe we can see this quite clearly. At Klasies River Mouth in South Africa, and at Katanga in Congo, at Tabun and Amud in Israel, and at Cyrenaica there is early evidence of material cultures which would in other circumstances be described as Upper Palaeolithic;¹² and at Klasies there is also evidence of long-distance trading and networking. The problem is that all these “Upper Palaeolithic” traits appear far too early — around 70,000 BP at Klasies, and 50,000 years ago at Katanga,¹³ well

¹⁰This concept of Middle Palaeolithic language leans heavily on the work of Dunbar (L. Aiello and R.I.M. Dunbar, “Neocortex Size, Group Size and the Evolution of Language,” *Current Anthropology*, 34, 1993); and Mithen (Steven Mithen, *The Prehistory of the Mind* [London: Thames and Hudson, 1996]). Dunbar argues that language originated as “verbal grooming,” an elaboration of the physical grooming shared and clearly valued within primate societies. Mithen builds on this in his work on the psychology of early humans, in which he develops the concept of “cognitive domains,” and associates language with the “social” domain.

¹¹Gamble, *op. cit.*

¹²Clive Gamble, *Timewalkers: The Prehistory of Global Colonization* (Harmondsworth: Penguin, 1995); Richard Rudgley, *The Lost Civilizations of the Stone Age* (New York: The Free Press, 1999); and James Shreeve, *The Neanderthal Enigma* (Harmondsworth: Penguin, 1997).

¹³Shreeve, *ibid.*

back in the Middle Palaeolithic. And then they disappear again, as their creators apparently reverted to the mainstream culture of the Middle Palaeolithic.

Similarly in Europe, the long transition towards a hunter-gatherer culture began as far back as 60,000 BP. This transition was not exclusively associated with our own ancestors. Neanderthals too participated in it, at least by imitation and emulation,¹⁴ though by the time of its final coalescence it had become identified exclusively with our own species.¹⁵

To sum up, what marks out and defines the hunter-gatherers of the Upper Palaeolithic, when compared to their Middle Palaeolithic predecessors, is their creation of over-arching social structures above and beyond the level of the family group; and the incentives which this created for higher levels of production and innovation to meet new social opportunities for wealth and prestige. When we look at the Upper Palaeolithic, and the emergence of a hunter-gatherer way of life, we are looking at the first solid appearance of the Domestic Mode of Production.¹⁶

¹⁴Gamble, 1995, *op. cit.*; Gamble, 1999, *op. cit.*; Shreeve, 1997, *op. cit.*

¹⁵We will probably never know why or how the Neanderthals disappeared. But we do know that they were not simply shouldered aside as soon as our own ancestors came on the scene, in a Palaeolithic version of manifest destiny. In western Asia the two populations co-existed and shared a similar culture for perhaps 60,000 years. In Europe, the traditional view that they were associated with radically different material cultures is increasingly open to question, and in some regions co-existence may have lasted for between 10,000 and 15,000 years. In Spain there are even tantalizing hints of inter-breeding.

¹⁶This does not mean that Middle Palaeolithic people, whether anatomically modern or Neanderthal, “lacked” a labor process or mode of production. Their activities clearly conformed to Marx’s general observations on the human labor process: “...human action with a view to the production of use-values, appropriation of natural substances to human requirements....The everlasting Nature-imposed condition of human existence (which) therefore is independent of every social phase of that existence, or rather is common to every such phase.” (Karl Marx, *Capital: Volume 1* [London: Lawrence and Wishart, 1954], p. 179). However, as Murray points out, the fact that it is possible to make general observations regarding the human labor process, which refer to all forms of society, does not mean that a labor process can actually exist which lacks a specific social form (Patrick Murray, “Marx’s ‘Truly Social’ Labour Theory of Value, Part 1,” in *Historical Materialism*, 6, Summer, 2000). In the real world, all labor processes are bound and driven by their time and place. The problem

But why this particular moment? Why, after flickering in and out of existence for tens of thousands of years, did hunter-gatherer culture finally coalesce and put down roots at this particular time, around 30,000 years ago? Climate change probably provides the answer. The period from about 32,000 to 28,000 BP represented a brief interlude between glacial episodes, during which the climate was relatively warm and benign. This may have allowed a degree of population growth, and provided a supportive context for the tentative cultural innovations of previous millennia finally to take root.

From 28,000 years ago conditions deteriorated again, getting steadily colder in the run down to the period of “Glacial Maximum” from 20,000 to 18,000 BP. But by this time the hunter-gatherer way of life, and the Domestic Mode of Production, were firmly established, and had acquired positive survival value. Social networks, and trade/gift regimes based on mutual aid and reciprocity, would have acted as a form of insurance against scarcity and hard times by encouraging a sharing of information, and the exploitation of a wider range of natural resources, thus increasing overall productivity. One of the most dramatic illustrations of this is seen at Sunghir in Russia. Here three individuals of high rank were buried, dressed in elaborate costume including many thousands of hand-made beads. It has been estimated that about 9,000 hours of labor-time — more than four solid years of work in our own terms — was invested in making these burial beads.¹⁷ The fact that this society could afford such an extravagant investment of time and labor on three burial costumes suggests that it enjoyed a healthy economic surplus. And yet these people lived in incredibly harsh conditions, about 24,000 years ago, just when the last Ice Age was nearing its glacial extreme, in a northerly continental location where its full force would have been felt with devastating effect. It has been suggested that their culture was driven by “Arctic hysteria,”¹⁸ a frantic commitment to work and creativity underpinned perhaps by some form of religious or messianic mania, as a way of coping with these harsh conditions.

Sunghir suggests that, once the hunter-gatherer way of life and the Domestic Mode of Production were solidly established, it became progressively more difficult to abandon them. It is true that the presence of higher-level social structures, by encouraging increased social

we encounter with the Middle Palaeolithic labor process and mode of production is that we simply lack the data to reconstruct, or even usefully speculate about, their precise social form.

¹⁷Rudgely, *op. cit.*

¹⁸Gamble, 1995, *op. cit.*

productivity and population growth, also created the conditions for social tension and conflict. But these same structures provided a mechanism for containing or resolving these conflicts, *and* a means of tackling other challenges, including the stresses generated by environmental crisis. In other words, the Domestic Mode of Production provided a powerful means for humans progressively to impose themselves and their priorities on the natural environment.

5. Australia

Humans first arrived in Australia around 40,000 BP, or maybe somewhat earlier. Their arrival pre-dated the secure emergence of the hunter-gatherer way of life in Europe or, so far as we know, anywhere else. The first Australians were not therefore hunter-gatherers, but were Middle Palaeolithic people with a Middle Palaeolithic culture.¹⁹

The emergence in Australia of the hunter-gatherer way of life is described by Harry Lourandos. He refers to periods in Australian prehistory dominated by “open systems” of small, scattered, self-sufficient family bands; and periods dominated by “closed systems” or social structures based on kinship and forms of political authority (e.g., gerontocracy, rule by elders). Closed systems, associated with relatively high population densities and a need for institutionalized conflict resolution, first appeared about 13,000 years ago at a time when environmental conditions were improving. Over the following millennia social structures ebbed and flowed, as institutionalized closed systems gave way to fragmented open systems, and then reasserted themselves again. The pattern varied between different parts of the continent, but Lourandos is at pains to argue that social change was not simply dictated by environmental change. He points out that closed systems appear both when conditions were benign (13,000 BP) and when they were stressful (5,000 BP).²⁰

Lourandos’ account of the shifting balance or tension between open and closed systems is in effect a description of the Domestic Mode of Production functioning in the Australian context. His concept of “closed systems” is analogous to Sahlins’ notion of higher level centripetal social structures, and to Gamble’s vision of extensive networks spread across a complex social landscape. This suggests that we can tentatively regard 13,000 years ago as the point at which an indigenous Australian hunter-gatherer culture first appears. Unlike

¹⁹*Ibid.*

²⁰Harry Lourandos, *Continent of Hunter-Gatherers* (Cambridge: Cambridge University Press, 1997).

Europe, this was not immediately associated with the appearance of a new tool kit: the Australian Small Tool Tradition, whose artifacts are broadly comparable to the blade-tools of the European Upper Palaeolithic, appeared about 8,000 years later.

What then of the megafauna extinctions in Australia? It is a fact that many large mammals and marsupials disappeared from the record following the arrival of humans, and when summed up in aggregate, across the continent and across the millennia, the sheer scale of species loss is awesome. Of Australia's fourteen native genera of large mammals, thirteen were lost, comprising tens or hundreds of separate species.²¹ If humans were not to blame, then what was?

The answer again seems to be climate change, the effects of which were felt very differently in different regions. So, for instance, many large mammals became extinct in South Australia from about 26,000 BP. This cannot be explained simply by the presence of humans, because humans had lived in this region for between 10,000 and 15,000 years with no apparent impact on these species. Much more relevant is the fact that, as in Europe, this was a period of climate change, the run-down to the Glacial Maximum. In Australia, this meant a shift to increasingly arid conditions. All species — including humans who at that time were still living in scattered family groups with a broadly Middle Palaeolithic culture — were therefore competing for increasingly scarce water resources. The most that we can say is that in this competition, humans would have been formidable and cunning rivals.²²

Elsewhere there are regions where humans were absent but large mammals still went extinct (e.g., western New South Wales), and regions where humans were present but large mammals survived locally, while going extinct elsewhere (e.g., north-east New South Wales).²³

Overall, two key points emerge. Firstly, the Australian megafauna extinctions largely pre-dated the emergence of an indigenous Australian hunter-gatherer culture. This suggests that any human role can only have been a minor one, because these were Middle Palaeolithic people with low population densities, moving in small bands within restricted ranges, lacking higher-level social institutions or social networks, and wielding a low-impact technology. There is no evidence from anywhere

²¹Diamond, *op. cit.*; Colin Tudge, *The Day before Yesterday* (London: Pimlico, 1996).

²²Lourandos, *op. cit.*

²³*Ibid.*

in the world that Middle Palaeolithic people were capable of exerting sufficient environmental pressure to drive large mammals to extinction. And secondly, the timing and detailed circumstances surrounding the disappearance of many species positively suggests climate change as the key factor.

The contrast with America could hardly be more striking.

6. America

The majority view is that humans first arrived in America between 12,000 and 13,000 years ago, crossing from Siberia into Alaska. Some would wish to push the first influx back to 20,000 BP, and a few would argue for even earlier arrivals at other points of entry.²⁴ But in broad terms there was a gap of 20,000 to 30,000 years between the arrival of the first Australians, and the arrival of the first Americans — and it was of course precisely during this period that hunter-gatherer cultures were emerging worldwide. Consequently, whereas the hunter-gatherer way of life developed indigenously in Australia, it was imported into America. The first Americans were heirs to a Eurasian hunter-gatherer tradition that already stretched back hundreds of generations.

These first Americans had an immediate impact upon the continent's large native animals. If we accept the conventional arrival date of 12,000-13,000 BP, then in just over 2,000 years the American mammoth were gone,²⁵ and in the relatively short time that it took to colonize both American continents, thirty-three genera of large mammals in North America, and forty-six in South America, went extinct.²⁶

We cannot deny the coincidence in timing between the first human arrival and the American megafauna extinctions. And consequently it is hard to deny some causal link between the two events. But what precisely was the causal mechanism? The best known explanation is also the most melodramatic. Paul Martin's theory of "overkill" envisages newly-arrived and highly-skilled hunters indulging in an orgy of slaughter, hunting naïve and bemused prey to exhaustion and extinction.²⁷ But before committing ourselves to this or any other hypothesis of human culpability, we need to consider what circumstances are necessary to bring about the extinction of a large mammal.

²⁴Gamble, 1995, *op. cit.*; Rudgley, *op. cit.*

²⁵Gamble, 1995, *op. cit.*

²⁶Tudge *op. cit.*

²⁷Martin and Klein, *op. cit.*

Large mammals typically produce few offspring at long intervals, and occupy especially fragile ecological niches. As a result, any combination of circumstances that disrupts the delicate fabric of their eco-systems by denying access to habitual food resources, or reducing the chances of infants reaching maturity, can within a remarkably few generations lead to a population crash. Orangutans today are a tragic example.²⁸

Newly arrived humans in America, entering the territories of native large mammals for the first time, would have disrupted their ecological niches in four ways.

Firstly, humans are omnivorous. In addition to meat we eat plants, roots, and fish, and lay claim to sources of water. We therefore have a broad impact across the environment. We compete with many species for resources, we put pressure on their food chains at many points, and in doing so we provoke knock-on pressures on yet more species.

Secondly, humans have fire. Fire has many uses. Cooking extends the range of the human diet and thus reinforces the point made above. But equally important is fire's use in pre-agricultural land management through practices such as low-level burning of vegetation which releases nutrients and promotes new plant growth. Over time, this technique may create an entirely new landscape, a Palaeolithic second nature, whereby forest is transformed progressively into woodland and thence into Savannah or grassland. For species adapted to life in the original pristine forest, this would clearly be catastrophic.

Thirdly, there is hunting. As stressed above, a subtle but sustained degree of pressure may be enough to disrupt the ecological niche of a large mammal, and hunting as practiced by human hunter-gatherers — cultural hunting — is more than capable of exerting such pressure. This is quite unlike the hunting of natural predators. Natural predators must adapt to conditions as they find them. They must balance their own strength and speed against that of their prey, and take into account any defensive measures which their prey can bring to bear. Consequently, they often select young, old or otherwise weak individuals as victims. Humans, on the other hand, can set up the conditions of the hunt on terms favorable to themselves. By using their symbolic resources (language, co-operation) and technological resources (especially missiles: arrows, bolas, spears) they can from positions of relative safety project killing power over considerable distances with minimal expenditure of energy. Consequently, unlike natural predators, human

²⁸Tudge, *op. cit.*

hunter-gatherers often target prime adults, and thus drastically undermine the capacity of the prey species to reproduce itself.²⁹

Finally, the impact of all these separate factors was magnified by the fact that these people did not live in small or isolated family groups: they were hunter-gatherers, whose households were integrated into higher-level social structures, complex and extensive networks, held together across the landscape by links of kinship, marriage, trade, gift-giving, celebration and ritual. Maybe this was the explanation for their rapid colonization of the Americas: the fact that pioneer groups were backed up by supportive networks may have provided them with a necessary degree of security as they moved forward into virgin land.

Putting all this together, there is simply no need to conjure up gory melodramas in which hunter-gatherers indulged in an orgy of slaughter. Simply by pursuing their way of life — including an omnivorous diet, use of fire, and cultural hunting — the first Americans could have driven the North American mammoth or other large animals to extinction.³⁰

However, climate change was also a crucial conditioning factor. In broad terms the first Americans were arriving when the last Ice Age was coming to an end: the glaciers were in retreat, temperatures and humidity were rising: the long Interglacial period in which we still live was getting under way. However, these climactic shifts do not proceed smoothly and predictably, and between about 13,000 and 11,500 years ago there was a sudden reversal to cold, dry glacial conditions. This sudden cold period, the Younger Dryas, would have placed many species under pressure even without the additional challenge of newly-arrived human hunter-gatherers. When added to the human arrival, however, it may have been enough to tip many of them over the edge.

7. Conclusions

In this article I have suggested that Sahlins' concept of a Domestic Mode of Production provides us with an analytical framework, through which to grasp the dynamics of hunter-gatherer societies and their relationship with nature. I have also argued that the models developed independently by prehistorians such as Gamble, and anthropologists such as Lourandos, are not only consistent with the Domestic Mode of Production but serve as case-studies in its emergence and functioning.

²⁹Rudgley, *op. cit.*; Tudge, *op. cit.*

³⁰*Ibid.*

From this, it transpires that there is no justification for the broad claim that humans as such were the sole or main cause of megafaunal extinctions in Australia and America, and therefore there is no justification for drawing morally pessimistic or politically reactionary lessons from these extinctions. These were complex events, best explained by reference to a range of causal factors, which varied in time and space.

Climate change figures in both cases: the run-down to the Glacial Maximum in Australia; the post-Glacial Younger Dryas interlude in America. As for newly-arrived humans, they were of marginal significance in Australia, and of enormous significance in America. This difference is accounted for by the fact that these two groups of humans lived in different eras, and in different cultural universes: at the time of most Australian extinctions, people were living in scattered bands with a Middle Palaeolithic culture; whereas the people associated with the American extinctions were part of a sophisticated hunter-gatherer society, with greater population densities, and with access to a much greater range of cultural resources, both material and symbolic. The first Americans are closer to us, in time and in culture, than they are to the first Australians.

In terms of the broader relationship between humans and the environment, the advent of the hunter-gatherer way of life can now be seen as a cultural threshold every bit as significant as the beginning of settled agricultural communities, or the first cities, or the advent of capitalism, or the beginning of industrial society. It is neither useful nor necessary to argue that any one of these events is more important than the others. But it does help to retain a sense of perspective by reminding ourselves that the human impact on the environment should be measured not in decades or even in centuries, but in thousands and tens of thousands of years.

Hunter-gatherers did not and do not live in a timeless “harmony” with nature. On the contrary, they live in dynamic societies, pushy and energetic and vibrant. They have their own histories, their own cycles of co-operation, growth, conflict, breakdown and reformation. And in certain circumstances, they are capable of exerting a dramatic, and occasionally catastrophic, impact upon the natural environment. In acknowledging this, we acknowledge our common humanity with them — which includes a common ignorance in the face of nature, and a shared inability to predict the consequences of our own human actions.