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Climate and Human Progress

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Review Articles

Climate and Human Progress

Being Human: Putting People in an Evolutionary Perspective by Mary & John Gribbin, 1993, London: J.M. Dent. 292pp.

James Steele

Being Human is the Gribbins' third book on human origins, and John Gribbin (the better known of the pair) has co-authored two others with Jeremy Cherfas. This productivity suggests both that there is a sizeable target market for such books, and that the Gribbins feel that they have something important to say to this target readership. Let us note at the outset that they have targeted a lay readership outside the academic community.

Their published output is that of *r*-selected strategists: lots of books, relatively low level of investment of time in any single volume. Presumably this reflects the hit-and-miss nature of commercial success in this competitive sector of the book market. Thus as well as his scientific journalism, John Gribbin published two other books last year, one on cosmology, the other a (co-authored) biography of Einstein. Within academia, John Gribbin is best known among scientists (to judge from his citations impact) for his scientific journalism and books on climate change. In the arts and social sciences, his impact has been primarily made by books of scientific popularization, notably one on quantum physics (*In Search of Schrodinger's Cat*). Mary Gribbin, a former teacher trained in developmental psychology, now writes science books for children. The Gribbins' recent joint books on human origins have had little discernible citations impact in any of these academic sectors.

But they are not pastiches. What makes *Being Human* distinctive, and a stimulating read, is the specific expertise the Gribbins bring to bear on the subject. Their message to their target audience concerns the role of climatic change as a determinant of vertebrate, especially human, evolution, and the evolutionary origins of 'central tendencies' in human social behaviour which make our species distinct. Another recent book by the Gribbins, *Too Hot to Handle?* (1992), evidently covers the inverse relationship — recent human impact on climate, and the anthropogenic greenhouse effect.

The effect of climate on evolution is reviewed in a series of chapters which cover both the ultimate causes of global temperature fluctuation (plate tectonics, vulcanism, meteor impacts, cyclical orbital variability), and the record of biotic responses (decline and extinction of the dinosaurs, radiation of the mammals, origins of the primates). The origin of the hominid line, and its divergence from that of the living great apes, is seen as part of this picture. Although the Gribbins write with engaging enthusiasm, they are somewhat lax in deciding how close in time climatic and speciation events should be for a causal relationship to be inferred. Their reading of the secondary literature in palaeoanthropology is also skimpy — the Aquatic Ape theory, for instance, is given space in a discussion of the evolution of skin hairlessness, while Peter Wheeler's more recent physiological models are omitted. But a more detailed review of this field would not have discredited their climatic determinism. Locomotor bipedalism in *Homo* may, like reduced skin hair, reflect the physiological optimization of heat dissipation and water retention postulated by Wheeler as a savannah adaptation (cf. Wood 1993). Earliest *Homo* has now been pushed back to *c.* 2.4 MYR, approximately coincident with earliest dates for *Paranthropus boisei* and with the earliest stone artefacts: this coincides with a shift at *c.* 2.5 MYR toward drier environments, probably also reflected in changes in the composition of other elements of vertebrate fauna at this time (Hill *et al.* 1992; Wood 1992). *Homo erectus* in Africa dates from *c.* 1.7 MYR, with Acheulean artefacts from *c.* 1.4 MYR, and colonization of Eurasia by 1.2–1.4 MYR (Asfaw *et al.* 1992): regionally, a severe climatic perturbation occurred in East Africa at *c.* 1.6 MYR, with major local extinctions of genera, which approximately coincides with the appearance of the *erectus*/Acheulean complex (Harris 1993). The climatic determinist model seems to work rather well for the Lower Palaeolithic.

In the Gribbins' account, human evolution is

the product of successive demographic bottlenecks forcing selection for enhanced intelligence and sociability as a response to the temperature fluctuations of Pleistocene glacial-interglacial cycles. The adaptive proliferation of human cultures in the present interglacial is, then, a contingent product of the fortuitous appearance of another brief interglacial warm spell after the appearance of *Homo sapiens* in Ice Age environments. The Gribbins extend their climatic determinism to Holocene prehistory and history, listing the historical events and processes (migrations, subsistence failures, systems collapses and transformations) which can be related to subtler climatic fluctuations during this period. They take their lead from the climatologist Hubert Lamb.

This approach has rarely been so systematically applied to human history. Few prehistorians have developed analogues of Sulimirski's (1935) early climatic determinist model of cyclical human migrations in the later Holocene (recent exceptions to this include: Bridgman 1983; Fang & Liu 1992; and Neuman 1993). But even with migration models discounted, models of fluctuating global solar energy budgets during the Holocene need to be reduced to a series of 'middle range' models of regional microclimates if we are accurately to discriminate the effects of climate from those of anthropogenic change in explaining subsistence changes and systems collapses (Renfrew 1989). Just recently, modified environmental determinisms which take account of this problem of scale are resurgent: a number of studies have persuasively implicated climatic change as a driving force in agricultural adaptation or failure (Ortloff & Kolata 1993; Stanley & Warne 1993; Wright 1993). This is clearly becoming a very active research field. But until more work is done, the Gribbins' approach must be discounted as speculative and conviction-led.

The parallel theme of this book concerns the distinctive human qualities of co-operative reasoning and low aggressiveness, which evolved in the small face-to-face bands of the Pleistocene, but which enable us today to transcend (with limited success) our 'mammalian inheritance' of sexually dimorphic behaviour patterns, and of close-kin-biased helping behaviour. This is the less-developed strand of the book, partly I think because climatic determinism prevents the Gribbins from appreciating the rôle of co-operative behaviour in enabling human societies to adapt to Holocene regional ecologies. The Tit-For-Tat strategy in the Prisoner's Dilemma game is used to explain the development of a post-war superpower arms race, but there is no discussion of how co-operation is sustained in risk-buffering agricultural alliances, nor any account of how Commons Dilemma models have helped us to understand the processes leading to environmental degradation. Again, this approach to human rationality is an active field in archaeological theory, and is one which is relevant to predicting global policy responses to greenhouse warming today.

In this context, the significance of engagingly-written books like *Being Human* is not measured by their limited potential as research tools, but by their use as a gauge of the *zeitgeist*. *Being Human* should not be judged in isolation, but as part of an *oeuvre* targeted at a lay audience, and which includes the Gribbins' other books on weather and the greenhouse effect. Indeed, the book is itself a synthesis of two of their previous collaborations, *Children of the Ice* and *The One Per Cent Advantage*, and this occasionally shows at the joins. Science writers like the Gribbins are sensitive to their market. They are also in a position to survey scientific work across disciplines and faculties, and to attempt to determine how this work should be consolidated into a synthesis which speaks to our condition. They make no apocalyptic predictions, but their book reminds us how slim is the record of human survival on a palaeontological time scale. The immediate challenge to archaeologists is to develop more detailed 'middle range' models of the effects of global climatic change on regional ecologies, and human subsistence responses.

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References

Asfaw, B., Y. Beyene, G. Suwa, R.C. Walter, T.D. White, G. WoldeGabriel & T. Yemane, 1992. The earliest Acheulean from Konso-Gardula. *Nature* 360, 732–5.

Bridgman, H.A., 1983. Could climatic change have had an influence on the Polynesian migrations? *Palaeogeography Palaeoclimatology Palaeoecology* 41, 193–206.

Fang, J.-Q. & G. Liu, 1992. Relationship between climatic change and the nomadic southward migrations in Eastern Asia during historical times. *Climatic Change* 22, 151–68.

Harris, J., 1993. Ecosystem structure and growth of the African savanna. *Global and Planetary Change* 8, 231–48.

Hill, A., S. Ward, A. Deino, G. Curtis & R. Drake, 1992. Earliest *Homo*. *Nature* 355, 719–22.

Neuman, J., 1993. Climatic changes in Europe and the Near East in the second millennium BC. *Climatic Change* 23, 231–45.

Ortloff, C.R. & A.C. Kolata, 1993. Climate and collapse: agro-ecological perspectives on the decline of the Tiwanaku state. *Journal of Archaeological Science* 20, 195–221.

Renfrew, C., 1989. Climate and Holocene culture change — some practical problems. *Philosophical Transactions of the Royal Society of London A* 330, 657–63.

Stanley, D.J. & A.G. Warne, 1993. Sea level and initiation of Predynastic culture in the Nile delta. *Nature* 363, 435–8.

Sulimirski, T., 1935. *Climate and Population*. London: Baltic Institute.

Wood, B., 1992. Old bones match old stones. *Nature* 355, 678–9.

Wood, B., 1993. Four legs good, two legs better. *Nature* 363, 587–8.

Wright, H.E., Jr, 1993. Environmental determinism in Near Eastern prehistory. *Current Anthropology* 34, 458–69.

Cognitive Aspects of Religious Symbolism: An Archaeologist's Perspective

Cognitive Aspects of Religious Symbolism
edited by P. Boyer, 1993,
Cambridge: Cambridge University Press.
246 pp.

Alan Peatfield

Cognitive archaeology seems about as likely a creature as a child of the marriage of Edward Lear's Owl and Pussycat. This article contributes to the current interest in cognitive approaches to archaeology, arising out of one of anthropology's newest sub-disciplines, cognitive anthropology. It was occasioned by the recent publication of *Cognitive Aspects of Religious Symbolism*, whose articles apply the principles of cognitive psychology to anthropological interpretations of religion. Cognitive archaeology in that sense therefore is a third-hand methodological derivative. But its focus on things of the mind remedies what has been a consistent flaw in New or Theoretical Archaeology in its various incarnations: for all its success in revolutionizing the analysis of site formation and political and economic processes, New Archaeology has rarely been successful in the understanding of religion (exceptions being Renfrew 1985; Flannery & Marcus 1983). This is partly a consequence of the elusive nature of religious evidence, inevitably involving a greater inclusion of mental abstractions than the material and social processes referred to above.

The brief of this article therefore is to assess the usefulness of the cognitive anthropology approach, as expressed in the aforementioned book, to the archaeological interpretation of religion. I suggest, however, that the premise is flawed, because it perpetuates the notion that archaeology can only interpret religion through methodologies derived from other disciplines: anthropology, and now psychology, considered 'superior' in the greater completeness of the human cultural evidence available to them. This is, of course, compounded for the prehistoric archaeologist, who is denied any of the verbally articulated ideas of the culture chosen for study.

The urge to interpret

The fundamental problem for the archaeologist is that the culture chosen for study is of the past; it is 'dead'. Yet few archaeologists have been content with the sterility of simple typologies, and the urge to interpret has always been there. Archaeology's sister discipline, anthropology, the study of living cultures, has always proved a rich and fruitful source of inspiration to interpret, because to a degree it brings those dead cultures back to 'life'. This has been nowhere more true than in the field of religion.

It has long been recognized, for example, that much of Evans' and Nilsson's vision of Minoan religion was influenced by the religious concepts of Mannhardt, Harrison and Frazer, whose collective ideas attribute early religion to the concepts of fertility, cyclical change, and magic (Marinatos 1993, 8–10). This was in a sense a universalist claim, because magic was identified as a general characteristic of the 'primitive' mind. In other words, the basic assumption operating here was that human capacity for symbolic thought expressed in religion was subject to evolutionary development from ancient 'primitive' magic to modern sophisticated religion. This assumption encompassed religion, psychology, anthropology, archaeology, and was thought to be universal, applicable to all human culture.

The validity of such an evolutionist perspective on the human mind, with its implicit assumption that west Europeans were at the top of the evolutionary ladder, is rightly now discredited. But anthropological or archaeological interpretations have often been tempted to make universalist claims. So what exactly is the urge to interpret? It is the attempt to render the alien culture (the foreign or the ancient)