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The Neanderthal Enigma: A New Theoretical Approach

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Abstract

The limited material evidence relating to Neanderthal culture has enabled scholars to give free rein to their imaginations in reconstructing the mind and society of this extinct branch of Homo. Despite their remarkable success, the Neanderthals are often characterised as being incapable of symbolic thought, language, and action. Sociobiologists have even suggested that the Neanderthal mind was structurally different to that of modern humans. To provide a realist perspective on the "Neanderthal enigma", a new general dynamic theory is presented and applied to the available evidence. This new theoretical approach shows that, despite possessing distinct mitochondrial DNA, Neanderthal minds and society were little different to those of modern humans, and that our ultimate success was far from inevitable.

Keywords: *Neanderthal extinction, dynamic-strategy theory, evolution, symbolic thought, language, complex systems.*

JEL Codes: *A12, B41, C73, O40, Z13*.

INTRODUCTION

It is 150 years since the dawn of the momentous idea that we are not the only species of humankind to have lived on this planet. In 1856 the remains of what was quickly recognised as an archaic species of *Homo* was recovered from the Feldhofer Grotto in Germany's Neander Valley. These remains, consisting of a skullcap and a partial skeleton, displayed a strong family resemblance to modern humans, but with marked differences. The skull was solidly built with a strong browridge, a receding forehead (yet with a large brain cavity), and a large occipital bun; and the body had massive limb and rib bones. Later, more complete, discoveries also showed the skull to have a projecting mid-face, no chin, a retromolar gap, and a brain cavity more than 10 percent greater than modern humans. The Feldhofer find, which was initially called "Neanderthal Man" after its location, became regarded as the representative of an extinct species of humankind. In 1863, at a meeting of the British Association for the Advancement of Science, it was declared to be a new species of humankind called *Homo neanderthalensis.*

The theoretical explanation for the existence of a separate species of humankind came just three years after the Feldhofer find, with the publication of Charles Darwin's *Origin of Species* in 1859. While the idea of another species of man was exciting, it was also disturbing for many Victorian scientists. Accordingly, some attempted to distance modern humans (and, hence, themselves) as far as possible from this "archaic" species. When, in August 1908, the relatively complete "La Chapelle individual" was discovered and reconstructed in France by Pierre Boule, Neanderthal man was characterised as dim-witted, stooped, lumbering, and ape-like, despite having an endocranial volume of 1625 cubic centimetres (cc), which is 18 percent larger than the brain capacity of the average modern human. Not until the midtwentieth century was it widely acknowledged that the Neanderthals had, on average, larger brains than modern humans, and that their posture and locomotion would have been very similar to ours, albeit with a greater sense of robustness and power.

Yet, even today, it would appear that the idea of a more intelligent and powerful type of human having once existed is too disturbing for some scholars. Despite the impressive credentials of the Neanderthals, it is argued by some that they were incapable of symbolic thought, were unable to create representational art, did not practice religion, failed to develop a spoken language, were unable to innovate, were limited to mere imitation, suffered physical trauma owing to an inability to develop effective weapons, were prisoners of a static culture, and were quickly driven to extinction by modern man. There are, of course, other scholars who reject this strange characterisation of the Neanderthals – strange because the Neanderthals employed state-of-the-art stone technology (the Levallois method), survived for up to 300,000 years (twice as long as modern humans to date) in one of the harshest climates on Earth, were highly accomplished big-game hunters, and were able to compete effectively with modern humans for up to 12,000 years (twice as long as the entire history of human civilization). Herein lies the Neanderthal enigma.

RESOLVING THE NEANDERTHAL ENIGMA

The Neanderthal enigma can be summarised as follows:

- while the Neanderthals were a highly successful species employing state-of-the-art technology, there is little material evidence that they created representational art and, hence, were capable of symbolic thought and language; and

- while the Neanderthals had larger brains and more robust bodies than modern humans, they were eventually overwhelmed by these opportunistic invaders.

How are we to resolve this enigma?

An interesting suggestion has been made in a recent article by Robert Davies and Simon Underdown (2006: 158–59). In an excellent summary of the literature and "social synthesis" of its research conclusions, they argue that, in order to avoid the "ideological stances of individual researchers",

> new approaches should be sought not to replace but to augment and strengthen traditional means of investigation. Arguably, we need to emphasize our phylogenetic history as a primate, so that the study of anthropology does not irrevocably dichotomize social behaviour from the physical reality and our environment. One way to prevent such unprofitable divisions may be by providing evolutionary, ecological theory with a more important role in our understanding of human behaviour… this article has shown that we still lack such a holistic understanding of Neanderthal social behaviour.

What I find interesting in this conclusion are the suggestions that:

- we need a "holistic understanding of social behaviour";
- we need to reject "ideological stances of individual researchers";
- we must "augment and strengthen traditional means of investigation" through the adoption of appropriate theory;
- we should place human history in the wider history of life (why limit it to that of primates?).

In other words, Davies and Underdown are advocating that the use of appropriate theory will enable us to resolve the problems of limited evidence and the scope this provides for "ideological stances".

While wholeheartedly supporting this general suggestion, I differ with them over what should be regarded as appropriate theory. The suggestion that we explain Neanderthal behaviour in terms of “environmental stochastity” and “ecological elements including population and community interaction” will not, in my opinion, produce the outcome they seek. Why? Because this type of theory cannot explain the dynamics of living systems, as it is partial not general, and is based on the assumption that living systems are driven by exogenous physical forces. What we require is a general dynamic theory that is self-contained, self-starting, and self-sustaining. We need in other words, an endogenous general dynamic theory that can explain not only human society but also all living systems. There is such a theory – the “dynamic-strategy theory” – that has been employed to successfully explain the nature and fluctuating fortunes of complex living systems in a series of books (Snooks 1996; 1997; 1998; 2003; 2006) and in scientific journals such as *Advances in Space Research* and *Complexity* (Snooks 2005; 2008). It is an inductive theory that has been developed through a systematic empirical examination of human and non-human systems over the past 4,000 myrs.

A GENERAL THEORY OF COMPLEX LIVING SYSTEMS

Essentially the dynamic-strategy theory consists of a self-starting and self-sustaining interaction between the organism and its society. This endogenous dynamic process occurs within the context of a largely stable physical environment, which occasionally changes in random and unsystematic ways. Most other theories, in which life is driven by asteroid impacts, massive volcanic eruptions, major climatic change, or other erratic energy inflows, are exogenous in nature. The origin of life in this theory is identified not with the ability to replicate, as the Darwinists claim, but with the establishment of an internal metabolic process (Snooks 2003:157–59; 2005). This process generates a metabolic demand for fuel that can be met only by the pursuit of a four-fold set of dynamic strategies. Replication, once the trick had been learned, was merely one of those strategies.

The significance of the emergence of systematic replication is that it made possible the beginning of what I have called the "law of cumulative biological/technological change" (Snooks 2003: 287–88). This law underlies the exponential growth of life over the past 3,800 million years, which has taken place at a *constant* compound rate of growth. This discovery (Snooks 1996: 79–82, 92–95, 402–405) revealed that each major biological/technological transformation during the history of life on earth (Figures 1–3) took only one-third the time of its predecessor. In other words, the coefficient of acceleration of life on earth is a constant 3.0. A more complete explanation can be found in my article on "The Origin of Life on Earth" in *Advances in Space Research* (Snooks 2005: 229–31). This relationship has become known as the Snooks-Panov algorithm (Nazaretyan 2005a; 2005b; Panov 2005).

Overview

In its most general form, the dynamic-strategy theory consists of four interrelated elements and one external and random force. These elements and forces include the following.

1. The internal driving force, which arises from the need of all organisms to survive and prosper, provides the theory with its self-starting and self-sustaining nature. This is the concept of the "materialist organism" (or, in

human society, "materialist man"), which is driven by the basic need to fuel its metabolic process. The only alternative is starvation and death.

2. The four-fold "dynamic strategies" – genetic/technological change, family multiplication (procreation plus migration), commerce (symbiosis), and conquest – are employed by individual organisms, or "strategists", through the process of "strategic selection" to achieve their material objectives. Strategic selection displaces natural selection as the key not only to biological, but also technological, change.
3. The "strategic struggle" is the main "political" instrument by which established individuals and species ("old strategists") attempt to maintain their control over the sources of their prosperity, and by which emerging individuals and species ("new strategists") attempt to usurp such control. This is the real nature of "agent interaction", which is left unexplained in complexity theory (as in Epstein 1999).
4. The constraining force operating on the dynamics of a society/species/dynasty is the eventual exhaustion not of natural resources but of the dominant dynamic strategy – or, at a higher level in the dynamic process, the genetic/technological paradigm (see Figures 2 and 3). This leads to the emergence of internal and external conflict, environmental crisis, collapse, and even extinction. This is the outcome of strategic laws and not power laws as in complexity theory.
5. Exogenous shocks, both physical (continental drift, volcanic action, asteroid attack, climate change) and biological (disease and unforseen invasion), impact randomly and marginally on this endogenously driven and shaped

dynamic system. Only exhausted systems that would have collapsed anyway are terminally affected; viable ones shrug off these external impacts.

The dynamic-strategy theory, therefore, views life as a "strategic pursuit" in which organisms adopt one of the four dynamic strategies in order to achieve the universal objective of survival and prosperity. The "choice" is based on a trial-and-error process of what works best in any given strategic and paradigmatic environment. In the pre-human world, at times of resource abundance the genetic strategy is chosen and speciation is the outcome; when competition is moderate, organisms switch to either the family-multiplication or commerce strategies, and take their "genetic style" to the rest of the accessible world; and when competition is intense, organisms adopt the conquest strategy, which leads to declining species diversity (*negative* speciation), environmental crisis, collapse, and extinction. The operation of this strategic sequence is the real explanation of the "punctuated equilibria" genetic profile apparent in the fossil record. Over the history of human society the sequence has been: family-multiplication (Paleolithic era), conquest or commerce (Neolithic era), and technological change (modern era). This strategic sequence explains the dynamic profiles in Figures 2 and 3.

Dynamic Mechanism

The all-important driving force in this dynamic system, which provides the self-starting and self-sustaining process, is the "materialist organism" (or "materialist man"), striving at all times, irrespective of the degree of competition, to increase its access to natural resources in order to ensure sufficient fuel to maintain its metabolic processes. It is the most basic force in life – a force I call "strategic desire" – which can be detected in human as well as other life forms (Snooks 2003: chaps 9 and 11).

More intense competition merely raises the stakes of the strategic pursuit, and leads to conquest rather than genetic change.

As organisms and their "societies" exploit their strategic opportunities, the dominant dynamic strategy unfolds (until it is finally exhausted), generating a "strategic demand" for a wide range of inputs required by this life-generating process. These essential inputs, which include natural resources, institutions (rules), organizations (net-working), and "ideas" (genetic, technological, and cultural), are supplied within social groups in response to the promise of prosperity. This strategic exchange between the organism and its society is the dynamic mechanism that generates the long-run increase in biomass/GDP at the local and global levels.

The mechanism of strategic exchange is a *creative* process, involving an innovative response of individuals and groups to the changing requirements of their "life-system". It is responsible for generating new ways, both genetic and technological, of exploiting natural resources. The long-run outcome of this strategic exchange is the transformation of both the individual and its "society". While the driving force originates with the individual organism, the directing and shaping force is strategic demand. Strategic demand shapes all relationships in a given society, including those between its interacting members. Hence, strategic exchange is a cooperative process aimed at maximising the success of a joint strategic pursuit, while member (or "agent") interaction, which is central to complexity theory, is merely a secondary process.

Dynamic Pathways

The development path taken by a society/species/dynasty, which consists of a series of "great waves" as shown in Figure 1, is determined by the unfolding dynamic strategy and sequence of dynamic strategies adopted by the majority of organisms in any "society". There is nothing teleological about this unfolding process, which is the blind outcome of organisms exploring their strategic opportunities on a daily basis in order to gain better access to natural resources. They do so within the framework of opportunities provided by strategic demand by "investing" time and effort in this endeavour. Successful individual strategies for survival and prosperity become the dynamic strategies of entire societies/species/dynasties through the process of "strategic imitation", whereby the conspicuously successful pioneers are imitated by the vast mass of followers (Snooks 1996: 212–13; Snooks 1997: 37–50). Choice is definitely not based on complex cost-benefit calculations even in modern human society, owing to the need to economise on what I suggest is the scarcest resource in the universe – intelligence (Snooks 1997: 46–9). Those that pioneer new dynamic strategies do so on a trial-and-error basis in response to strategic demand, while all others in that "society" follow those who are conspicuously successful.

[Figure 1 about here]

The development path of life, therefore, is an outcome of the individual/group exploitation and eventual exhaustion (when the costs of additional investment are as great as the returns) of a dynamic strategy or sequence of strategies. Once replacement strategies are no longer available, the society/species/dynasty stagnates and eventually collapses. Hence, the rise and fall of groups of organisms at all levels of existence, which generates the great-waves patterns shown in Figures 1-3, is the outcome of the strategic pursuits of the individual organisms they contain. The demand-side dynamic-strategy theory, therefore, can explain both the micro and macro aspects of both human society and life. This is something that the usual supply-side theories of complexity and self-organisation (including natural selection) are unable to do.

[Figure 2 about here]

It is important to realise that dynamic pathways – the great waves of biological and technological change – taken by complex living systems are shaped by strategic demand as the dynamic strategies and technological paradigms unfold. They are *not* the outcomes of supply-side constructs such as “attractors”, “energy landscapes”, self-organised criticality, or historical contingency. In other words, the dynamic pathways of living systems are the outcomes of systematic and creative decision-making in response to long-run structural changes in societal parameters.

[Figure 3 about here]

Strategic Selection – the Key to Selfcreation

The choice of dynamic strategies is central to this theory. Under the dynamic strategy of genetic change, the physical and instinctual characteristics of organisms are gradually transformed in order to use existing natural resources more intensively or to gain access to previously unattainable resources. The outcome of pursuing the genetic strategy is the emergence of new species, or what I call “genetic styles” (to be compared with “technological styles” in human society). On the other hand, the family-multiplication strategy, which consists of procreation and migration, generates a demand for those characteristics that increase fertility and mobility, in order to bring more natural resources under the control of the extended family; the commerce or symbiotic strategy requires characteristics that enable organisms to gain a monopoly over certain resources and/or services that can be exchanged for mutual benefit; and the conquest strategy demands weapons of offence and defence to forcibly extract resources from, and to defend resources against, one's neighbours. The mechanism by which these physical and instinctual changes in organisms are achieved brings us to the centrally important, and radically new, concept of "strategic selection".

Strategic selection distinguishes the dynamic-strategy theory from all other theories of life. It displaces the "divine selection" of the creationists and the "natural selection" of the Darwinists. Strategic selection empowers the organism and removes it from the clutches of gods, genes, entropy, and blind chance. It formally recognises the dignity and power that all organisms clearly possess and, in particular, reinstates the humanism of mankind that some ultra-Darwinists and physical theorists deny. But this is not why it has been adopted. Strategic selection has been adopted because, unlike all other equivalent concepts, it works.

While only a brief outline of strategic selection can be given here, a full explanation can be found elsewhere (Snooks 2003: chaps 10 and 12). Organisms respond to the ever-changing strategic demand for a variety of biological and instinctual inputs into the strategic pursuit. The reason they do so is to satisfy "strategic desire" by maximising the probability of survival and prosperity. Those possessing the characteristics required by the prevailing dynamic strategy will be, on average, conspicuously more successful than their peers in gaining access to natural resources. This success will attract the attention of other organisms with similar characteristics. Through cooperative activity, these similarly gifted organisms will maximise their individual as well as group success. If of different gender they will mate and pass on their successful characteristics to at least some of their offspring, through the mechanism of "selective sexual reproduction". They may even cull – or allow their stronger offspring to cull – those offspring that do not share these successful characteristics. This occurs in animal and human society alike to increase the probability of their survival and prosperity.

In the strategic selection process, only those mutations that assist the prevailing dynamic strategy are taken up, by selective sexual reproduction and cooperation between the individuals possessing them; all others are ignored by avoiding, boycotting, even destroying those regarded as "freaks" and "mutants". The theory of strategic selection possesses two unique characteristics. The first is that individual organisms are responsible for the process of selection, which is employed to maximise the probability of their survival and prosperity and not that of their genes. And the second is that strategic selection operates under the full range of competitive conditions, ranging from high to low levels of intensity. Strategic selection, therefore, can explain not only the origin of life and recovery from major extinctions, but also all the great diasporas of life and its great conflicts, crises, and collapses (Snooks 2003; 2005). It also explains the choice of dynamic strategies in human society (Snooks 1996; 1997).

Strategic Struggle – the Real Nature of Competitive Interaction

The real nature of competitive interaction is explained by the process of strategic struggle, which takes place within the boundaries dictated by strategic exchange. Strategic struggle is undertaken by individuals and groups in order to maintain/gain some control over their society's dynamic strategy. To do so they employ the dynamic tactics of order and chaos. The tactics of order, which include the threat of punishment or ostracism and the enforcement of customary rules, are employed by insiders to maintain and exploit the status quo; and the tactics of chaos, which include attempts to undermine the authority of the existing leadership, are employed by outsiders to disrupt the existing order as the basis of takeover. In both cases the aim is to maintain or gain some control over the dominant dynamic strategy – not to destroy it – because it is the source of survival and prosperity. In the process, political structures are transformed.

In the non-human world, combat between males of many species is not primarily about sex as usually argued, but about a struggle to maintain/gain control over the sources of their dynamic strategy – namely the territories needed to provide access to food and shelter (Snooks 2003: 209–10). These struggles permeate the entire society but are particularly significant when between leaders of different dynamic strategies or dynasties (such as between the archosaurs and therapsids) as they determine the rise and fall of genetic paradigms. Great strategic struggles for the land resources required for hunting have also occurred over millions of years between competing hominid societies (such as between the Neanderthals and modern humans). Similarly within modern human society, these struggles have taken place both to maintain/gain control of a society's dominant dynamic strategy (such as the civil wars in Rome between the supporters and slayers of Julius Caesar) and to enable a new dynamic strategy to triumph over an old one (such as the political struggle in Britain during the first half of the nineteenth century between the new industrialists and the old commerce-based, land-owning aristocracy). The point is that these struggles and the resulting change in political structures are outcomes not of supply-side local interactions but of a systematic response to the changing strategic and paradigmatic conditions in society that are communicated via strategic demand.

Here we have, in the very barest of outlines, the dynamic-strategy theory. Those wanting a fuller explanation might like to consult Snooks (1996; 1997; 1998; 2003; 2006). This theory provides the "holistic understanding of social behaviour" of the Neanderthals that Davies and Underdown (2006) rightly claim is urgently required.

IMPLICATIONS FOR THE NEANDERTHAL SOCIAL SYSTEM

What are the implications of the dynamic-strategy theory for the Neanderthal social system? To answer this we need to briefly outline what is known about the Neanderthals and their culture, and to show how the dynamic-strategy theory resolves existing problems. This account does not discuss the long-running debate between scholars about whether the Neanderthals and modern humans constitute separate species or different members of the same species. Suffice it to say that, since DNA tests have been conducted, they have been increasingly regarded as separate species of the genus *Homo* (Cooper et al 2004).

Neanderthal cognitive ability

Both *H. neanderthalensis* and *H. sapiens* can trace their ancestry back to *H. ergaster,* who lived in east Africa from about 1.9 to 1.0 myrs ago. While they probably had a common ancestor, *H. heidelbergensis*, who existed from about 0.7 to 0.3 myrs ago – recently confirmed (at 660,000 +/- 140,000 years) by mitochondrial genome sequencing (Green et al 2008) – the Neanderthals developed in Europe and west Asia, while modern humans evolved in Africa. By the time these genetic cousins saw each other again – at about 100,000 years ago in the Levant and 40,000 years ago in western Europe – they had, on average, similar sized brains and similar dynamic strategies despite their markedly different physical appearances and skin colour. As we shall see, it was the dynamic strategies they pursued that played the key role in our story.

In terms of brain size, it would appear, at first glance, that Neanderthal man had a slight advantage over modern man. While the average brain size for modern man was about 1340cc, that for Neanderthal man was about 1520cc (Davies and Underdown: 147). One Neanderthal skull, recovered from Amud Cave in the Levant, even boasts a brain size of 1750cc, which no modern brain could match (Kappelman 1996: 254). Hence, on average, Neanderthal man's brain was about 13.4 percent larger than that of modern man. This comparison, however, doesn't take into account differences in body mass – if, indeed, it should be taken into account at all.

While modern man was relatively tall (178 cm for the average male) and long-limbed, Neanderthal man was relatively short (166 cm for the average male) and thickset, with a large barrel chest, heavy bones, large muscle sets, and shortish arms and legs (Davies and Underdown: 147). This contrasting physical structure was reflected in differences in body mass: the average Neanderthal male probably weighed 77 kg and the average modern male weighed 65 kg – an 18 percent difference in favour of Neanderthal man. It should be emphasised that the estimates of body mass are only approximate owing to the small number of complete skeletons discovered.

Undaunted by this, John Kappelman (1996) has attempted to calculate the encaphalisation quotent (EQ) – the degree to which brain size for a given species exceeds the brain/body ratio for mammals as a whole – for hominids over the past 2 myrs. Cognitive ability for a given species will only increase, we are told, if brain size grows more rapidly than body mass. In other words, if EQ for a particular species remains the same in the face of increases in both brain size and body mass, then cognitive ability also remains the same. Hence, the underlying assumption of this statistical procedure is that in a given species there is a fixed relationship between brain size, body mass, and cognitive ability. Kappelman's data (1996: 254–56) suggests that for the period of overlap between Neanderthal man and modern man in western Europe, their average EQs were 4.6 and 5.2 respectively – a 13.0 percent difference in favour of modern man.

The important questions here are whether these EQ estimates reflect a real difference between the two species or a statistical illusion; and, if real, what it implies for the ability of Neanderthal man to think symbolically. Owing to the overwhelming problems of estimation, we can conclude only that these EQ estimates constitute a statistical illusion. First, the sample size – merely two specimens each – over the 12,000 years of competition between the two species is far too small to enable us to draw any statistically significant conclusions. Second, there are a number of very different methods for estimating EQs, with no consensus as to which is the most appropriate. Third, in order to estimate sensible EQs we need solid data on body mass as well as brain size. The problem here is that as excavated skulls rarely have complete skeletons attached, Kappelman has attempted to estimate body mass from cranial characteristics, such as the size of the orbital area (or eye socket). Clearly, such estimates of body mass can only be very approximate. Owing to these daunting estimation problems, it is very risky to base any conclusions about the relative cognitive ability of Neanderthals and modern humans on EQ estimates.

But would a statistically significant difference in EQ between these two competing species really translate into a meaningful difference in cognitive ability? The answer, in the light of my dynamic-strategy theory, is no. And the reason is that the underlying assumption about a fixed relationship between brain size, body mass, and cognitive ability cannot be sustained. Kappelman (1996: 270–71), for example, believes that genetic change involving a more rapid increase in body mass than brain size (as in Neanderthal man) will lead to a corresponding reduction in cognitive ability; and, conversely, that genetic change involving a fall in body mass while brain size remains unchanged (as in modern man) will lead to a corresponding increase in cognitive ability. He also claims that “selection for body mass” was the driving force in these changes. We are told, therefore, that dependent changes in the size of body and brain in species of the genus *Homo* led to corresponding changes in cognitive ability. This assumption arises from the supply-side theory of Darwinian adaptation.

In reality, both body and brain respond independently and flexibly to changes in strategic demand. For the Neanderthals, a larger brain was required not by the increased demands of a larger body – the difference in body mass between species was no greater than that between genders within these species – but by the need to supervise a sophisticated meat-and-marrow version of the dynamic strategy of family multiplication. Larger bodies, on the other hand, were required by the Neanderthals to tackle the large mammals – such as wild cattle, woolly mammoths, and woolly rhinos – needed to obtain the nutrition required to fuel such a sophisticated life form. As modern humans employed a similar dynamic strategy, they also needed large brains; but as they targeted smaller mammals (reindeer) and salmon, they did not require such robust bodies. Hence, in these competing species, body and brain could respond differently to the different requirements of strategic demand without causing an offsetting change in cognitive ability. There is no fixed relationship between these three variables.

Further, recent empirical studies of nutrition and human stature show that it is possible to maintain a large brain with declining but adequate nutrition by reducing body size (Komlos & Baten 2004). This, however, does not lead to an increase in cognitive ability. Conversely, these studies also show that in the modern world improved nutrition has led to an increase in body size, without reducing cognitive ability. Once again this demonstrates that there is no fixed relationship between these three EQ variables, whether we are dealing with genetic change in the long run or of nutrition in the short run. Hence, the larger body of Neanderthal man cannot be treated as a measure of his inferior cognitive ability.

Symbolic thought and action in Neanderthal society

On the face of it, the fossil evidence, viewed through the lens of the dynamic-strategy theory, suggests there is no reason to suppose that Neanderthal man wasn't at least the intellectual equal of modern man. But we need to consider the material artefacts that have been discovered over the past 150 years in several hundred Mousterian (300,000–40,000 years ago) sites. These sites contain carefully collected fossil shells and skilfully constructed stone tools. While the shells have not been modified for ornamental use – no holes have been bored for threading on a string – they are sufficient to suggest that the Neanderthals possessed a relatively sophisticated sensibility. Randall White (2003: 64) assures us that these artefacts "clearly reflect an interest in form and color, and may well imply that Western European Neanderthals had all the cognitive hardware for aesthetic judgement and symbolic action". But, he admits, such symbolic thought and action was either largely "nonmaterial" or practiced at a very "low level".

There are a number of sites, particularly in the caves of Pech de L'Aze, that contain specimens of "worked" – scraped with stone tools – manganese dioxide nodules (Mithen 2006: 230). This suggests that powdered minerals were used by Neanderthals to make pigments, perhaps for body painting and/or the painting of objects and rock surfaces that have faded with time. It is even possible that, like Australian Aboriginal tribes who employed sand paintings in their religious ceremonies (Strehlow 1993; Flood 1997), the Neanderthals largely practiced ephemeral art forms, along with singing and dancing.

There is another, totally overlooked, possibility for the sparse supply of representational artefacts. I wish to propose that our ancestors systematically destroyed and reused all known Neanderthal sites and cultural artefacts. Why? Because the struggle by our ancestors for access to Neanderthal land – a struggle not just for individual survival, not just for family and group survival, but also for the survival of our species – had been very long, very drawn-out, very harsh, and very bitter. It was a close-run struggle that lasted for 12,000 years. In their triumph, modern humans attempted to destroy, bit by bit, all evidence of the world's greatest act of genocide – an act of genocide that very easily could have gone the other way. And had the Neanderthals triumphed, there would be little evidence today of the material culture of *Homo sapiens.*

The rationale underlying this explanation is both theoretical and historical. First, the dynamic-strategy theory suggests that in the context of a highly competitive struggle for survival between two hunting peoples over a very long period of time, the protagonists will adopt a "conquest attitude" despite pursuing the dynamic strategy of family-multiplication. The major focus of this conquest attitude is the total destruction of the enemy's cultural sites in order to prevent them reoccupying them at a later time. Second, the history of human civilization shows that the victors of bitter life-and-death struggles always attempt to systematically destroy all trace of the vanquished. Consider the way the emerging Roman empire, after a long and bitter struggle, completely destroyed the Carthaginian civilization. Not only did the Romans attempt to kill every man, woman, and child in Carthage, but they razed all Carthaginian buildings, and destroyed all cultural objects; they even sowed salt into the surrounding fields to prevent them being employed by any hapless survivors. Similarly in the New World in the early sixteenth century, the invading Spaniards systematically destroyed the Aztec and Inca buildings, institutions, books, and cultural artefacts. Aztec Mexico, for example, was completely levelled and built over by the Spaniards, and all Aztec culture was blotted out (Snooks 1997: chaps 6 and 7). Hence, there are good reasons, both theoretical and historical, for suggesting that the sparse nature of surviving cultural artefacts is the outcome of systematic destruction by modern humans.

But even a determined and systematic attempt over a very long time to destroy all evidence of genocide will leave something behind. Not surprisingly, a few representational objects have been found and they suggest that Neanderthal man was indeed capable of symbolic thought. First, there is the Berekhat Ram figurine, discovered in a 250,000 year-old site in Israel, which is thought by some scholars to represent the female form (Marshack 1997; d'Errico and Nowell 2000). Second, we have the bone flute recovered from a 50,000 to 35,000 year-old site in the Divje Babe Cave in Slovenia, which displays two complete holes and, at the broken ends, two partial holes (Turk 1997; Chase and Nowell 1998; Kunej & Turk 2000). As the majority of modern flutes are still wooden, we can appreciate why most musical instruments of the Mousterian would not have survived, particularly after falling into hostile hands. Third, incised and pierced bone objects have been found at a 300,000 year-old site at Bilzingsleben in Germany. These have been interpreted as displaying symbolic markings (Mania and Mania 1988; Davies and Underdown 2006). And finally, there are a small number of other deliberately marked objects, which are also thought by some to be of a representational nature (Bednarik 1995). Nevertheless, there are some who dogmatically and persistently assert that even these objects show the hand not of sophisticated minds but of the mocking indifference of nature (Mithen 2006: 228–30). But, as we shall see, some of these scholars are engaged in a conflict of interest.

The most persuasive evidence of symbolic thought by the Neanderthals, however, comes from the Châtelperronian culture of 38,000 to 28,000 years ago. This was the period of determined competition between the two species. Yet even for this period, there are only a couple of Neanderthal sites that contain representational objects. The most important of these are located in the limestone caves near the village of Arcy-sur-Cure, east of Paris. Here was found the remains of Neanderthal bones, residential structures (huts and hearths), and about thirty personal ornaments (with bored holes) made from marine fossils and animal teeth (White 2003: 68). While some scholars (Mellars 1996; Mithen 2006: 230) claim that these Neanderthal sites have been contaminated by the contemporary Aurignancian artefacts of modern humans, others argue persuasively that this is not correct, and that they even predate the culture of modern humans (d’Errico et al 1998).

Further, there are scholars, such as Randall White (2003: 68), who accept that these representational objects are not the result of contamination, but disagree with d’Errico by claiming that they were only produced after the Neanderthals came in contact with modern humans, even though it is clear that they employed their own methods of manufacture. These objects were, White claims, the result of imitation. This theme of Neanderthal imitation is a persistent one among those – such as Paul Mellars (1996) and Clive Gamble (1999) – determined to draw a sharp distinction between the intellectual achievements of Neanderthal man and modern man. Steven Mithen, for example, argues that changes in Neanderthal technology and culture in the period 35,000 to 30,000 years ago, were out of character for a society that had been largely static for 250,000 years. We are told:

> So my view is that the final Neanderthals in Europe were imitating the symbol-using modern humans without understanding the power of symbols. Imitation was, after all, at the centre of Neanderthal culture as the key means by which tool-making traditions were passed on from one generation to the next (Mithen 2006: 232).

The dynamic-strategy theory reveals four major problems with Mithen's imitation argument. First, Mithen treats a 5,000-year period as if it were insignificant in duration. Consider the extent to which human civilization has changed over the past 5,000 years in comparison with the previous 150,000 years for which modern humans have existed. Should we dismiss these "final" years as being out of character for modern humans? In fact, all phases in the development of the societies of both modern humans and Neanderthals can be explained by the dynamic-strategy theory. Second, the idea that a society has either a static or dynamic character, which it cannot change owing to its genetic origins, is entirely without foundation. Such an idea is the outcome of the flawed supply-side approach. The dynamic-strategy theory shows that all societies are flexible and opportunistic, and will adopt the dynamic strategy that maximises the probability of their survival and prosperity. "Stasis" (actually, dynamic equilibrium) and "dynamism" are merely different outcomes of those strategies. In the absence of external competition (the Mousterian) a society will achieve dynamic equilibrium (often mistaken for stasis), whereas in the presence of external competition (the Châtelperronian) a society will achieve varying degrees of dynamism.

Third, Mithen fails to realise that imitation – what in the dynamic-strategy theory is called “strategic imitation” – lies “at the centre” of all animal and human societies, even the most advanced societies in the world today. As the dynamic-strategy theory shows, strategic imitation is the key process by which the ideas and strategies of successful individuals permeates entire societies and drives them forward. Without imitation, societies would not exist, let alone expand and flourish. Hence, rather than being a sign of intellectual and cultural backwardness, imitation is a sign of advanced thinking and social development. Fourth, why would the Neanderthals have wasted valuable effort – effort needed just to survive in ice-age Europe – in mindlessly imitating the manufacture of objects for which there was no strategic demand in their society? Ice-age man could not afford to be economically irrational.

Nor were the Neanderthals technologically backward. Before, long before, the arrival of modern man in western Europe, the Neanderthals employed, what was in effect, state-of-the-art stone technology. This was the Levallois technique for producing long stone flakes of a predetermined shape and size, which could be employed for spear blades without further working. This technique – which can be traced back 300,000 years in Neanderthal Europe (Moncel et al 2005) – not only required considerable intellectual and physical skill in the manufacturing process, but also considerable imagination in the conception and design phases. It is impossible to separate this type of imagination from the symbolic thinking required for representational image-making and language construction. Some scholars, who are convinced that Neanderthal man lacked this cognitive ability, argue unconvincingly that these tool-making skills were merely the result of “selecting from a repertoire of tried and tested tool-making methods”, owing to their inability to make the imaginative leap between technological ideas and ideas about social relationships (Mithen 2006: 231, 232–33). But this merely begs the question of how this repertoire came into existence in the first place. And, even more importantly, it overlooks the fact that existing techniques will continue to be used for as long as they effectively supply the tools and weapons required by their dynamic strategy – and no longer.

Which brings us to the next criticism of Neanderthal society: that for hunting they lacked specialised weapons, relying largely on thrusting spears. This, it is claimed, accounts for the high incidence of injury sustained by Neanderthal hunters (Berger and Trinkaus 1995). Two responses can be made here. First, as a number of scholars have pointed out, there is some evidence to suggest that Neanderthal hunters fashioned wooden throwing spears that rarely survive the ravages of time (Finlayson 2004; Marshack 1990; Lieberman & Shea 1994; Underdown 2004). Second, the criticism is, in any case, entirely misplaced. As the dynamic-strategy theory shows, the range of weapons and tools developed in any society is a product not of the genetic make-up of its members – the flawed supply-side approach – but of the strategic demand generated by its unfolding dynamic strategy. Hence, the decision about whether to adopt a general hunting weapon or a range of more specialised weapons will depend on the requirements of the hunting strategy being pursued. Surely the fact that the Neanderthals survived in a harsh climate for 300,000 years is a testament to the effectiveness of their decision-making. Even the remarkable Romans could manage to survive *only* for a thousand years.

The flawed supply-side approach to Neanderthal language

The opportunity to arrange a head-to-head confrontation between the supply-side and demand-side approaches to the Neanderthal enigma is provided by the question of language. In a recent book entitled *The Singing Neanderthals* (2006), Steven Mithen argues that the Neanderthals failed to develop language as we know it, and instead employed a form of “singing without words”. Language is viewed by Mithen and others as central to the larger issue of Neanderthal man’s ability to think symbolically and, hence, to engage in representational art forms and religious ritual. They also see language as the driving force in the enlargement of the human brain (Mithen 2006: 221). One is left wondering whether Neanderthal intellectuals would have framed the same hypotheses about us had they won the great ice-age strategic struggle. Or would their larger minds have viewed the matter differently?

Mithen’s task in establishing this hypothesis is not an easy one. We have already noted that the Neanderthals had a brain capacity larger than that of modern man; they developed a highly successful society that survived for 300,000 years; they employed state-of-the-art technology; they pursued a dynamic strategy similar to that of modern humans; and they shared a common ancestor, perhaps as recently as 500,000 years ago. But there are more hurdles to clear. Because of the careful research of others, Mithen is forced to admit that Neanderthal man had the same vocal and auditory capacity as modern man, and therefore was physically capable of producing speech like ours (Davies and Underdown 2006; Houghton 1993; Schepartz 1993; Mithen 2006: 226). But despite all of this evidence to the contrary, Mithen (2006: 226–28) asserts that:

> While the evolution of language would conveniently explain the large Neanderthal brain, the vocal tract, auditory capacity, and motor control over the tongue and breathing, *there is nonetheless overwhelming evidence that*

> *language had not yet evolved within this lineage of the Homo genus*. So we must look to an advanced form of "Hmmmmm" to explain these anatomical developments and cultural achievements. (My emphasis.)

Mithen, as we shall discover, requires not only "overwhelming evidence", but also a realignment of reality. These two issues are dealt with separately.

The assertion that hominid brain development was the outcome initially of "singing without words" and later, in the case of modern humans, language, has no realist-theoretic underpinning. It is merely the product of guesswork, because supply-side theorists lack a general dynamic theory of human society and life. In contrast, the dynamic-strategy theory shows that the development of the hominid brain together with the emergence of the need and physical attributes for language, were both interactive responses to the unfolding hominid dynamic strategy of family-multiplication (hunting-gathering version) expressed through strategic demand. The hominid hunting-gathering strategy generated a growing demand for the following groups of *combined* inputs into the strategic process: improved hunting weapons and tools; improved biological systems of navigation; more effective economic and social organization; better means of communication for conducting both hunting-gathering and social organization; "strategic thinking", involving pattern-recognition and generalisation; and tactical thinking, involving social interaction (Snooks 2006: 133–43). These *combined* strategic inputs could only be supplied if the hominid brain developed as a general and flexible strategic instrument rather than as the aggregation of domain-specific modules. It is essential to realise that these inputs required by the hominid strategic pursuit were not separate and autonomous adaptations, but rather simultaneous and integrated changes in response to changes in overall strategic demand. This was a selfcreating, or autogenous, process because strategic demand was an outcome of individuals actively exploring strategic opportunities, and the response to it was mediated through "strategic selection" based on individual choice.

Let's now turn to the "evidence" that Mithen calls upon to support his assertions about the lack of symbolic language in Neanderthal society. He nominates three sets of "compelling" and "overwhelming" arguments: namely that "Neanderthals lived in small socially intimate communities" and didn't require language; that the absence of symbolic artefacts means they also lacked language; and that the "immense cultural stability" of Neanderthal society is a reflection of the absence of language, which is assumed to be "a force of change".

The first argument is extremely weak and cannot be regarded as evidence at all, let alone "compelling" or "overwhelming". *All* hunter-gatherer and hunter-herder societies operating under harsh climatic conditions do so as small, socially intimate communities. Such societies of modern man include the Inuit of North America, the Aboriginals of Australia, and the San People of southern Africa. And all of these societies have complex languages.

Mithen's (2006: 229) second argument is that "the absence of symbolic objects must imply the absence of symbolic thought, and hence of symbolic utterances". If this argument is to have any validity, it is essential that not a single extant Neanderthal object be interpreted as symbolic in nature. Just one symbolic object would show that Neanderthal man possessed a mind capable of symbolic thought and, hence, language. This is why Mithen is forced to deny the symbolic nature of *each and every* artefact that many other scholars regard as representational. Even at the best of times it is dangerous to argue the absence of action in the past from the absence of evidence. In this case his evidence is underwhelming rather than overwhelming.

The third argument proposed by Mithen is that the "immense cultural stability" of Neanderthal society is the outcome of a lack of language, which is seen as a driving force. He claims "the tools they made and the way of life they adopted at around 250,000 years ago were effectively no different from those current at the moment of their extinction, just after 30,000 years ago" (Mithen 2006: 230–31). There are at least three empirical difficulties with this claim, which in turn are dwarfed by an insurmountable existential problem. First, we have virtually no information about the Neanderthal way of life 250,000 years ago; second, the final 12,000 years of the Neanderthal's time on Earth were marked by considerable cultural change, which some see as the outcome of Neanderthal innovation that predated the arrival of modern humans (d'Errico 1998; 2003); and third, Neanderthal technology was the equal of modern man's and, while the Neanderthal tool-kit may have been different, it was no less effective, because it was a rational response to their variant of the human hunting strategy.

The most important difficulty with Mithen's stability thesis, however, is that it runs counter to what we know about the dynamics of living systems. Mithen (ibid: 232) regards the "immense cultural stability" as the outcome of Neanderthal man's alleged cerebral deficiency – the outcome of a people both "primitive" and "lacking in intelligence" when it came to cultural issues, despite their ability to make complex stone tools and to survive in a harsh climate. Mithen views this alleged dichotomy as the Neanderthal "paradox". I will review this stasis thesis.

Before we begin, it must be emphasised that no society is ever static over the long, or very long, term. Under competitive conditions, societies are either actively dynamic or in the process of collapse, and under isolated conditions they either achieve a dynamic equilibrium or they collapse. While a society in dynamic equilibrium is constantly responding in a dynamic way to changing circumstances, the competitive pressures are insufficient to cause it to undergo any major transformations. Accordingly, this dynamic state, which is often confused with stasis, is both a rational and intelligent response to total isolation from external competition. There is nothing “primitive” about it at all. Rather it is one of a range of responses – to what I call the “global scale of competitiveness” – that the Neanderthals and modern humans have in common (Snooks 1996: 393, 435).

Australian Aboriginal society, for example, also experienced “immense cultural stability” over a vast period of 60,000 years, owing to its similar ice-age isolation from external competition (Flood 1997). Clearly these peoples are undeniably part of the family of modern man. But, any scholar adopting the “immense cultural stability” thesis, and also valuing intellectual consistency, would have to conclude that Australian Aboriginal society was also “primitive” and “lacking in intelligence”. This, of course, would be a totally false conclusion and, no doubt, such scholars would hasten to distance themselves from it. But where would this leave Mithen’s thesis about Neanderthal man?

This is an intellectual trap into which scholars employing supply-side theories inevitably fall. While they may not always realise it, supply-side theorists always imply that human culture is the outcome of the peculiar and inflexible genetic structure of the human mind. Of course, evolutionary psychologists and their followers are completely aware of this implication, as it is a central article of their intellectual faith. Essentially, supply-side theorists like Mithen view the relative performance of societies (such as the Neanderthals and modern humans) as the outcome of their different genetic characteristics. In contrast, demand-side theorists (such as myself) view relative societal performance as the outcome of different dynamic strategies (or different versions of the same dynamic strategy) that call forth, via strategic demand, different individual and group responses. It has nothing to do with alleged genetic differences – and, hence, race – at all. While evolutionary theorists can still get away with this approach to the Neanderthals, the wheels start to fall off when it is applied to modern hunter-gatherer societies.

It has already been suggested that the reason Neanderthal Europe and Aboriginal Australia experienced similar states of dynamic equilibrium is that they were both effectively isolated from the rest of the world by ice-age conditions. Also it is important that neither society was located in, what I call, a "funnel of transition" – a competitive corridor such as the Fertile Crescent or the Mesoamerican isthmus (Snooks 1996: 225–26, 405, 434). While both isolated societies responded in a dynamic way to changing local conditions of a societal and environmental kind, they were free from the life-transforming pressures of external competition for vast periods of time. Unlike the Fertile Crescent – that great crossroad of history – both around 100,000 to 40,000 years ago and 11,000 to 5,000 years ago, Neanderthal Europe and Aboriginal Australia were not compelled by demand-side forces to make radical changes to their technologies and cultures. Their existing life-systems were able to effectively meet their central objectives of survival and prosperity.

Only when external competition confronted Europe and Australia, did the native populations have any need to significantly change their systems. In western Europe after 40,000 – or, at least, 36,500 – years ago, the Neanderthals needed to take action, because the new competitive pressure applied by modern humans changed the Neanderthal life-system and the strategic demand that it generated. And the

Neanderthals responded in their own way to their own changing life-system. This was not a matter of mindless imitation but of creative responses to their own unfolding dynamic strategy – the process of "strategic exchange". Clearly this creative response was remarkably successful, as the Neanderthals were able to participate effectively in this life-and-death "strategic struggle" and to resist the invaders for 12,000 years. Modern humans, therefore, possessed only the smallest of advantages – advantages that could not have been predicted in the year 40,000 BP – which suggests that the Neanderthals were not at all culturally "primitive", were far from "lacking in intelligence", and had not been standing still for the past 250,000 years while modern humans surpassed them. In Australia the outcome was very different, because the life-system of the invaders from western Europe had, under the pressure of external competition, been transformed by two great economic revolutions (one agricultural and the other industrial) and, therefore, provided a marked advantage over that of the isolated locals. The Antipodean strategic struggle was massively one-sided.

Hence, there is no paradox. Neanderthal man possessed both the technological *and* imaginative/symbolic capacity to compete with modern man. As much as many scholars would like to think differently, the final triumph of modern humans in western Europe about 28,000 years ago was a very close-run thing. And it was the outcome of a great strategic struggle, not climatic factors as some have suggested (d'Errico et al 2003).

What we now need to consider is how a supply-side theorist like Mithen attempts to explain the Neanderthal "paradox" of his own making? The answer is that he falls back on the discredited theories of evolutionary psychology – which in turn owes much to the highly flawed theory of sociobiology – by arguing that the hominid brain consists of a large number of Darwinian modules, which "evolved" to perform specific adaptive functions. In my recent book *The Selfcreating Mind* (2006), I have attempted to demonstrate the fatal empirical and logical flaws in this ultra-Darwinist argument, and have developed a replacement dynamic-strategy theory of the mind. And in my earlier book, *The Collapse of Darwinism* (2003), I have critically evaluated sociobiology, together with other forms of neo-Darwinism, and have proposed a realist theory of life.

Mithen's contribution to this ultra-Darwinist literature is the argument that while all hominid brains consist of a large number of adaptive modules – "domain specific neural circuits" – only the brain of modern man has a module for making connections between all other modules (Mithen 2006: 233). He chooses two examples to illustrate this ultra-Darwinist concept of the Neanderthal mind. First, although the Neanderthals possessed the skills both to produce tools as sophisticated as "any modern human" and to develop complex social relationships, "they were unable to use their technical skills to make artefacts to mediate those social relationships, in the way that we do all the time by choosing what clothes or jewellery to wear, and as do all modern hunter-gatherers through their choice of beads and pendants". Second, although the Neanderthals had "an extensive and detailed knowledge of animal behaviour, they were unable to design specialized hunting weapons because they could not bring their technical and natural history intelligence into a single 'thought'".

This is hardly a persuasive argument – indeed it makes Neanderthal man out to be some sort of Frankenstein's monster. No attempt has been made, nor could be made, by Mithen to explain why Neanderthal man lacked an integrative module – "two bob short of a quid" as we used to say in Australia – or why modern man possessed one. Such a distorted view of a highly successful hominid could only be held by those who accept the equally unrealistic idea that the brain of modern man consists of a large number of independent modules. A domain-specific, or modular, brain would be a very inflexible instrument, completely unable to respond to unpredictable changes in the real world. It could only do what it had "evolved" through natural selection to do – to solve pre-existing problems. It could certainly not cope with something as totally unprecedented as civilization, as there would be no "civilization module" in a brain that had "evolved" 150,000 years ago on the east African savannah. Even the guru of sociobiology, Edward Wilson (1998: 48), has admitted that as the Darwinian brain cannot anticipate future needs that were not part of the evolutionary process, it could not prepare humans for civilized living: "That [i.e. anticipating civilization] is the great mystery of human evolution: how to account for calculus and Mozart".

In contrast, the dynamic-strategy theory, which views the hominid brain – the "selfcreating mind" (Snooks 2006) – as a general and flexible instrument that is able to respond to any unpredictable situation, has no difficulty accounting for the fact and nature of civilization. Modern man is not unique in this respect. All hominids possessed brains that acted as general, flexible instruments; otherwise they would have been completely unable to participate in the dynamics of life. It is just that as the hominid brain transformed itself (in response to changes in strategic demand) from *Australopithecus afarensis* (4 to 3 myrs BP) to *A. garhi* (3 to 2.5 myrs BP) to *Homo ergaster* (2 to 1 myrs BP) to *H. neanderthalensis* and *H. sapiens*, this general, flexible instrument became more powerful and sophisticated. Owing to the close similarities between the Neanderthals and modern humans it is hard to believe that the former did not only employ symbolic thought and action but also symbolic language. This is the strategic reality that contrasts with the ultra-Darwinist fantasy.

CONCLUSION

The Neanderthal enigma, therefore, is an outcome of the sparse material evidence available for this human species. Although the Neanderthals were a highly successful species employing state-of-the-art technology, little material evidence of their symbolic thought and action has survived. Despite their large and obviously complex brains, they were eventually overwhelmed by modern humans and have left little or no trace of their existence in the human gene pool. This is an example of one of the mantras of the dynamic-strategy theory – "desires drive and ideas facilitate". Intellectuals, in other words, do not win strategic struggles.

This sparse evidence has enabled adventurous scholars to fully exercise their imaginations by adopting bizarre supply-side theories concerning the nature of the hominid brain. In particular, it has been concluded from the sparse evidence of representational artefacts that the Neanderthals were incapable of both symbolic thought and language. And it has been speculated, in imitation of evolutionary psychology, that this was because Neanderthal man lacked the integrative module that characterised the Darwinian domain-specific brain of modern man. According to this view, the Neanderthals were very different beings to our ancestors.

This article has attempted to show that the opposite is true. The Neanderthals were very much like us in so many ways. This viewpoint was reached by providing both a historically verifiable reason for the sparse evidence of symbolic artefacts and a new theory of both the mind and the dynamics of hominid society. It is highly likely that the sparse supply of representational artefacts is due to their slow but systematic destruction by the invading modern humans in an effort to prevent old settlements being reoccupied by the Neanderthals once they had been locally dispossessed. While this explanation is speculative, it is confirmed by the subsequent history of modern humans. But more importantly, it has been demonstrated how a general dynamic theory – the “dynamic-strategy theory” – can show that the Neanderthal mind was similar to the mind of modern humans, and that modern man’s slightly different version of the same dynamic strategy pursued by both species was, in the end, responsible for their ultimate triumph. But it was a close-run thing.

We can conclude, therefore, that the Neanderthals were much more like ourselves than many of us care to think. Hence, the Neanderthal enigma is a product not of reality but of the flawed nature of the supply-side theories that have been used to evaluate these remarkable people.

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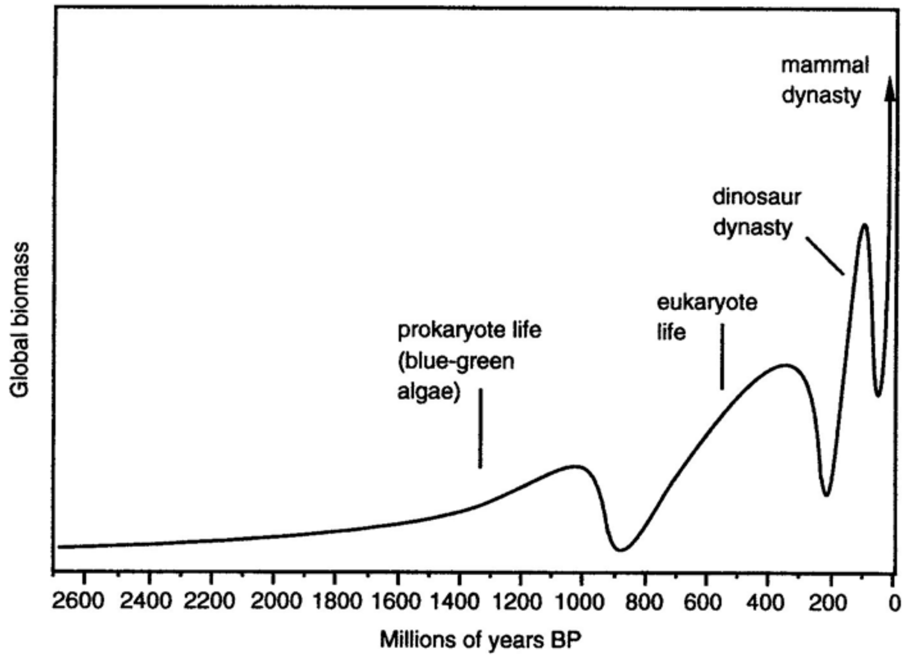

Figure 1 The great waves of life – the past 3,000 myrs

Source: Snooks 2003: 155, based on Snooks 1996: 75.

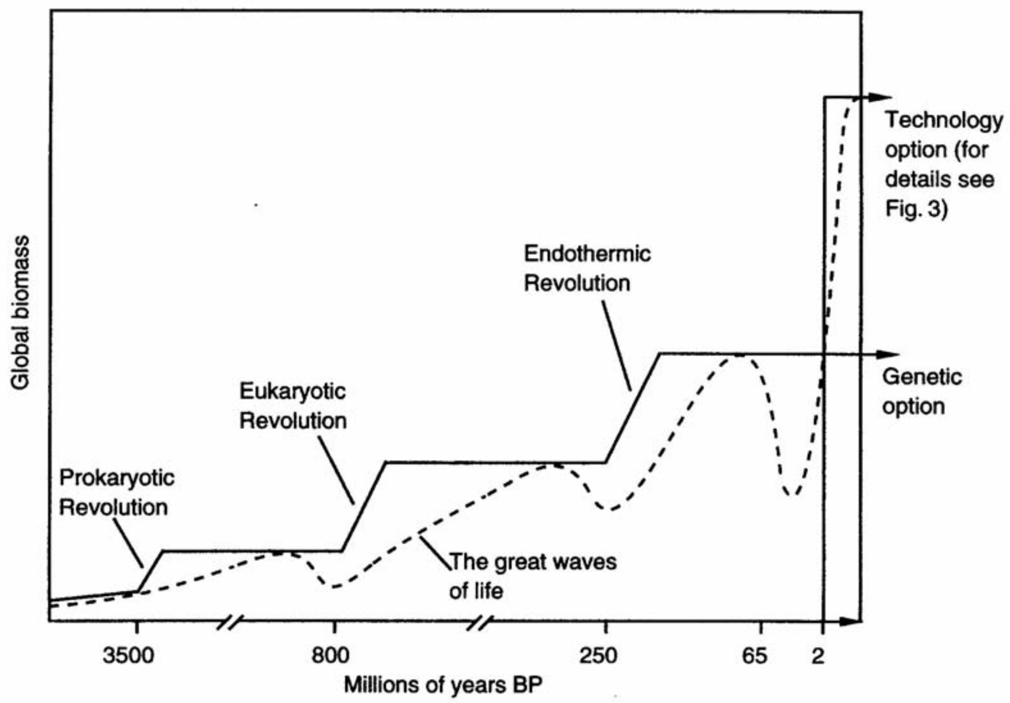

Figure 2 The great steps of life – the past 4,000 myrs

Source: Snooks 2003: 252.

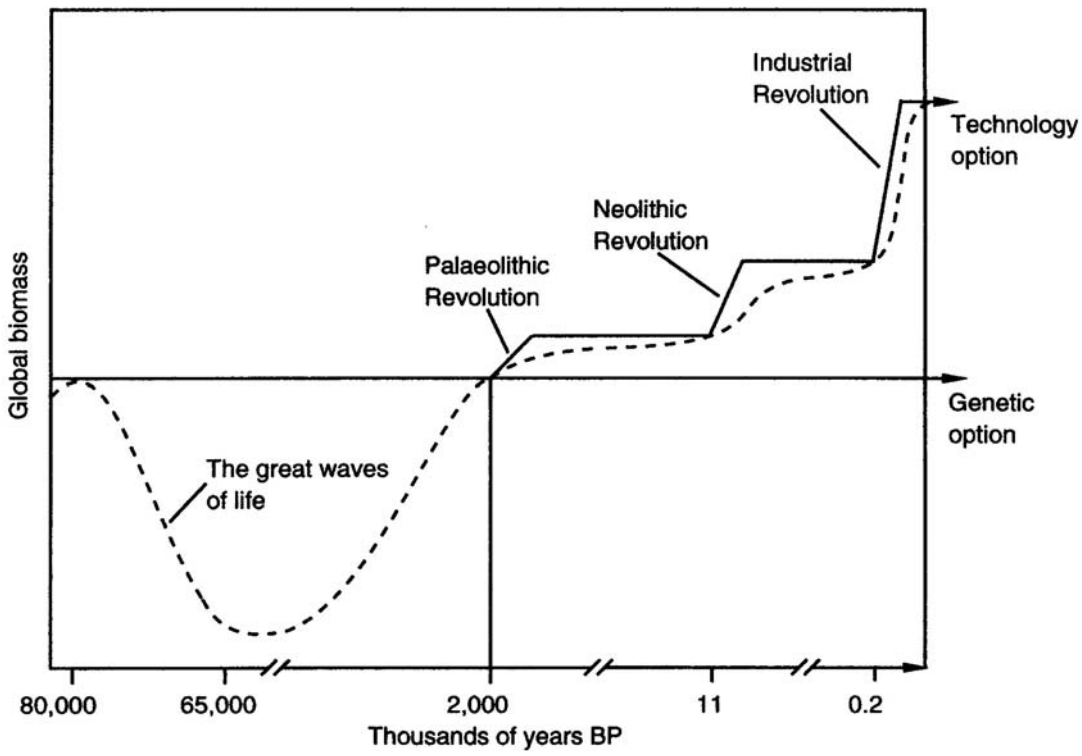

Figure 3 The great steps of life – the past 80 thousand years

Source: Snooks 2003: 253, based on Snooks 1996: 403.