

THE HUMAN VOYAGE OF SELF-DISCOVERY

Essays in Honour of Brendan Purcell

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Neanderthal Politics¹

BARRY COOPER

By the middle of the nineteenth century, natural historians were able to argue persuasively and on the basis of geological phenomena that the earth was older than the 6,000 or so years calculated on the basis of counting 'begats' in the Old Testament. Some natural historians got carried away and thought that geology was a kind of metaphysics or theology. Today some of their successors, particularly biologists and geneticists, have voiced similar sentiments. In fact, however, the appearance of a new species, *Homo sapiens* is, for biologists, simply a biological event, but inasmuch as it is an *event* it also has a historical aspect. In other words, the subject matter of very early human history appears to overlap with biology even though the approaches to this subject matter by historians (and *a fortiori* by political scientists) are not the same as those used by biologists.

In *From Big Bang to Big Mystery*, Brendan Purcell raised the question: 'Are hominid studies a branch of zoology or anthropology?' as well as a tributary one: 'Was there a human revolution?'² For philosophical anthropology the answer to the first question is: both. One could even add physics and history, which is another way of introducing the major hermeneutical question for which Purcell's book provides a subtle and magisterial answer. The goal of this chapter is more modest than an exegesis of his argument. I take it as given, as Purcell wrote in an earlier book, that all human societies 'were burdened with the task of wresting the order of their existence from ever-threatening disorder.'³ The rather unusual question I would like to introduce is whether or to what extent Neanderthals are to be understood in that context as constituting a 'human society'. Because it is impossible to engage in conversation with Neanderthals, much of the discussion is inferential and necessarily makes use of the work of archaeologists and other paleoscientists. Whether they would approve of the use made of their work is a separate matter.

Let us begin by considering Purcell's second question, whether there was a 'human revolution'. Gordon Childe may not have been the first to apply

the notion of 'revolution' to human affairs, but his 1930s Marxism has certainly been influential in archaeology and paleoanthropology.⁴ One of the consequences that follows from insisting upon revolutions, particularly in archaeology and paleoanthropology, is that 'researchers, perhaps unwittingly, create a gulf separating humans from the rest of the biological world.'⁵ Apart from the conflicting paleoanthropological accounts, what is at issue here is the question of continuity and discontinuity, which is a problem of interpretation because the fossil record does not speak for itself.

I have already introduced the biological term for this new species, *H. sapiens*. What constitutes a species, however, is not self-evident. Let us therefore consider what a biological species conventionally is understood to be today.

Richard G. Klein began his comprehensive thousand-page book, *The Human Career: Human Biological and Cultural Origins*, with an account of what the term means. 'The species,' he said, 'is the least arbitrary and most fundamental evolutionary unit ... Evolutionary biologists define a *species* as a group (or a population) of organisms that look more or less alike and that interbreed to produce fertile offspring.' The necessity of producing fertile offspring is usually called the 'biological species definition' and is usually grounded in genetics whereas more or less looking alike is usually called the 'typological species definition', and is grounded in morphology.⁶ The contemporary biological definition has largely replaced the older typological definition, in part because of the acceptance by biologists of the major tenets of Darwinian evolution. So far as the fossil record is concerned, however, the typological definition is still widely applicable for the obvious reason that fossils don't breed even though fossil DNA is sometimes available for analysis.

Until very recently, the biological barrier between *H. sapiens* and *H. neanderthalensis* was assumed to be impermeable.⁷ The theoretical possibility of interbreeding had occasionally been raised,⁸ but because most of the argument was based on morphological differences between Neanderthals and Anatomically Modern Humans, Cro-Magnons, or 'Moderns', as we will call them in this essay, the results were inconclusive.⁹ Conventional biology was formalised as 'rules' (Bergmann's Rule and Allen's Rule) according to which, 'if Neanderthals and modern humans are separate species, they cannot be compared reliably' in terms of morphology because such 'rules' permit comparisons only among members of the same species. On the other hand, 'if they are the same species, then the comparison would be appropriate, but

then ... the Neanderthals ... would not be extinct'.¹⁰ It was not until 2010 that an international team of paleogeneticists published a paper showing that both Europeans and Asians shared between 1 per cent and 4 per cent of their nuclear (not mitochondrial) DNA with Neanderthals, but Africans did not share any. This finding suggested 'that gene flow from Neandertals into the ancestors of non-Africans occurred before the divergence of Eurasian groups from each other'.¹¹ Genetic theory¹² would predict what the paleogeneticists found.¹³ Moreover, genetic theory would also predict that a relatively small number of events of interbreeding can have appreciable frequencies of Neanderthal alleles in contemporaneous Modern populations.¹⁴ As Gibbons said, the estimated frequency, around 2 per cent, is 'not trivial' but not 'wholesale' either.¹⁵ The most likely site for initial interbreeding was the Levant.¹⁶ Moreover, genome comparisons suggest a date between 45ky and 80ky ago, well within the period when Neanderthals and Moderns shared the same Levantine and European ranges.¹⁷

In short, the geneticists argued that beneficial Neanderthal alleles would, on conventional Darwinian grounds, provide a selective 'fitness' advantage to carriers that was akin to hybrid vigour in cattle. Moreover, by the standard statistical accounts of population genetics it would not have taken much: 'even a few dozen half-Neanderthal babies over thousands of years would have allowed modern humans to acquire most of the Neanderthal's genetic strengths'.¹⁸ The discoveries by the paleogeneticists may not put to rest the disputes between the theory of the 'rapid replacement' of Neanderthals by Moderns¹⁹ and the 'slow assimilation' theory,²⁰ but they do certainly favour the latter. If so, and without even considering the validity of the assumptions of population genetics regarding mutation rates, the characteristics of a 'slow' process needs to be explained. In particular, it is not clear why genetic change is given more weight than behavioural changes that for one reason or another are creative, volitional and innovative and thus, biologically considered, are uncaused.²¹

The philosophical limits to biological explanations of human being are by now familiar themes in philosophical anthropology so there is no need to reiterate the arguments here.²² We would add only the observation that a series of chance historical factors combined to constitute the view that Neanderthals were a distinct species: (1) the discovery of Neanderthal fossils in nineteenth-century Europe; (2) that because of European climate during the Pleistocene, Moderns developed in a particular way so that (3) Neanderthals

did not look like contemporary Europeans. 'Thus, about 100 years ago,' as Henneberg pointed out, 'a separate taxonomic category for Neandertals was created' and new fossil discoveries were categorised in light of it.²³ Since the self-understanding of archaeology and the various paleosciences is both incremental and positivist, once the category 'Neanderthal' was created it remained pretty much unquestioned as a taxonomic unit. The significance of gene flow between Neanderthals and Moderns for our purposes is that it provides clear evidence that the two groups interacted in close physical proximity. This is politically important not because of what it tells us about Neanderthals but because of what we already know about Moderns.

There is widespread agreement that the common ancestor of both Neanderthals and Moderns was *Homo heidelbergensis*,²⁴ a fossil dating back over half a million years. Mitochondrial DNA analysis confirmed the separation of *H. neanderthalensis* and *H. sapiens* between ca.410–440kyBP during the mid-Pleistocene. This DNA analysis is generally consistent with a paleoanthropological interpretation of distinct lineages of humans north and south of the Mediterranean commencing around the same time.²⁵ In other words, 'in evolutionary terms it does not matter what we call Neanderthals or Moderns. The point is that the genetic evidence ... indicates that Neanderthals and Moderns had a common ancestry that can be approximately dated around 500–400kyr and that these two lineages apparently went along separate paths, one in Eurasia and one in Africa.'²⁶ The question of species and taxonomy by contemporary accounts therefore is subordinate to the evolutionary ecology of populations or, more simply, to population history. We may, accordingly, think of the human lineage as a single paleospecies comprised of geographically separate populations displaying varying degrees of cultural and morphological distinctiveness at different times in their history.

Considered by themselves rather than in the context of a transition to Modern culture, the chief characteristic of Neanderthal society, just about everyone who has considered the question agrees, is its stability because the collections of artifacts and assemblages from Neanderthal sites were homogeneous, at least as compared to the much more variable assemblages from roughly contemporaneous Modern sites.²⁷ 'Stability' in the context of evolution, which is to say, in the context of historical adaptation to alterations in the physical, biological, social or cultural environment, is not necessarily a blessing when one or more of these contextual factors change.

Regarding the other attributes of Neanderthal society, there also appears to be widespread agreement on several points. Given that the earliest domestication of fire, by *H. erectus*, has been dated in the Levant at 790kyBP,²⁸ and in Europe ca.400ky ago,²⁹ it is not surprising that Neanderthals could as they wished make fires for protection, warmth, sociability and cooking.³⁰ Without being cooked, meat is difficult to digest,³¹ and meat-eating Neanderthals were hunters of fresh as well as scavengers of 'aged' or 'naturally cooked', which is to say, sometimes rotten meat.³² Hunting, moreover, is a cooperative enterprise; most Neanderthal hunts were ambushes of herding animals in open landscapes, which meant they were able to communicate with some accuracy.³³ There is even evidence of mass killing; much as North American Indians would stampede bison over cliffs or 'buffalo jumps', Neanderthals could stampede mammoths and rhinoceroses as well as bison.³⁴ They were not, however, as accomplished 'endurance runners' as Moderns and so were unable to run ungulates, for example, to a standstill before dispatching them.³⁵ As a consequence they would have been subjected to greater risk of injury either from prey that was not immobilised or had been immobilised by less effective techniques, such as running them into a swamp or a trap.³⁶

Neanderthals also buried their dead, which is one reason for the relative abundance of surviving fossils, a fact that has inspired yet another major controversy.³⁷ Tattersall and Schwartz made the commonsensical observation that perhaps the Neanderthal corpses were buried only for hygienic reasons or to remove them from the attention of animal scavengers,³⁸ but d'Errico has recently pointed out that of fifty-eight burials dating from the Middle Paleolithic, thirty-five are of Neanderthals in Europe and the Near East. The remaining twenty-three from this period are of Moderns and are found only in the Near East. Some graves for both types of hominin in both places were accompanied by grave goods – stones and antlers.³⁹ Such evidence led him and his colleague Joao Zilhao to argue that the Neanderthals 'could well have been the acculturators, not the accultured,'⁴⁰ inasmuch as burial was interpreted as *prima facie* evidence that Neanderthals questioned the meaning of existence by implicitly raising the question of the place of the protected dead in the story of life.⁴¹ Conard and Bolus more cautiously argued that the newly arriving Moderns had much to profit 'from the local knowledge of the region [Swabia in the Upper Danube Valley] that the indigenous Neanderthals no doubt possessed.'⁴² Neanderthals also apparently were cannibals,⁴³ though it is not

clear whether those consumed were dietary sources or participants in a ritual. And they were as right-handed as modern humans.⁴⁴ There are additional controversies regarding the Neanderthals' means of communication, their use of ochre, and their capacity to symbolise.⁴⁵ About the only firm conclusion one can make is that the population history of Eurasian hominins including (but not limited to) Neanderthals and their replacement by Moderns is complex. In recent years it has been rewritten practically on an annual basis.⁴⁶ One thing however seems clear: the rapid biological replacement narrative or 'human revolution' has come under increasing criticism. As Nowell said, the European 'human revolution' ca.40ky ago is 'effectively dead', which answers in part Purcell's tributary question.⁴⁷

A more interesting line of thought that also conforms to Darwinian orthodoxy is that the replacement of Neanderthals was effected by cultural rather than biological competition. In this context, paleoscientists often speak of a 'cultural stimulus' that (somehow) caused pre-Modern organisms morphologically identical to *H. sapiens* to turn into Moderns. This 'stimulus' was the cause of language and a new capacity to symbolise.⁴⁸ In its simplified Darwinian form, one finds an almost *a priori* assertion that 'interspecies competition' resulted in the extinction of the Neanderthals. The causes have been variously identified as climate change,⁴⁹ poor diet leading to high infant mortality,⁵⁰ especially a dearth of micronutrients (they did not eat enough veggies!),⁵¹ lengthy breast feeding, leading to demographic decline because of longer mean birth-spacing than Moderns,⁵² an inability of Neanderthals to pursue successfully low-risk generalised hunting strategies,⁵³ a reduced 'social brain' that impaired their ability to use symbols and develop extensive social networks for mating and risk reduction through mutual obligations,⁵⁴ and bad luck.⁵⁵ The way Moderns lived apparently contradicted Neanderthal traditions and culture and so increased their vulnerability, much as European civilisation did to North American Indians.⁵⁶ In short 'what became extinct by some 25,000 BP was not a taxon but a way of living and relating to others.'⁵⁷ The addition of culture as a relevant variable adds considerable complexity to the euphemistic narrative of 'replacement'.

For example, Francesco d'Errico argued not only that the Neanderthals created their own Upper Paleolithic technology in France but did so without help from the Moderns.⁵⁸ Granted that Neanderthals did not produce spears with bone points though they were able to haft stone, so why no bone-tipped spears? Were they too stupid to figure out how to do

the trick? Or, since stone-tipped spears have some obvious advantages in sharpness and penetrating power, though they are not a stand-off weapon and so are more dangerous to employ, did they simply use a hunting strategy that did not require bone?⁵⁹ It is difficult to know which interpretation is preferable, though the implications for our understanding of Neanderthal consciousness, intelligence and cognitive capabilities are quite distinct.⁶⁰ For his part, d'Errico argued at length that there is 'no material support for the ... notion of "Neanderthal inferiority"'. On the contrary, the evidence points to 'an original and independent cultural evolution of western Europe's late Neanderthals'.⁶¹ Or, in his more cautious later formulation, 'the hypothesis of separate but converging cultural trajectories for archaic hominins in Europe and anatomically modern *Homo sapiens* before the Middle/Upper Paleolithic transition is not proven, but cannot be rejected'.⁶² If these arguments are sound, they give additional poignancy to the question: what happened to the Neanderthals?

Consider the Iberian situation. D'Errico and his colleagues argued that south of the Ebro river Neanderthals and Moderns 'were contemporary for at least 5,000 and probably for 10,000 years, during which, inevitably, some form of contact must have taken place'. But nothing fundamental changed in the material culture of the Iberian Neanderthals, which challenges the hypothesis of the biological superiority of Moderns that led to acculturation of Neanderthals. It may be that the Ebro was 'a major biocultural frontier'; to the north, Europe was occupied between 40ky and 38kyBP by Moderns. To the south 'the rest of Iberia continued to be occupied, until ca.30,000–25,000 years BP by Neanderthals with a Middle Paleolithic material culture'. And then, in a relatively short period, ca.2ky, 'replacement seems to have taken place quite suddenly' following a 1500-year cold snap (40–38.5kyBP) called the Heinrich 4 event, which saw Arctic ice rafts drifting south into the Bay of Biscay and the eastern Atlantic.⁶³ It is no doubt true, as Tattersall and Schwartz said, that for hunters, cold times are not necessarily hard times because pursuing herding ungulates in a more or less open landscape is a lot easier than killing boar in an oak forest,⁶⁴ but there is a limit to the benefits of cold weather and gradually, the argument goes, the Neanderthals were driven south toward the Mediterranean and Black Seas.⁶⁵

The reason for the existence of the Ebro frontier was 'unclear', though several theories were available – it was more heavily wooded in the south, for example, or relatively warm micro-climates in the north provided plenty of

space for the Moderns. In any event, at least 5,000 years of possible contact, which was plenty of time for 'acculturation' to occur, provided no evidence of changes in Neanderthal culture south of the Ebro. As Zilhao observed,

... unless we go back to nineteenth-century notions of a north-south gradient in human intelligence – i.e. Iberian Neanderthals were even dumber than French ones, which at least were able to imitate [the Moderns] – the Ebro frontier pattern cannot be explained at all in the framework of the paradigm of a biologically based intellectual inferiority of Neanderthals.⁶⁶

However, because Moderns living on the south shore of the Mediterranean did not attain the cultural achievements of the European Upper Paleolithic until well after 30kyBP, cultural achievement must be independent of biology. Accordingly, the contact between Neanderthals and Moderns was

... a traditional problem of contact between populations with different cultural trajectories; in this case, as has often been documented in both the historical and the ethnographic record, the long-term outcome of contact was that one of those trajectories was truncated and the corresponding genetic lineage became extinct.⁶⁷

In this respect, the example of the extinction of the Viking colonies in Greenland during the Little Ice Age and the survival of the Inuit provides a parallel.⁶⁸

Zilhao and colleagues recently discovered evidence in southern Spain of Neanderthal use of body decoration. They began with the uncontroversial statement that, so far as Moderns are concerned, body decoration in Africa and southwest Asia has been accepted widely as evidence of symbolic thinking. But when the same kind of evidence is found at Neanderthal sites in Europe, claims that they, too, engaged in symbolic behaviour 'are disregarded on different grounds', such as poor recording techniques, uncertain or ambiguous interpretation, imitation of Moderns and so on. 'Here, we report secure evidence that approximately 50ky cal BP, ten millennia before modern humans are first recorded in Europe, the behaviour of Neandertals was symbolically organised and continued to be so until the very end of their

evolutionary trajectory.⁶⁹ What made the evidence secure was that it was found at a brecciated remnant of a site 50ky old so that 'the association of this material with the Neandertals is, literally, rock-solid.'⁷⁰ He drew the conclusion that body-painting and the use of shells for decoration at about the same time in Iberia and South Africa 'among two different lineages ... is inconsistent with cognitive-genetic explanations and implies that these innovations were fulfilling a need – aiding in the personal or social identification of people – that did not exist in the preceding two million years of human evolution.'⁷¹ Their conclusion, bluntly stated, is that cultural barriers between Neandertals and Moderns would have been as permeable as biological ones.

The use of colourants, 'representations' and engravings, 'personal ornaments and decorated bone tools with sets of notches' show no dramatic differences with similar 'depictional ... representations' produced by Moderns.⁷² The significance of such ornamentation is that it represents 'a profound shift in technologies for encoding and transmitting information.'⁷³ With contemporary humans, decorations can indicate marital status, ethnicity, religion, wealth and other marks of social identity. Why should Neandertals be exempt from such concerns? Denying Neandertals ability to symbolise, d'Errico said, was simply an 'anti-Neandertal prejudice.'⁷⁴

The significance of the capability of symbolisation, which paleoscientists shorten to symboling, has been analysed from a paleoscientific perspective by Marin Byers. According to him, *all* the activities of a symboling population are rule-governed and *all* their material culture has a rule-governed style. In contrast, non-symboling behaviour is directed by ends or goals, not rules, which guide (rather than direct) actions (as distinct from behaviour).⁷⁵ For example, consider two observably different stone tools, both of which are capable of slicing and cutting, which is to say both can be used to perform the same material behaviour. But one is used only for sacrifice and the other only for butchering – two rule-guided actions. Accordingly, 'non-symboling human populations perform only material behaviours, symboling human populations material actions.'⁷⁶ This distinction between behaviour and action, which Byers borrowed from the contemporary language philosopher, John Searle, is practically identical with that of Hannah Arendt.⁷⁷ The 'rules' governing distinct actions are surplus to the material behaviour *and* they endow the actions with meaning – as sacrifice or butchery, for example. The ability to symbolise, moreover, rests on our ability to monitor what we are doing – to monitor our monitoring, which Byers (and Searle) call 'reflexivity'.

In other words, the ability to engage in symbolic action is self-conscious as well as 'effortless'.⁷⁸

The editors of *Current Anthropology* (where Byers published this article) often invite critical comments from other scholars and give the author an opportunity to reply. Much of the criticism in this instance did not bear on the questions considered here. Michael Shanks, however, made the highly pertinent remark that Byers's 'real topic is the sudden emergence of *social* order and the character of this order; indeed, he is writing of the origins of society and morality. This is, of course, a traditional interest of political philosophy'.⁷⁹ Shanks was, in my view, essentially correct, whether the 'emergence' was sudden or gradual. Byers agreed and made the following concluding observation:

To state the obvious, humans are animals, and as such we are subject to the same range of constraints in nature as are other animals. But we are not quite like any other animals, for as effortlessly reflexive beings we are responsible for the conditions of our life in ways that cannot be claimed for any other species we know.⁸⁰

Ex hypothesi, if the cultural barriers between Neanderthals and Moderns were permeable, this has a major implication for their replacement by Moderns. By analogy it is not simply wrong to say, for example, that cattle 'replaced' buffalo on the great plains of North America, but such language does obscure the political and human dimension whereby a European culture extinguished, suppressed or subordinated an indigenous one. The means of doing so may have varied north and south of the border between Canada and the United States (or so Canadians like to think) but the result was pretty much the same: the 'replacement' of wild buffalo with domestic cattle. Let us consider the 'replacement' of Neanderthals in the same way. This has the important implication that the biological process involved, whether the agent of replacement was a hybrid Modern-Neanderthal hominin, a purebred Modern with a random genetic mutation that conferred some sort of Darwinian advantage, or a Modern that endured some other kind of neuroplastic alteration, is secondary.

Suppose the population dynamics of Neanderthals and Moderns as roughly analogous to the human changes that accompanied the replacement of buffalo with cattle. Suppose as well, as Tattersall and Schwartz noted, Upper

Paleolithic Moderns, 'were us: humans with all the attributes, appalling as well as admirable'. Now, 'we only have to know one side of the equation to realise that encounters between Neanderthals and modern humans cannot always have been happy ones' so that 'it seems highly unlikely that they usually brought out the best in the strangers who invaded their territory ... it is staying well within the bounds of science to suggest that the extinction of the Neanderthals involved at least a certain amount of direct conflict as well as of more generalised economic competition.'⁸¹

In a similar vein, Nicholas Wade asked:

What does it mean to say that the Aurignacian culture was succeeded by the Gravettian? ... when the last Glacial Maximum made northern latitudes uninhabitable and the glaciers pushed their populations south, is it likely that they were welcomed with open arms by the southerners whose territory they invaded? If warfare was the normal style of affairs, it would have shaped almost every aspect of early human societies.⁸²

In other words, the first option of 'population dynamics' can be called conflict, war, even what we now call genocide. In this context, the implication regarding gene flow would be equally stark.

In contrast to a simple assault, others have argued for simple avoidance because 'direct competition or fighting' would be 'probably too risky'.⁸³ In support of the 'peaceful competition leading to extinction' narrative, Zubrow offered the observation that an increase in mortality rates of Neanderthals of only 2 per cent would extinguish the population in a millennium.⁸⁴ Other accounts speak of 'absorption' or 'blending' without specifying in detail what such metaphors might mean.⁸⁵ It seems to me that the one basic fact that we should not lose sight of is, as Tattersall put it: 'our species became an irresistible force in Nature, clearly not only intolerant of competition but able to indulge that intolerance.'⁸⁶ I quoted Purcell above that *all* human societies 'were burdened with the task of wresting the order of their existence from ever-threatening disorder.'⁸⁷ There is no reason to think Neanderthals were exempt or that they were incapable of understanding the Moderns as an exemplar of ever-threatening disorder.

Let us, however, consider some ancillary evidence. Exhibit A: much to her surprise and dismay, Jane Goodall observed what she called chimpanzee

warfare in Gombe.” In fact, monkey wars have become almost a subfield in primatology.⁸⁹ It would probably be prudent, therefore, to expect that warfare, which is to say organised and collective violence, to be an attribute of primate and so of human existence. To be more anthropologically precise: a predisposition to kill is present in nonhuman animals, especially when they are in conditions that stimulate aggressive behaviour, anger, self-protection, jealousy, and so on, any of which may lead to violence. This does not mean that the death of another is sought even in primates. Baboons apparently treat a dead companion ‘as if the latter were alive but passive.’⁹⁰ For humans at least it is likely true, as Azar Gat said, ‘fighting was probably an integral part of hunter-gatherers’ existence throughout the genus *Homo*’s evolutionary history.’⁹¹

We noted Neanderthal cannibalism above. Eudald Carbonell and his colleagues presented evidence of cannibalism by *H. antecessor*, ca.800ky ago, which Keith F. Otterbein took to be the earliest evidence of warfare.⁹² Even if cannibalism is not the result of homicide, there is strong circumstantial evidence of Neanderthal homicide. During the 1950s, excavation of Shanidar Cave in the Zagros mountains of northeastern Iraq produced partial skeletons of nine Neanderthals. Four of the six reasonably complete skeletons show some form of ‘trauma-related abnormality.’⁹³ The most interesting individual was Shanidar 1, who was at least 45ky old. All his injuries were described in great detail, including head trauma that crushed his left eye orbit, ‘probably causing blindness in the left eye.’ Three interpretations were advanced to account for his other injuries including ‘a penetrating wound to the shoulder’ that eventually resulted in an infection of the clavicle. Almost as interesting was Shanidar 3, also an adult male. He was injured on the ninth rib leaving a parallel-sided groove ‘caused by a penetrating wound between the eighth and ninth ribs’ that punctured the lung. ‘The angle and precision of the wound make it unlikely that the injury was self-inflicted’. Indeed, it was just what one would expect if a right-handed individual stabbed Shanidar 3 while standing face to face. It could, of course, have been an accident; and in any event, Shanidar 3 was nursed for several weeks and then buried. Shanidar 5, of which little remains, was scarred on the head and suffered a scalp wound deep enough to impact the periostium.⁹⁴

In 1979 a partial Neanderthal skeleton was discovered near the village of St Césaire, Charente Maritime, France. It was about 36ky old and provided ‘the first direct evidence for the association of Neanderthals with Châtelperronian

implements'. The Châtelperronian period, dated between 45 and 36kyBP, overlapped with the late Mousterian, which used to be exclusively identified with Neanderthals, and early Aurignacian, which used to be identified exclusively with Moderns; these fossils constituted the material basis for much of the archaeological discussion of the relationship of Neanderthals and Moderns during the early Upper Paleolithic. What is interesting about this fossil in the present context is that when the skull was reconstructed using computer-assisted imagery, it revealed a healed fracture in the cranial vault. 'When paleopathological diagnostic standards are applied, this bony scar bears direct evidence for the impact of a sharp implement, which may have been directed toward the individual during an act of interpersonal violence' followed by burial.⁹⁵ If we accept that blades are 'a marker of the Upper Paleolithic culture complex',⁹⁶ this Neanderthal may have been killed by one of his Modern contemporaries. The direction of the slash indicated that he suffered a blow or thrust that was intentional and was accomplished by an implement, not a natural object. 'To attain the kinetic energy necessary to penetrate bone, considerable acceleration, probably through hafting, would have been essential.' The immediate effects were probably serious, with heavy bleeding and temporary impairment. He did however survive for several months, which meant the trauma was not fatal.⁹⁷ Both Moderns and Neanderthals were capable of hafting.⁹⁸

Both the St Césaire and Shanidar 3 individuals indicate that Neanderthals were capable of using tools as weapons – unless both Neanderthals were killed by Moderns. It seems more plausible that Neanderthals knew how to use an implement in a context other than that for which it was originally designed. The relative dearth of direct evidence of weapons may reflect the low frequency of such aggressive actions or it may 'reflect the limits of paleopathological diagnosis'.⁹⁹ If it is the latter, a reexamination of Neanderthal fossils with weapons-induced trauma in mind, might produce a more violent picture of 'replacement', especially if we bear in mind that, face to face, a person's skeleton occupies a little over half the target area that a body presents to an attacker.¹⁰⁰

In any event, two things seem clear: first, the use of hunting or food-processing tools as weapons in interpersonal violence increased the potential for intergroup damage.¹⁰¹ More interesting for our concerns, Zollikofer wrote, with this use of weapons 'no major "transition" from Neanderthal to EMH-specific [i.e. Modern] behavioural patterns during the Upper Paleolithic

took place: That is, Neanderthals and Moderns were 'largely similar' in their ability 'to balance between aggressive and cooperative tool-mediated behavioural patterns'.¹⁰² In short, both groups were capable of using weapons and practising warfare of some kind.

In addition, there is some indirect evidence of Neanderthal war-making capability. Their elevated frequencies of head and neck trauma, which have been compared in its distribution to that of injuries sustained by rough-stock rodeo cowboys, may reflect their high-risk hunting of medium- and large-size game using thrusting spears, 'given the tendency of ungulates to react strongly to being impaled'.¹⁰³ Elevated trauma rates may also reflect a lot of fighting.

The evidence for hostile contact or warfare is admittedly thin because Neanderthal populations, already small at their maximum, were under climate-induced stress, as were Moderns. The estimates of Upper Paleolithic meta-populations vary over a fairly large range,¹⁰⁴ but the ratio of Modern to Neanderthals has been estimated to have been around 10:1.¹⁰⁵ This is why some archeologists and paleoanthropologists argue quite reasonably that it is highly unlikely that they ever met.¹⁰⁶

Granted, then, that absolute population numbers of Neanderthals were small and that they were increasingly outnumbered by the new arrivals, we must note as well that tenure in historical hunter-gatherer societies is not a matter of controlling a surface area but of controlling sites and pathways within a surface landscape, which is to say that boundaries clearly exist, but they are connected to the use of specific sites and paths, not to specific real estate or a general surface area.¹⁰⁷ Moreover, the examples of Inuit, Australian Aborigines, or North American plains Indians indicate low population densities and mobility over low-yield terrain does not mean little or no conflict and competition. All it means is that larger low-yield territories are needed to survive. Even in Tasmania, before the modern European settlers murdered the inhabitants, the combination of low population density and primitive military and hunting technology (Tasmanians lacked even the stand-off weapon of a boomerang) did not prevent the maintenance of territorial frontiers and lethal raiding – warfare.¹⁰⁸

At the very least, all the elements for Neanderthal-Modern conflict were in place. In this context, as with the problem of choosing a narrative,¹⁰⁹ we must note that, historically, contemporary anthropologists and archaeologists have, until fairly recently, typically overlooked or de-emphasised violence. Partly this is because archaeological evidence of annihilation of a population

through war is difficult to find,¹¹⁰ but also because of pre-scientific commitment to peaceful primitives.¹¹¹ In what has become a kind of minor classic, *War Before Civilization*, Lawrence H. Keeley offered an explanation for the comparative understudying of prehistoric conflict: 'archeologists of the postwar period had artificially "pacified the past" and shared a pervasive bias against the possibility of prehistoric warfare.'¹¹²

Partly because of the impact of Keeley's book in changing the minds of archeologists, Steven A. LeBlanc was able to undertake an extensive survey of conflict among hunter-gatherers, including prehistoric humans. 'One common thread' of hunter-gatherer conflict, he said, was that it was correlated with human beings exceeding the carrying capacity of the area in which they live.¹¹³ In this respect war is an alternative to starvation and population control by disease or predators. Moreover, if resource stress is the normal human condition, then warfare is endemic. The historical absence of 'ecological balance' means that Rousseauian peaceful savages living in harmony with nature can be summarily dismissed because first, societies have always lived in a changing environment and second, they always have had neighbours. 'The best way to survive in such a milieu is not to live in ecological balance with slow growth, but to grow rapidly and be able to fend off competitors as well as take resources from others.'¹¹⁴ Stealing resources of others is likely to be resisted by them, and the result is conflict.

LeBlanc mentioned two other considerations directly relevant to our admittedly speculative notion of conflict between Neanderthals and Moderns. The first is an apparent desire to dominate other males that may be innate to primates and certainly is present among chimpanzees. This is a significant consideration because it lies outside the conventional assumptions that raiding and stealing the resources of one's neighbours is economically rational. Of course one can reduce observations to a 'selfish gene' model, which is basically economic, but that is not where the phenomenal evidence leads a normal observer. Chimps, said LeBlanc, 'seem to enjoy dominating other males of their own group, but they usually do this in ways that are not lethal. They extend this behaviour by attacking and killing the males of other groups.'¹¹⁵ Among humans one would speak, by analogy, of a desire for recognition, of the enjoyment of *thymos*, pride and self-respect, or even of manliness. At the very least, the notion that either modern hunter-gatherers or Neanderthals and Moderns did not fight because they had few possessions and thus had nothing to fight about or could have easily declined

confrontation and wandered away rests on the assumption that all conflict is over territory or possessions. A moment's reflection indicates that this is not so. All wars, even chimpanzee wars, are dangerous, and the chimps know it. Indeed, the ability to face danger looks to be part of all primate conflict. Bands or societies that avoid danger, especially the danger of confrontation and conflict (and this applies equally to chimps as to contemporary humans), lose. As Winston Churchill said, every country has an army; either its own or somebody else's.

Another equally significant consideration concerns hunting. The connection between group hunting and group fighting has often been noted. Stalking, attacking a target in a coordinated way, being able to throw things accurately or to stab or thrust a spear with force and precision are all useful hunting arts. 'And they are useful when executing an ambush on an unsuspecting camp of nearby humans.' Moreover, generally speaking big-game hunting is a 'specialised male activity the world over. With very few exceptions, it is these same men who engage in warfare.'¹¹⁶ There is practically unanimous agreement that Neanderthals were skilled big-game hunters and we have seen that the change from a hunting tool to a weapon is entirely within their imaginative capability.

A third consideration concerns emotion, which is always involved in facing danger, and self-respect or *thymos*. Fighting, battle, and even war are all at least as much an emotional experience as a calculative or cognitively rational one. Like territorial chimps, surely Neanderthals would take offence and become angry at the migration of these other humans into 'their' home range, even if it is only sites and pathways, not real estate. Indeed, if Mithen's account of the singing Neanderthals is at all accurate,¹¹⁷ the emotional power of music might lead us to anticipate great emotional intensity among Neanderthals.

Peaceful accounts of the extinction of the Neanderthals defy commonsense. It seems to me that Jiri A. Svoboda was correct when he suggested that the new arrivals on many occasions faced 'a dangerous aboriginal population, the Neanderthals'. Accordingly, 'if the modern humans benefitted from higher levels of self-awareness, planning and imagination, as we generally expect, then they were also probably more afraid.'¹¹⁸ If the rather gruesome accounts reconstructed by Keeley of scalping and weapons trauma were not sufficiently persuasive regarding the likelihood of conflict,¹¹⁹ consider again the analogy of the replacement of wild buffalo with domestic cattle across the prairies of North America. For political science, the notion that Neanderthals would be

incapable of fighting Moderns is simply naïve. The process of replacement, we have no reason to expect, was some sort of unarmed peaceful migration. In short, humans, whether Neanderthal or Modern, would fight before they would agree to starve, even though fighting increases the chance of starvation. Given that the carrying capacity of the land of the European Neanderthals was already strained by persistent cold, the invading Moderns would be seen as adding to the problem, even if questions of cultural differences and the inherent danger of dealing with strangers can be ignored. Perhaps William Golding's *The Inheritors* better describes the process of 'replacement' than does the preferred peaceful paleoanthropological narrative.

A strong tradition in anthropology and archaeology does not consider 'primitive warfare' to be an adaptive Darwinian strategy. Indeed, in a rather odd reversal of the usual evolutionary rationale, the conventional argument is that warfare is inherently non-adaptive, at least until the invention of agriculture and the founding of cosmological empires. It seems to me that Azar Gat was correct to argue that warfare is not really a social mechanism for regulating population but one of the strategies that human beings use 'to gain the upper hand in response to increased competition that may arise from demographic growth' or other sources of stress.¹²⁰ Such competition and conflict is not necessarily connected either to agriculture or to empire.

This brief account of recent contemporary intellectual history regarding the allegedly peaceful hunter-gatherers, as distinct from the actual historical subject matter of Upper Paleolithic conflict and war has a bearing on the question of Neanderthal 'politics'. Taking some comfort in the fact that 'chimpanzee politics' is an intelligible notion,¹²¹ in principle there is no reason, apart from always sparse and sometimes ambiguous evidence, why Neanderthal politics is impossible. That is my first and relatively straightforward concluding point. As a corollary, one would expect there to be a means by which these conflicts came to an end. The obvious candidate is massacre but given the existence of 'peacemaking' among chimpanzees, one might expect that negotiations would also be possible.¹²² And negotiations, one need hardly add, are possible only on the basis of some shared understanding of the rules of the game.¹²³

A second conclusion is more elaborate. Often in the paleoanthropological literature scholars draw parallels and analogies between historical hunter-gatherer societies and prehistoric ones. Usually this exercise is undertaken with an abundance of caution since the evidence is so widely separated in

time. There is a large anthropological literature on what might be called the politics of small-scale societies. I have not discussed this material here, and no one is more aware than I of this lacuna in the full argument that needs to be made. However, the evidence for Upper Paleolithic warfare seems to me to be suggestive, if not compelling, given the widespread agreement regarding what Modern and Neanderthal humans were like. Accordingly I would propose as a hypothesis or as a heuristic, and not simply as evidence of admiration for Clausewitz, that war constituted a major element of politics during the Upper Paleolithic, especially during the period of 'replacement' of Neanderthals by Moderns.

This second, more contentious conclusion leads to a third that is even less secure. If an analogy with much later human activity might be permitted, one might say that the 'victory' of the Moderns in the long wars against the Neanderthals was the basis for the sustained creative outburst in technology and art during the Mousterian. This is not to imply that there was no conflict among Moderns, no war and no violent politics. Unquestionably there was plenty. Nor is there any suggestion that, with the 'victory' of the Moderns, evolution came to a stop. On the contrary. But it is to suggest that the rules of the game had become more explicit when politics and war did not have to cross a divide (however narrow) that separated two kinds of human beings.

NOTES

1. I would like to thank Joe Donner and the Donner Canadian Foundation for their support for this project.
2. Brendan Purcell, *From Big Bang to Big Mystery: Human Origins in the Light of Creation*, (Dublin: Veritas, 2011), p. 169ff; p. 173ff.
3. Purcell, *The Drama of Humanity: Towards a Philosophy of Humanity in History* (Frankfurt am Main: Peter Lang, 1996), p. 53.
4. Bruce G. Trigger, *A History of Archaeological Thought*, second ed. (Cambridge: Cambridge University Press, 2009), p. 241ff; p. 322ff; G. Clark, 'Prehistory since Childe', *Bulletin of the Institute of Archaeology* 13 (1976), pp. 1-21; Kevin Greene, 'V. Gordon Childe and the Vocabulary of Revolutionary Change', *Antiquity* 73 (1999), pp. 97-106; P. Gathercole, 'Patterns in Prehistory?: An Examination of the Later Thinking of V. Gordon Childe', *World Archaeology* 3 (1971), pp. 225-32.
5. Sally McBrearty and Allison S. Brooks, 'The Revolution That Wasn't: A New Interpretation of the Origins of Modern Human Behaviour', *Journal of Human Evolution* 39 (2000), p. 455. See also McBrearty, 'Down with the Revolution', *Rethinking the Human Revolution: New Behavioural and Biological Perspectives on the Origins and Dispersal of Modern Humans*, Cambridge, McDonald Institute for Archaeological Research, Paul Mellars et al., eds. (Oxford, Oxbow Books, 2008), pp. 133-51.
6. Richard G. Klein, *The Human Career: Human Biological and Cultural Origins*, third ed. (Chicago: University of Chicago Press, 2009), pp. 3-4.

7. Klein, 'Archaeology and the Evolution of Human Behaviour', *Evolutionary Anthropology* 9 (2000), p. 24; Klein, *Human Career*, p. 627, p. 741; Brian Fagan, *Cro-Magnon: How the Ice Age Gave Birth to the First Modern Humans* (New York: Bloomsbury, 2010), p. 12.
8. See for example, W. W. Howells, 'Explaining Modern Man: Evolutionists versus Migrationists', *Journal of Human Evolution* 5 (1976), p. 492; O. Bar-Yosef, 'The Role of western Asia in Modern Human Origins', *Philosophical Transactions of the Royal Society, London: Biological Sciences*, Vol. 337, No. 1280 (29 August 1992), p. 198; Milford H. Wolpoff et al., 'Modern Human Ancestry at the Peripheries: A Test of the Replacement Theory', *Science* 291 (2001), pp. 293–7.
9. See, on the pro-interbreeding side, Erik Trinkaus et al., 'An Early Modern Human from Pesteracu Oase, Romania', *Proceedings of the National Academy of the United States of America*, 100.20 (30 September 2003), pp. 11231–36; and on the anti-interbreeding side, Shara E. Bailey et al., 'Who Made the Aurignacian and Other Upper Paleolithic Industries?', *Journal of Human Evolution* 57 (2009), pp. 11–26.
10. J. R. Stewart, 'The Ecology and Adaptation of Neanderthals During the Non-Analogue Environment of Oxygen Isotope Stage 3', *Quaternary International* 137 (2005), p. 42. See also Stewart, 'Neanderthal-modern Human Competition?: A Comparison Between the Mammals Associated with Middle and Upper Paleolithic Industries in Europe During OIS 3', *International Journal of Osteoarchaeology* 14 (2004), pp. 178–89.
11. Richard E. Green et al., 'A Draft Sequence of the Neanderthal Genome', *Science* 328 (7 May 2010), p. 710. See also Ann Gibbons' introduction, 'Close Encounters of the Prehistoric Kind', *Science* 328 (7 May 2010), pp. 680–84; and Rex Dalton, 'Ancient DNA set to Rewrite Human History', *Nature* 465 (13 May 2010), pp. 148–9.
12. Mathias Currat et al., 'The Hidden Side of Invasions: Massive Introgressions by Local Genes', *Evolution* 62 (2008), pp. 1908–20.
13. Green et al., 'A Draft Sequence', p. 721.
14. John Hawles et al., 'A Genetic Legacy from Archaic Homo', *Trends in Genetics* 24:1 (2007), pp. 14–20.
15. Gibbons, 'Close Encounters', p. 681. See also Chris Stringer, 'Evolution: What makes a Modern Human', *Nature* 485 (3 May 2012), pp. 33–5.
16. See Vania Yotova et al., 'An X-linked Haplotype of Neandertal Origin is Present Among all Non-African Populations', *Molecular Biology Evolution* 28:7 (2011), pp. 1957–62. For a slightly earlier criticism of this position, see John J. Shea, 'The Boulevard of Broken Dreams: Evolutionary Discontinuity in the Late Pleistocene Levant', *Rethinking the Human Revolution*, Mellars et al., eds., pp. 219–32.
17. See also Sriram Sankararaman et al., 'The Date of Interbreeding between Neanderthals and Modern Humans', available at <http://www.arXiv:1208.2238> vi [q-bio.PE] (accessed 10 August 2012).
18. Gregory Cochran and Henry Harpending, *The 10,000 Year Explosion: How Civilization Accelerated Human Evolution* (New York: Basic Books, 2009), p. 42.
19. The cause of the rapid replacement of Neanderthals by Moderns was during the 1990s widely claimed to be an unspecified (and unspecifiable) genetic mutation that (somehow) endowed Moderns with new capacities. This was an update on the 'pre-sapiens' models of the 1950s, which in turn were re-writes in the language of natural science of the biblical narrative of the story of the chosen people, only now they were Moderns who went forth and multiplied worldwide after God or Nature gave them light, called language, intelligence and the ability to symbolise.

20. For a clear pre-paleogeneticists statement of the problem, see John F. Hoffecker, 'The Spread of Modern Humans in Europe', *Proceedings of the National Academy of Sciences of the United States of America* 106:38 (22 September 2009), pp. 16040–45. See also W. W. Howells, 'Explaining Modern Man: Evolutionists versus Migrationists', *Journal of Human Evolution* 5 (1976), p. 480. See also Giorgio Manzi and Pietro Passarelli, 'At the Archaic/Modern Boundary of the Genus *Homo*: The Neanderthals from the Grotta Breuil', *Current Anthropology* 36:2 (1995), pp. 355–66.
21. This human capacity, as Hannah Arendt has argued, is the basis for politics. It constitutes a 'second birth' following the biological birth that constitutes our natality. For a discussion, which we cannot even summarise here, see Arendt, *The Human Condition* (Chicago: University of Chicago Press, 1958), pp. 8–9, pp. 62–3, pp. 96–7, pp. 177–8; and Tilo Schabert, *Die zweite Geburt des Menschen: Von der politischen Anfängen menschlicher Existenz* (Freiburg: Verlag Karl Alber, 2009), pp. 21–4.
22. See Purcell, *The Drama of Humanity* and *From Big Bang to Big Mystery*. See also Jonas, *The Phenomenon of Life: Toward a Philosophical Biology* (Chicago: University of Chicago Press [1966] 1982), pp. 3–4.
23. M. Henneberg, 'Comments' to Trinkaus: Modern Human versus Neandertal Evolutionary Distinctiveness', *Current Anthropology* 47 (2006), pp. 610–11. See also M. Henneberg and C. de Miguel, 'Hominins are a Single Lineage: Brain and Body Size Variability does not reflect Postulated Taxonomic Diversity of Hominins', *Homo: Journal of Comparative Human Biology* 55 (2004), pp. 21–37.
24. But as with just about every 'fact' in paleoanthropology, there is disagreement. See Jean-Jacques Hublin, 'What Can Neanderthals tell us about Modern Humans?' in Mellars et al., *Rethinking the Human Revolution*, pp. 237–8. See, for example, D. Curnoe and A. Thorne, 'Number of Ancestral Human Species: A Molecular Perspective', *Homo* 53.3 (2003), pp. 201–24.
25. Phillip Endicott, et al., 'Using Genetic Evidence to Evaluate Four Paleanthropological Hypotheses for the Timing of Neanderthal and Modern Human Origins', *Journal of Human Evolution*, 59 (2010), 87–95. For a discussion of the archeological evidence, and a slightly different time for separation of the two kinds of humans, see J. J. Hublin, 'The Origin of Neanderthals', *Proceedings of the National Academy of Sciences of the United States of America* 106.38 (22 September 2009), pp. 16022–27. Similar estimates of the separation of Neanderthals and Moderns were also established by analysing Neanderthal DNA. See Richard E. Green et al., 'A Draft Sequence', p. 718.
26. Clive Finlayson, *Neanderthals and Modern Humans: An Ecological and Evolutionary Perspective* (Cambridge: Cambridge University Press, 2004), p. 72.
27. Klein and Edgar, *The Dawn of Human Culture*, p. 190; Fagan, *Cro-Magnon*, p. 42, p. 80; Clive Finlayson, *The Humans Who Went Extinct: Why Neanderthals Died Out and We Survived* (Oxford: Oxford University Press, 2009), p. 152, p. 219.
28. Naama Goren-Inbar et al., 'Evidence of Hominin Control of Fire at Benot Ya'aqov, Israel', *Science* 304.5671 (2004), pp. 725–7.
29. John Gowlett, 'The Early Settlement of Northern Europe: Fire History in the Context of Climate Change and the Social Brain', *Comptes Rendus Palevol* 5 1.2 (2006), pp. 299–310.
30. Steven Mithen, *The Singing Neanderthals: The Origins of Music, Language, Mind and Body* (London: Phoenix, 2006), p. 223ff; Finlayson, *The Humans Who Went Extinct*, p. 57ff.
31. Rachel Carmody and Richard Wrangham, 'The Energetic Significance of Cooking', *Journal of Human Evolution* 57 (2009), pp. 379–91.

32. Klein and Edgar, *The Dawn of Human Culture*, pp. 156–7; see also Curtis W. Mavean and Soo Yeun Kim, 'Mousterian Large Mammal Remains from Kobeh Cavé: Behavioural Implications for Neanderthals and Early Modern Humans', *Current Anthropology* 39, SI (Special Issue: The Neanderthal Problem and the Evolution of Human Behaviour), (June 1998), pp. 79–114.
33. M. P. Richards et al., 'Isotopic Dietary Analysis of a Neanderthal and Associated Fauna from the Site of Jonzac (Charente-Maritime, France)', *Journal of Human Evolution* 55 (2008), pp. 179–85; Hervé Bocheureus et al., 'Isotopic Evidence for Diet and Subsistence Pattern of the Saint-Césaire I Neanderthal: Review and Use of a Multi-Source Mixing Model', *Journal of Human Evolution* 49 (2005), pp. 71–87; Fagan, *Cro-Magnon*, 61–2.
34. Katharine Scott, 'Two Hunting Episodes of the Middle Paleolithic Age at La Cotte Saint-Brelade, Jersey (Channel Islands)', *World Archaeology* 12 (1980), pp. 137–52; Paul Mellars, *The Neanderthal Legacy* (Princeton: Princeton University Press, 1996); C. Farizy et al., 'Hommes et bison du paléolithique moyen à Mauran (Haute-Garonne)', *Gallia Préhistoire* (Paris: CNRS, 1994), supp. 30; A. J. Jelinek et al., 'A Preliminary Report on Evidence Related to the Interpretation of Economic and Social Activities of Neanderthals at the Site of La Quina (Charente), France', *L'Homme de Neandertal: Actes du Colloque International*, Vol. 6, M. Otte, ed. (Liège: Université de Liège, 1986), pp. 99–106.
35. 'Endurance running' is a hunting technique that relies on the inability of quadrupeds to run and pant at the same time. Since panting is a way of cooling off and since humans sweat to cool off, humans can run some game quadrupeds to a standstill and then kill them as they stand panting from hyperthermia.
36. For details, see D. R. Carrier, 'The Energetic Paradox of Human Running and Hominid Evolution', *Current Anthropology* 25 (1984), pp. 483–95; Dennis M. Bramble and Daniel E. Lieberman, 'Endurance Running and the Evolution of Homo', *Nature* 432 (18 November 2004), pp. 345–52; David A. Raichlen et al., 'Calcaneus Length Determines Running Economy: Implications for Endurance Running Performance in Modern Humans and Neanderthals', *Journal of Human Evolution* 60 (2011), pp. 299–308.
37. Gargett, 'Grave Shortcomings: The Evidence for Neanderthal Burial', *Current Anthropology* 30.2 (April 1989), pp. 157–90. In addition to the remarks appended to Gargett's original article, the 'et al.' of the citation above, see also the comments in the following issue: L.P. Louwekooijmans et al., 'On the Evidence for Neanderthal Burial', *Current Anthropology* 30.3 (June 1989), pp. 322–30.
38. Ian Tattersall and Jeffrey H. Schwartz, *Extinct Humans* (Boulder: Westview, 2000), p. 213.
39. Francesco d'Errico, 'The Origin of Humanity and Modern Cultures: Archaeology's View', *Diogenes* 54 (2007), pp. 127–8.
40. Zilhao and d'Errico, 'The Chronology and Taphonomy of the Earliest Aurignacian and Its Implications for the Understanding of Neanderthal Extinction', *Journal of World Prehistory* 13 (1999), p. 3.
41. Henry de Lumley, 'The Emergence of Symbolic Thought: The Principal Steps of Hominisation Leading towards Greater Complexity', *Becoming Human: Innovation in Prehistoric Material and Spiritual Culture*, Colin Renfrew and Iain Morley, eds. (Cambridge: Cambridge University Press, 2009), p. 21.
42. Nicholas J. Conard and Michael Bolus, 'Radiocarbon Dating the Appearance of Modern Humans and Timing the Cultural Innovations in Europe: New Results and Challenges', *Journal of Human Evolution* 44 (2003), p. 364.

43. Armand Leroi-Gourhan, 'Neanderthal Symbolism at Vignas-Bucley, Ardèche, France', *Science* 286 (1 October 1999), pp. 128–31.
44. Natalie T. Uomini, 'Handedness in Neanderthals', *Neanderthal Lifeways, Subsistence and Technology: One Hundred and Fifty Years of Neanderthal Study*, Conard and Jürgen Richter, eds. (Dordrecht: Springer, 2011), p. 150.
45. April Nowell, 'Defining Behavioural Modernity in the Context of Neanderthal and Anatomically Modern Human Populations', *Annual Review of Anthropology* 39 (2010), pp. 437–52. Ella Hovers et al., 'An Early Case of Colour Symbolism: Ochre Use by Modern Humans in Qafzeh Cave', *Current Anthropology* 44.4 (2003), pp. 491–522.
46. P. Brown et al., 'A New Small-Bodied Hominin from the Late Pleistocene in Flores, Indonesia', *Nature* 4312 (2004), pp. 1055–61; M. J. Morwood et al., 'Preface: Research at Liang Bua, Flores, Indonesia', *Journal of Human Evolution* 57 (2009), pp. 437–9; David Reich et al., 'Genetic History of an Archaic Hominin Group from Denisova Cave in Siberia', *Nature* 468 (23 December 2010), pp. 1053–60; Reich et al. confirmed an earlier DNA sequencing of Neanderthal remains from Uzbekistan and the Altai region of Siberia.
47. Nowell, 'Defining Behavioural Modernity', p. 441.
48. Tattersall, *The Monkey in the Mirror: Essays on the Science of What Makes Us Human* (New York: Harcourt, 2001), pp. 160–1.
49. Paul Mellars, 'A New Radiocarbon Revolution and the Dispersal of Modern Humans in Eurasia', *Nature* 439 (23 February 2006), pp. 931–5; Jean-Jacques Hublin and Wil Roebroeks, 'Ebb and Flow or Regional Extinctions? On the Character of Neanderthal Occupation of Northern Environments', *Comptes Rendus Palevol* 9 (2009), p. 503; Bert Sørensen, 'Demography and the Extinction of European Neanderthals', *Journal of Anthropological Archaeology* 30 (2011), p. 17. On the other hand, if migratory herds moved south during periods of environmental degradation, the hunters could follow them, thus increasing the local carrying capacity. Francesco d'Errico and Maria Fernanda Sanchez Goni, 'Neanderthal Extinction and the Millennial Scale Climatic Variability of OIS 3', *Quaternary Science Reviews* 22 (2003), p. 769. Leslie C. Aiello and Peter Wheeler, 'Neanderthal Thermoregulation and the Glacial Climate', *Neanderthals and Modern Humans in the European Landscape During the Last Glaciation*, Tjeerd H. van Andel and William Davies, eds. (Cambridge: Cambridge University Press, 2003), pp. 147–66.
50. Bryan Hockett and Jonathan A. Haws, 'Nutritional Ecology and Diachronic Trends in Paleolithic Diet and Health', *Evolutionary Anthropology* 12 (2003), pp. 211–16.
51. Hackett and Haws, 'Nutritional Ecology and the Human Demography of Neanderthal Extinction', *Quaternary International* 137 (2005), pp. 21–4.
52. P. Pettit, 'Neanderthal Lifecycles: Development and Social Phases in the Lives of the Last Archaics', *World Archaeology* 31 (2000), pp. 354–5.
53. Curtis W. Marean, 'Heading North: An Africanist Perspective on the Replacement of Neanderthals by Modern Humans', *Rethinking the Human Revolution*, Mellars et al., eds., p. 376.
54. See Robin I. M. Dunbar, 'The Social Brain and the Cultural Explosion of the Human Revolution', *Rethinking the Human Revolution*, Mellars et al., eds., p. 91ff; Clive Gamble, 'The Social and Material Life of Neanderthals', Conard and Richter, eds., *Neanderthal Lifeways*, 160ff; Dunbar, 'The Social Brain Hypothesis', *Evolutionary Anthropology* 6 (1998), pp. 178–90.
55. Finlayson, *The Humans Who Went Extinct*, p. 102, p. 218. See also Joao Zilhao, 'Fate of the Neanderthals', *Archaeology* 53:4 (July–August 2000), pp. 24–32.

56. Conard, 'The Demise of the Neanderthal Cultural Niche and the Beginning of the Upper Paleolithic in Southwestern Germany', *Neanderthal Lifeways*, Conard and Richter, eds., pp. 223–40. See also J. Lear, *Radical Hope: Ethics in the Face of Cultural Devastation* (Cambridge: Harvard University Press, 2006).
57. Olger Soffer, 'Defining Modernity, Establishing Rubicons, Imagining the Other and the Neanderthal Enigma', *An Enquiring Mind: Studies in Honor of Alexander Marshack*, Paul Bahn, ed. (Cambridge: Oxbow Books, 2009), p. 301.
58. Francesco d'Errico et al., 'Neanderthal Acculturation in western Europe? A Critical Review of the Evidence and Its Interpretation', *Current Anthropology* 39.51 (*Special Issue: The Neanderthal Problem and the Evolution of Human Behaviour*) (1998), pp. 1–44, p. 2. See also Jean-Jacques Hublin et al., 'A Late Neanderthal Associated with Upper Paleolithic Artefacts', *Nature* 381 (16 May 1996), pp. 224–6; and J. Hahn, 'L'Origine du Paléolithique supérieure en Europe centrale: Les Datations C14', *El Origen del Hombre moderno en el Suroeste de Europa*, Cabrera Valdés, ed. (Madrid: Universidad Nacional de Educación a Distancia, 1993), pp. 61–80.
59. Steven Lithen, *The Prehistory of the Mind: The Cognitive Origins of Art, Religion and Science* (London: Thames and Hudson, 1996), p. 167.
60. Francesco d'Errico et al., 'Archaeological Evidence for the Emergence of Language, Symbolism, and Music: An Alternative Multidisciplinary Perspective', *Journal of World Prehistory* 17 (2003), p. 13.
61. D'Errico et al., 'Neanderthal Acculturation', pp. 3–4. Of course, d'Errico has received a good deal of criticism as well. See Paul Mellars, 'The Neanderthal Problem Continued', *Current Anthropology* 40.3 (1999), pp. 341–64; Mellars, 'Neanderthals and the Modern Human Colonization of Europe', *Nature* 432 (25 November 2004), pp. 461–5; Mellars et al., 'Confirmation of Neanderthal/Modern Interstratification at the Châtelperronian Type-Site', *Publications of the National Academy of Science of the United States of America* 104:9 (27 February 2007), pp. 3657–62.
62. D'Errico, 'Archaeological Evidence for the Emergence of Language, Symbolism and Music', p. 19. This argument did not convince those who held the orthodox or traditional views regarding acculturation of Neanderthals by superior Cro-Magnons. See P. Mellars, 'The Impossible Coincidence: A Single Species Model for the Origins of Modern Human Behaviour in Europe', *Evolutionary Anthropology* 14 (2005), pp. 12–27. See also P. G. Chase, 'The Significance of Acculturation Depends on the Meaning of Culture', *Rethinking the Human Revolution*, Mellars et al., eds., pp. 55–66. G. A. Clark, 'Neandertal Archaeology: Implications for Our Origins', *American Anthropologist* N.S. 104.1 (2002), p. 61. See also April Nowell and Francesco d'Errico, 'The Art of Taphonomy and the Taphonomy of Art: Layer IV, Moldova I, Ukraine', *Journal of Archaeological Method and Theory* 14 (2007), pp. 1–26. Taphonomy considers the process to which an organism is subject from its death until its recovery. See Gisela Grupe, 'Taphonomic and Diagenetic Processes', *Handbook of Paleoanthropology*, Vol. 1: *Principles, Methods and Approaches*, Winfried Henke and Ian Tattersall, eds. (Berlin: Springer, 2007), pp. 241–59.
63. See H. Heinrich, 'Origin and Consequences of Cyclic Ice Rafting in the Northeast Atlantic Ocean During the Past 130,000 Years', *Quaternary Research* 29 (1988), pp. 142–52; G. Bond et al., 'Correlations Between Climate Records from North Atlantic Sediments and Greenland Ice', *Nature* 365 (1993), pp. 143–7. D'Errico et al., 'Neanderthal Acculturation', p. 19; D'Errico and Goni, 'Neandertal Extinction', p. 784.
64. Tattersall and Schwartz, *Extinct Humans*, p. 205.

65. Finlayson, *The Humans Who Went Extinct*, p. 125ff.
66. Zilhao, 'The Ebro Frontier: A Model for the Late Extinction of Iberian Neanderthals', C. B. Stringer et al., eds., *Neanderthals on the Edge: Papers from a Conference Marking the 150th Anniversary of the Forbes Quarry Discovery, Gibraltar* (Oxford: Oxbow Books, 2000), p. 119.
67. D'Errico et al., 'Neanderthal Acculturation', pp. 21–2.
68. See also Curtis W. Marean, 'Heading North: An Africanist Perspective on the Replacement of Neanderthals by Modern Humans', *Rethinking the Human Revolution*, Mellars et al., eds., pp. 367–79.
69. Joao Zilhao et al., 'Symbolic Use of Marine Shells and Mineral Pigments by Iberian Neanderthals', *Proceedings of the National Academy of Science of the USA* 107 (19 January 2010), p. 1023. D'Errico was also part of this research team.
70. Zilhao et al., 'Symbolic Use of Marine Shells', p. 1027. Brecciated archaeological sites contain artifacts that are surrounded by minerals or rock fragments that cement the artifact in place, making it 'literally rock-solid'.
71. Zilhao et al., 'Symbolic Use of Marine Shells', p. 1027.
72. D'Errico, 'The Invisible Frontier', p. 199.
73. Steven L. Kuhn and Mary C. Stiner, 'Paleolithic Ornaments: Implications for Cognition, Demography and Identity', *Diogenes* 214 (2007), p. 41.
74. D'Errico, 'The Invisible Frontier', p. 196. See also the earlier argument by Zilhao and d'Errico, 'The Chronology and Taphonomy of the Earliest Aurignacian and Its Implications for the Understanding of Neanderthal Extinction', *Journal of World Prehistory* 13 (1999), pp. 1–68. Whether animated by 'anti-Neanderthal prejudice' or not, Eric Trinkaus downplayed the Southern African evidence as presenting 'few distinctively modern human features', notwithstanding evidence of modern human symbolic behaviour dating from a very early period. See C. W. Marean et al., 'Early Human Use of Marine Resources and Pigment in South Africa during the Middle Pleistocene', *Science* 449 (18 October 2007), pp. 905–09; Trinkaus, 'European Early Modern Humans and the Fate of the Neanderthals', *Proceedings of the National Academy of Sciences of the United States of America* 104.18 (1 May 2007), p. 7368.
75. Byers, 'Symboling and the Middle-Upper Paleolithic Transition: A Theoretical and Methodological Critique', *Current Anthropology* 35.4 (1994), pp. 369–99.
76. Byers, 'Symboling', p. 370.
77. See n. 20 above.
78. Byers, 'Symboling', p. 372.
79. Shanks, 'Comment' on 'Symboling', p. 390.
80. Byers, 'Symboling', p. 397.
81. Tattersall and Schwartz, *Extinct Humans*, p. 221.
82. Wade, *Before the Dawn: Recovering the Lost History of Our Ancestors* (New York: Penguin, 2006), p. 157. My emphasis.
83. John J. Shea, 'Neanderthals, Competition and the Origin of Modern Human Behaviour in the Levant', *Evolutionary Anthropology* 12 (2003), p. 184, p. 187. See also Sørensen, 'Demography and the Extinction of European Neanderthals', p. 25.
84. E. Zubrow, 'The Demographic Modelling of Neanderthal Extinction', *The Human Revolution: Behavioural and Biological Perspectives on the Origins of Modern Humans*, P. Mellars and C. Stringer, eds. (Edinburgh: Edinburgh University Press, 1989), pp. 212–31.
85. An exception is Pierre-Yves Demars who noted in response to d'Errico's paper on 'Neanderthal Acculturation' that 'none of the definitions' of 'assimilation' or

- 'acculturation' assumes 'the "inferiority" of a population, except perhaps in war technology'. D'Errico, 'Neanderthal Acculturation', p. 24.
86. Tattersall, 'Evolution and the Human Capacity', *An Enquiring Mind*, Bahn, ed., p. 320.
 87. Purcell, *The Drama of Humanity*, p. 53.
 88. Goodall, *Through a Window: My Thirty Years with the Chimpanzees of Gombe* (Boston: Houghton Mifflin, 1990), pp. 98–111.
 89. See Michael P. Ghiglieri, *The Dark Side of Man: Tracing the Origins of Male Violence* (Cambridge: Perseus Books, 1999), pp. 156–204; R. W. Wrangham and D. Peterson, *Demonic Males: Apes and the Origins of Human Violence* (Boston: Houghton Mifflin, 1996); see also Frans de Waal, *Peacemaking among Primates* (Cambridge: Harvard University Press, 1989).
 90. Vijender Bhalla, 'Comments' to Marilyn Keyes Roper, 'A Survey of the Evidence for Intrahuman Killing in the Pleistocene', *Current Anthropology* 10.4 (October 1969), p. 450.
 91. Gat, *War in Human Civilization* (Oxford: Oxford University Press, 2006), p. 25.
 92. Carbonell et al., 'Cultural Cannibalism as a Paleoeconomic System in the European Lower Pleistocene', *Current Anthropology* 51 (2010), p. 439; Carbonell et al., 'A Reply to Otterbein', *Current Anthropology* 52 (2011), p. 441.
 93. Erik Trinkaus and M. R. Zimmerman, 'Trauma Among Shanidar Neandertals', *American Journal of Physical Anthropology* 57 (1982), p. 61. See the complete report as well; Trinkaus, *The Shanidar Neandertals* (New York: Academic Press, 1983), esp. pp. 206, p. 414ff.
 94. Trinkaus and Zimmerman, 'Trauma Among Shanidar Neandertals', p. 69, pp. 71–2, p. 75.
 95. Christopher P. E. Zollikofer et al., 'Evidence for Interpersonal Violence in the St Césaire Neanderthal', *Proceedings of the National Academy of Sciences of the United States of America* 99.9 (April 30 2002), p. 6444.
 96. Klein, *The Human Career*, p. 489. Archaeologists define blades as stone tools that are significantly longer than they are wide, which means they embody a greater length of cutting edge per unit volume of stone than either core or flake tools; that is, they are an improvement.
 97. Zollikofer et al., 'Evidence for Interpersonal Violence', p. 6447. Hafting, that is attaching a handle to a point, dates from the Mousterian about 40kyBP. See Eric Boëda et al., 'Bitumen as a Hafting Material on Middle Paleolithic Artefacts', *Nature* 380 (28 March 1996), pp. 336–8.
 98. Johann Koller et al., 'High-Tech in the Middle Paleolithic: Neanderthal-Manufactured Pitch Identified', *European Journal of Archaeology* 4.3 (2001), pp. 385–97.
 99. Zollikofer et al., 'Evidence for Interpersonal Violence', p. 6647.
 100. Phillip L. Walker, 'A Bioarcheological Perspective on the History of Violence', *Annual Review of Anthropology* 30 (2001), p. 584. Studies of arrow wounds to US Army personnel during the Indian wars indicated that 'fewer than a third of the arrows struck bone and that 61 per cent of fatal arrow wounds were to the abdomen'. See Samuel Bowles, 'Did Warfare Among Ancestral Hunter-Gatherers Affect the Evolution of Human Social Behaviour?', *Science* 324 (5 June 2009), p. 1296. See also Ruth Mace, 'On Becoming Modern', *Science* 324 (5 June 2009), pp. 1280–1. Possibly the same percentage would obtain with spear thrusts, since bows and arrows were not invented until after the Neanderthals were long gone.
 101. In this context, Lawrence Guy Straus used the image of an 'arms race' to describe intergroup competition around the last Glacial Maximum (ca.25kyBP). 'The Upper Paleolithic of Europe: An Overview', *Evolutionary Anthropology* 4 (1995), p. 10.

102. Zollikofer et al., 'Evidence for Interpersonal Violence', p. 6448.
103. Thomas D. Berger and Erik Trinkaus, 'Patterns of Trauma among the Neanderthals', *Journal of Archaeological Science* 22 (1995), p. 8489. See also the earlier survey by Marilyn Keyes Roper, 'A Survey of the Evidence for Intrahuman Killing in the Pleistocene', 427ff.
104. Jean-Pierre Bocquet-Appel et al., 'Estimates of Upper Paleolithic Meta-Population Size in Europe from Archaeological Data', *Journal of Archaeological Science* 32 (2005), pp. 1663-4. A meta-population is a population that is geographically dispersed, fragmented or isolated but of the same species.
105. Paul C. Mellars and Jennifer C. French, 'Tenfold Population Increase in western Europe at the Neanderthal to-Modern Human Transition', *Science* 333 (29 July 2011), pp. 623-7. See also Adrian W. Biggs et al., 'Targeted Retrieval and Analysis of Five Neanderthal mtDNA Genomes', *Science* 325 (17 July 2009), pp. 318-21.
106. Sørensen, 'Demography and the Extinction of European Neanderthals', p. 25.
107. See Tim Ingold, *Territoriality and Tenure: The Appropriation of Space in Hunting and Gathering Societies* (Iowa City: University of Iowa Press, 1986), p. 153.
108. W. Lloyd Warner, *A Black Civilization: A Social Study of an Australian Tribe* (New York: Harper [1937] 1958), pp. 15-90.
109. See Misia Landau, *Narratives of Human Evolution* (New Haven: Yale University Press, 1991). See also Clifford Geertz, *Available Light: Anthropological Reflections on Philosophical Topics* (Princeton: Princeton University Press, 2000), p. 102; Abigail Hackett and Robin Dennell, 'Neanderthals as Fiction in Anthropological Narrative', *Antiquity* 77 (2003), pp. 816-27.
110. S. L. Vencel, 'War and Warfare in Archaeology', *Journal of Anthropological Archaeology* 3 (1984), p. 124.
111. Carol R. Ember, 'Myths about Hunter-Gatherers', *Ethnology* 17 (1978), pp. 438-39; V. Gordon Childe, 'War in Prehistoric Societies', *The Sociological Review* 33 (1941), pp. 126-38.
112. Keeley, *War Before Civilization* (New York: Oxford University Press, 1996), p. vii.
113. LeBlanc, *Constant Battles: The Myth of the Peaceful Noble Savage* (New York: St Martin's, 2003), p. 69.
114. *Ibid.*, p. 73.
115. *Ibid.*, p. 85.
116. *Ibid.*, pp. 90-1.
117. See n. 30 above.
118. Svoboda, 'On Modern Human Penetration into Northern Eurasia: The Multiple Advances Hypothesis', *Rethinking the Human Revolution*, Mellars et al., eds., p. 329.
119. See *War Before Civilization*, pp. 36-9.
120. Gat, *War in Human Civilization*, p. 143.
121. Frans de Waal, *Chimpanzee Politics: Power and Sex Among Apes*, rev. ed. (Baltimore: Johns Hopkins University Press, 1998).
122. See De Waal, *Peacemaking Among Primates*.
123. See Johan Huizinga, *Homo Ludens: A Study of the Play Element in Culture* (Boston: Beacon Press, 1950), Chapter 1, p. 6.