

FOURTH WORLD MAN

'A HYPERMODERN PROMETHEUS'

The Neanderthals in Popular Consciousness, Literature and Culture

*How we accepted the existence of
ancient humans; how the
Neanderthals were discovered and
accepted as human, and how they
emerged from the pages of dry
scientific papers to become the
subject of a new theme in popular
literature and culture.*

*Written to accompany
'Fourth World Man'*

JOHN QUENTIN

A Note from John Quentin

While carrying out my background research for 'Fourth World Man' (4WM) I read a lot, watched a lot and listened to a lot. Interestingly, and despite all my initial research, several things of relevance emerged even while I was writing. To be right up to date with developments, I had to change and add some things during the process of writing and editing to ensure that the new information was there. At some point, it was necessary to commit and say, 'that's it!' Maybe there will have to be a Second Edition some time soon if some major new discovery or theory emerges.

I felt that it was appropriate to offer readers of 4WM something in exchange for the privilege of having them join my mailing list. I had taken a long time to finish the book after I thought I had completed the manuscript. In the absence of having any other books to give away, I thought briefly about writing a short story or novella. But all that would have done was delayed the launch of 4WM by months.

I hit upon the idea of a discussion of how the Neanderthal fiction genre had come about and why there is such a fascination with the Neanderthals when, after all, they have been extinct for thirty-five thousand years and they only lived in Europe and Western Asia. I don't know how that idea germinated, but it did.

I wanted it to be a worthwhile and interesting guide, based on fact and testimony and not some random collection of personal opinions that was clearly assembled in haste. Perhaps typically, I ended up spending much longer on it than I had intended.

This is not an academic paper in the formal sense. I wanted it to have that sort of quality and rigour to it, but not the appearance, peppered as it would have been with references that disrupt the flow of just reading something for interest. That is why I decided not to include my references, of which there would be many, it has to be said. I also did not want to confuse the cleanliness of the text by embedding the mass of hyperlinks that would be necessary to allow any reader to go to a

relevant internet page or site. I'm sorry about that. Maybe in slower time, I will do it.

I have drawn extensively from all sorts of sources, although the only things that are in anybody else's words are the quoted excerpts from books. Everything else I have studied, interpreted my own way and changed to my own wording and style. That., I think, defines the difference between plagiarism and research.

I like to think that this item is informative and, dare I suggest, educational: doing the research for it was certainly informative and educational for me. If you are interested by what you read here, and want to consult some of the sources, it will provide you with a rich source of search terms for your own investigations. Hopefully, if you manage to read through it, and if you also manage to do some additional research stimulated by it, and (fingers crossed) you have read or are about to read 'Fourth World Man', I am sure it will also help to highlight 4WM's uniqueness within the Neanderthal genre.

Finally, I decided that I should just make it available as a download on my website, rather than as something you get by signing up. Maybe by being more accessible, it will help to spread the knowledge wider among fellow '*Neanderthalophiles*'.

I hope you read this and 'Fourth World Man', and I hope you enjoy both.

The Neanderthals in Popular Consciousness, Literature and Culture

Accepting Antiquity: Legitimising an Artistic and Literary Genre

It has only been possible to represent and portray ancient humans as figures of fact and fiction, rather than of speculation and fantasy, since human antiquity has been accepted. In European, and later in North American understanding and popular culture, and in other cultures based on them or deriving their principal influences from them, the existence of people who might have predated Adam and Eve, and been different in appearance from them, may have been suspected and was eventually postulated, but it was not readily accepted as fact until not much more than a century and a half ago.

It was generally believed that Adam and Eve had been created around six thousand years ago; just a few days after the creation of Earth itself. That there were also other types of human, not necessarily direct ancestors of the modern population, and that they interbred with each other and with the ancestors of modern humans to leave an extant residual genetic presence has only been proved within the last generation. Debate continues over their classification and naming, and whether, or not, these other now-extinct types were merely variations, or they were separate species: and, more fundamentally, whether they were humans at all. This invites discussion on the definition of 'human', and what it means to be human – or not.

In the Western cultural tradition, inspired by interpretations of the creation accounts shared by the Abrahamic faiths, it was believed that modern humans had been created in their current form some six thousand years ago: according to some even more specific interpretations, in 4004 BC[E]. Challenges to this widely and rigidly held belief began to emerge in earnest during the Enlightenment – the 'Age of Reason'. When scientific method was applied to the evidence available at the time, the idea progressively, albeit slowly, became less a matter of religious or historical dogma and more one of rationality and realisation. Although challenged by scientific reasoning, these beliefs continued to inform

scientific and popular opinion.

The middle of the nineteenth century was something of a golden age for the new scientific disciplines that had begun to emerge from the Enlightenment movement. It was characterised by an explosion of discovery. Also, by intellectual activity that enabled far more rational and objective challenges to the received wisdom of the time and to orthodoxies that had been established in antiquity or were founded on dogmatic interpretation of biblical narrative.

It may be imagined that throughout history, fossil bones and associated items and artefacts were found that could now easily be attributed to early modern humans and to other, predecessor human populations. Among these items, *ceraunia*, or 'thunderstones', created during thunderstorms and rained onto Earth, had been known since antiquity. Their significance appears to have been unappreciated, unquestioned or dismissed until speculation informed by study began to be applied. In the late 16th century, Michele Mercati, superintendent of the Vatican Botanical Gardens, collected curiosities such as fossils and minerals, including *ceraunia*. He was particularly interested in *ceraunia cuneata*: 'wedge-shaped' thunderstones. In '*Metallotheca, opus posthumum*', published in 1717 over one hundred and twenty years after his death, Mercati wrote, '*Most men believe that ceraunia are produced by lighting. Those who study history believe that they have been broken off from very hard flints by a violent blow, in the days before iron was employed for the follies of war; for the earliest men had only splinters for knives.*'

In France, in 1655 Isaac de la Peyrère published '*Prae-Adamitae*' in Latin (and in English in 1656 as '*Men Before Adam*'), wherein he set out the case for a 'pre-Adamite' race. His work attracted the opprobrium of both Catholic and Protestant as well as Jewish religious authorities. Copies of his work were burned in public and he was imprisoned briefly. Although *Prae-Adamitae* is considered to have inspired nineteenth century discourse on racial superiority, which has tainted it, at the time its principal effect was to challenge accepted biblical orthodoxy, and clerical authority, on the matter of human origins; essential for the eventual acceptance of human antiquity.

Again in France, in 1758 Antoine-Yves Goguet published '*De L'Origine des Loix, des Arts et des Sciences et leurs Progrès chez les Anciens Peuples*' (published in English in 1775 as 'The Origin of Laws, Arts and Sciences and their Progress Among the Most Ancient Nations'). He declared that a Stone Age had been followed by a Bronze Age, then an Iron Age. This classification was confirmed, and archaeological understanding developed further by the work of Danish archaeologists Christian Thomsen, Jens Worsaae and Lauritz Vedel Simonsen.

In 1790, in a brick-earth quarry at Hoxne in eastern England, John Frere studied flint items he recognised immediately on discovery as having been deliberately fabricated. He wrote a brief, two-page letter to the Society of Antiquaries, read in June 1797 but published in the society's journal, *Archæologica*, only in 1800. In it, he says of the items that, '*...They are, I think, weapons of war, fabricated and used by a people who had not the use of metals. They lay in great numbers at a depth of about twelve feet. ... and in the [overlying] stratum of sand were found some extraordinary bones, particularly a jaw-bone of enormous size, of some unknown animal...*'

In addition to his observations on the stratification of the ground and how it may have occurred, Frere also observed that '*...The situation in which these weapons were found may tempt us to refer them to a very remote period indeed; even beyond that of the present world... The manner in which they lie would lead to the persuasion that it was a place of their manufacture and not of their accidental deposit; and the numbers of them were so great that... baskets full of them [had been emptied, before they were recognised as items of historic interest,] into the ruts of the adjoining road.... If you think the above worthy the notice of the Society, you will please to lay it before them.*'

The inference of the term '*even beyond that of the present world*' was clear. His unwillingness to assert explicitly that the flints may somehow pre-date the accepted understanding of the dawn of Humanity speaks volumes for the influence of religiously inspired thought and opinion. That the society took some three years to publish the letter is damning evidence how worthy of its members notice it was considered at the time.

Little could Frere, nor the Society of Antiquaries, suspect that modern dating would establish the Hoxne flints as being around 400 000 years old.

From around 1830, in the gravels of the Somme valley in France, Jacques Boucher de Crèvecœur de Perthes began to find flints that, in his opinion, had been deliberately worked. Unaware of Frere's work, he brought to public attention the discovery near Abbeville of flint tools along with the bones of extinct elephants and rhinos. His three-volume work, '*Antiquités Celtiques et Antédiluviennes*' (Celtic and Antediluvian Antiquities), published from 1847, was not received with widespread approval at the time. Indeed, a contemporary observer wrote that '*...Contradictions, jeers, scorn were unsparingly heaped on the author.*' While he had discovered hundreds of genuine artefacts, his scientific integrity and credibility were low. He was considered something of a fantasist and dreamer; his theories were also dismissed because they did not reflect what his audience already firmly believed.

In 1858, Dr Hugh Falconer, noted Scottish geologist and palaeontologist, visited the Abbeville collection while making his way to Sicily. Aware of its significance, as it might offer conclusive proof of the association of archaic humans with long-extinct mammals, he persuaded Joseph (later, Sir Joseph) Prestwich, a noted English geologist and businessman, to visit the Somme valley. Prestwich was joined there by John (later Sir John) Evans, an antiquarian and businessman, also an expert on flint tools. During their short tour of excavations at Abbeville and Amiens, their attention was brought to the edge of a worked flint sticking out from the gravel at a site near St Acheul. It was the first Palaeolithic tool to be recorded, and the first ever to be photographed, while still in situ: the historic photograph survives to this day.

Before Prestwich and Evans presented their findings formally, Evans visited the Society of Antiquaries in London. While waiting for some friends there, he spent time looking at the display cases. On viewing one in particular, he was '*...absolutely horror-struck to see in it three or four implements precisely resembling those found at Abbeville and Amiens.*' These had been gifted to the Society by Frere when he wrote his 1797

letter. Immediately having read Frere's letter in the society's archive, Evans visited Hoxne with Prestwich. Unsurprisingly, the location figured significantly in the addresses both made to their respective learned societies to press their case for acceptance of human antiquity. Prestwich addressed the Royal Society; according to Evans his reading being well received by the very august audience that heard it. Evans himself subsequently addressed the Society of Antiquaries.

Prestwich's paper, entitled '*On the Occurrence of Flint-Implements, Associated with the Remains of Animals of Extinct Species in Beds of a Late Geological Period, in France at Amiens and Abbeville, and in England at Hoxne*', was read on 26 May 1859 and published in *Philosophical Transactions of the Royal Society of London* in January 1860: significantly quicker than Frere's letter had been published in *Archæologia* after its reading. In his conclusions, Prestwich concurs generally with the opinions of de Perthes in his assertion that the tools were made by humans. He also concludes that '*...It might be supposed that in assigning to Man an appearance at such a period, it would of necessity imply his existence during long ages beyond all exact calculations...*' Interestingly, he also concluded that, '*...The evidence, in fact, as it at present stands, does not seem to me to necessitate the carrying of Man back in past time, so much as bringing forward of the extinct animals towards our own time...*'

Prestwich includes in his Annexes a letter to him from Evans, titled '*On the Nature and the Form of the Flint Implements*'. Evans wrote, '*...Who the people were that formed them, at what period they lived... must, I am afraid, ever remain a matter for conjecture. But that these weapons and implements form as much an integral part of the deposit in which they are found as any other of its constituent flints or pebbles, I for one am convinced... Had any doubts remained upon my mind, the discovery of identical weapons at Hoxne in Suffolk, in conjunction with similar remains of extinct mammals ... recorded moreover in the 'Archæologia' sixty years ago by an antiquary unfettered by geological theories, would have sufficed to have removed them.*'

Prestwich and Evans avoided the question of the samples' age, the most

contentious issue and perhaps central to the case for ancient human life, principally because the means by which to establish accurately a date for the fabrication of the artefacts did not exist at the time. It is intriguing that Prestwich does not make the case to extend human antiquity; rather, he proposes to advance the extinction of Pleistocene megafauna. It is equally interesting that Evans observes how Frere's opinion was not influenced by wider misunderstandings or by errant theory – that is, by 'bad' science.

However deftly and appropriately the age of the Abbeville, Amiens and Hoxne flint tools and the mammal bones found in the same strata is side-stepped, general acceptance by the great scientific minds of the time of the inference that Humanity was more ancient than previously believed marked a turning point.

This was not only scientifically significant; it was also significant in literary terms. It meant that fictional depictions and accounts of ancient humans, who shared an environment with extinct giant creatures, was no longer exclusively the stuff of imaginative invention that could be dismissed, ridiculed or even punished. The acceptance of archaic Humanity as a fact not only set the scientific conditions for further investigation and eventual confirmation but also legitimised a developing artistic and literary genre.

Neanderthal Discovery

The first fossil remains found that are now confirmed as Neanderthal were a child's skull, discovered by Philippe-Charles Schmerling at Engis in Belgium in 1830, and a woman's skull, found by Lieutenant Edmund Flint at Forbes' Quarry in Gibraltar in 1848. Flint, the secretary of the Gibraltar Scientific Society, presented his discovery to the organisation on 3 March 1848. Neither the Engis, nor the Gibraltar find was formally recognised for its uniqueness at the time. A male skeleton, only partially complete, unearthed in 1856 during limestone quarrying activity in the Neanderthal (later Neandertal, (the Neander Valley), near Düsseldorf in Germany, was the first to be recognised, categorised and named, albeit only eventually, as this distinct, archaic, and long-extinct human.

There is a delicious irony about the name given to the Neanderthals. Between the localities of Hochdal and Ekrath in Germany, just east of the industrial city of Düsseldorf, is a stretch the Düssel, a minor tributary of the Rhine. There, it flows through what was once a picturesque, deep, steep-sided limestone gorge, long since widened by industrial quarrying. Properly known as the Düsselthal (Düssel Valley), the gorge was known locally as *das Gesteins* (the Rock), *das Hundsklippe* (the Dog Cliff) or simply *das Klipp* (the Cliff). From the early 19th century, the surrounding area above the gorge became known as *Neanderhöhe* (Neander Heights) and from the mid-19th century, the Düsselthal became known as the Neanderthal, or Neander Valley. The name change honoured the seventeenth-century Calvinist pastor Joachim Neander, who had lived in nearby Düsseldorf. He preached open-air services in the valley and walked there to draw inspiration for his hymn writing. His father, also Joachim, had Hellenized the family surname, as was the fashion of the time for classically-educated men of learning. The original German, Neumann, became Neander; derived from the Greek *Neos Anthropos*. In English, Neumann translates as 'Newman'; Neos Anthropos and its derivative Neander as 'New Man'.

Skeletal remains were unearthed in August 1856 in a cave near Hochdal, known as the *Kleine Feldhofer Grotte* (the Small Feldhof [Farm] Cave), located in the side of the Neanderthal gorge about 60 feet above the river level. The workmen were carrying out commercial quarrying and all that means for the care they may have had to look for fossil remains and for the preservation of any they may have found. Sixteen bones in all were salvaged from the cave at the time, including the skull cap, two fully intact femora (thigh bones), three bones from the right arm, two from the left arm, one of which shows a bad injury sustained in life, an almost complete right clavicle (collar bone) part of the left ilium (part of the pelvis) associated with the left femur, fragments of the right scapula (shoulder blade), and fragments of several ribs.

The two quarry workers who had found the bones had presumed them to be from a cave bear; remains were found in another cave just 150m away and examples of which were by then on display, for example, in the Poppelsdorf Museum in Bonn, and also in other museums in the region.

The quarry's co-owners, Wilhelm Beckershoff and Friedrich Pieper, belonged to the *Naturwissenschaftlichen Verein für Elberfeld und Barmen* (the Elberfeld and Barmen Natural Sciences Association), founded by Dr F. Carl Fuhlrott, a school science teacher in nearby Elberfeld. Pieper informed Fuhlrott of the find, and he came to the quarry to examine them, inspect the cave and talk to the quarrymen. By his own admission, it was only several weeks later that he recognised the bones as human and took them into his possession for safekeeping. It is tantalising to think, as Fuhlrott had done, that with diligence, the quarrymen could have exposed and collected a complete skeleton. Excavations of spoil residues in the 1990s, over 140 years later, long after quarrying had ceased and the cave itself had ceased to exist, revealed some additional, albeit small, parts of the original skeleton.

Notice of the find came to the attention of Professor Hermann Schaaffhausen, professor of anatomy at the University of Bonn, at the February 1857 meeting in Bonn of the *naturhistorischen Verien der preussischen Rheinlande und Westphalens* (the Natural History Society of Prussian Rhineland and Westphalen). He subsequently acquired a plaster cast of the skull fragment made in Elberfeld and, later, Fuhlrott sent him the bones for detailed examination. Schaaffhausen had previously begun to develop ideas about the nature of species and evolution. For example, in a treatise of 1853 on the longevity and transformation of species he opined that, '*...species are not immortal*'. He also passed comment on observable similarities between the physical characteristics of humans and apes, concluding, among other prescient observations that '*...the immutability of species which is considered a law of nature ... has not yet been proved.*' He was very likely unaware at the time that Darwin's '*On the Origin of Species*' was being prepared for publication.

The find was discussed further at the Society's meeting in April 1857. Unusually for a non-university academic and a schoolteacher, Fuhlrott was privileged to contribute to a presentation on the find and its subsequent examination the Society's General meeting on 2 June 1857. Fuhlrott described the discovery, the state in which the specimens had been found and his observations. Schaaffhausen provided the

interpretation and gave his anthropological opinion. He described the superficially simian (ape-like) appearance of the skull but did not attribute it to a great ape, nor to any pathological reason. His description was detailed in observation, but somewhat more cautious when it came to attribution. He suggested that the skull belonged to an individual from some wild tribe who had inhabited the area before the ancestors its Germanic inhabitants arrived.

In 1858, Schaaffhausen published his findings as '*Zur Kenntniss der ältesten Rassenschädel*' (On the Knowledge of the Oldest Racial [type] Skulls) in '*Müller's Archive*', otherwise the '*Archiv für Anatomie, Physiologie und wissenschaftliche Medizin*' (Archives of Anatomy, Physiology and Scientific Medicine). A year later, in the '*Verhandlungen des Naturhistorischen Vereins der preussischen Rheinlande und Westphalens*' (Proceedings of the Natural History Society of Prussian Rhineland and Westphalen), Fuhlrott published '*Menschliche Überreste aus einer Felsengrotte des Düsselthals - Ein Beitrag zur Frage über die Existenz fossiler Menschen*' (A Treatise on Human Remains from a Rock Cave in the Düsselthal (Düssel Valley)). The essence of the claims made by Fuhlrott and Schaaffhausen was that the bones were ante-diluvial (that is to say, they pre-dated the biblical flood) and were fossil human remains that they belonged to an '*...archetypal individual of our race.*'

The editorial comment made on Fuhlrott's piece suggested that while the article from the 'noble author' had been reproduced in full '*...we cannot help but note that we cannot share the views expressed...*' The similarity of this polite dismissal to the equally uninterested reception given to Frere's letter and his gift of specimens by the Society of Antiquaries sixty years earlier is obvious. As with Frere's opinion, the opinions of Fuhlrott and Schaaffhausen were ultimately shown to be broadly correct.

Neanderthal Resurrection: The Difficult Reanimation of a 'New Man'

Schaaffhausen's circumspect views were a reasonable reflection of the scientific thinking and, just as influentially and importantly, the pervasive religious beliefs of the time. The age of the Earth was unknown, disputed, and was routinely still described in terms of a few thousands of years. The scientific Establishment had not yet been rocked by Darwin's

‘On the Origin of Species’. For an established, respected scientist, acknowledging or postulating the existence of human types other than modern humans was difficult to countenance, given the inevitable public opprobrium and ridicule and reputational damage that would follow.

The notion would have been a direct challenge to religious orthodoxy and to the *Scala Naturae* or the ‘*Great Chain of Being*’. This grandly conceived, some believed divinely dictated, hierarchy of living things, whose origins can be traced directly to Aristotle’s ‘*Historia Animalium*’ (the History of Animals), was the accepted framework for biological thinking. In it, beneath the divine and heavenly beings and above all the creatures of the Earth, was the modern human being. The scheme did not allow for the existence of alternative or predecessor species of human. The order and the appearance of things were considered to have been fixed at the creation.

Discussion and dispute over the attribution of the Feldhofer samples continued over several years. Professor William King, professor of geology at Queen’s College, Galway, was another eminent scientist who was able to subject a cast of the skull cap to scrutiny. In 1863, he read ‘*On the Neanderthal Skull, or Reasons for believing it to belong to the Clydian Period and to a species different from that represented by Man*’ to the 33rd meeting of the British Association for the Advancement of Science in Newcastle-upon-Tyne. Despite being widely credited as the first person to attribute the remains as belonging to the genus *Homo*, and proposing a Linnaean classification, King was far from unequivocal in his attribution of the Feldhofer specimen as either definitely human or definitely simian.

The Report, published to record the proceedings of the meeting, states that ‘[Professor King] *first examined the features of the Neanderthal skull and showed that, in his point of view, it differed widely from all human crania, either recent or fossil... the [form, contours and positions of the bones of the skull] were shown to be abnormal to man, but normal to the ape. Indeed, so closely does [it] resemble that of a young chimpanzee, as almost to lead to the belief that it does not belong to the human genus. It was admitted, however, that in the absence of the facial and basal*

bones, this would be little more than a mere assumption.'

It further describes how King had asserted that, '*...considering [that the Neanderthal skull] presents only an approximate resemblance to that of man [and] that it more closely agrees with the cranial type of the chimpanzee, a creature whose faculties are unimprovable, incapable of moral and theosebic conceptions – [he] feels himself constrained to believe that the thoughts and desires which dwelt once within it never soared beyond those of the brute.*' Finally, the Report states: '*Thus the Author is led to regard the Neanderthal skull as belonging to a creature cranially and physically different from man; and he proposes to distinguish the species by the name of Homo Neanderthalensis.*'

Professor August Mayer, until 1856 a Professor at Bonn University and described by one source as '*...a resolute supporter of the Christian belief of creation in its traditionalist form,*' had been present at the meetings where his colleague Schaaffhausen had discussed and presented on the Feldhofer samples. He later undertook his own study of the fossils. His interpretations were published in 1864 in two pieces published in Müller's Archive: '*Über die fossilen Überreste eines menschlichen Schädels und Skeletes in einer Felsenhöhle des Düssel- oder Neander-Thales*' ('On the fossil remains of a human skull and skeletons in a rock cave of the Düssel- or Neander-Thal' (Düssel- or Neander Valley)) and '*Zur Frage über das Alter und die Abstammung des Menschengeschlechtes*' ('On the question of the age and pedigree of the human race').

Mayer suggested there was evidence of childhood rickets and that, given the pelvic and lower limb morphology, the sample must have come from an individual who had spent considerable time in the saddle. The 'distinguished' brow ridges he attributed to permanent worry lines, due to the constant pain of a broken arm that appeared not to have healed. The flattened shape of the skull he attributed to severe blows to the head received later in life. He surmised that the skeleton was that of a mounted Russian Cossack; a deserter who, in the chaos that attended Napoleon's retreat from Russia, had arrived in the area in 1814, crawled into the cave and died. The assessment disagreed with the then already known and accepted symptoms of rickets, especially weakened bones, as the

Neanderthal bones were thick and extremely strong. He had also clearly ignored Fuhlrott's extensive description of the state of the cave and the nature of the matrix in which the bones had been included.

At this time, the biological sciences in Germany were dominated by Professor Rudolf Virchow. He is known as the founder of social medicine and the '*father of modern pathology*': to his colleagues, he was the '*Pope of medicine*'. He founded the German Anthropological Association and the Berlin Society for Anthropology, Ethnology and Prehistory but he was an anti-evolutionist and an anti-Darwinist, reportedly calling Darwin an '*ignoramus*'. When Mayer's papers were published, Virchow was Professor of Pathological Anatomy and Physiology at the Friedrich-Wilhelms-University in Berlin and Director of the new Institute for Pathology on the premises of the Charité Universitätsmedizin Berlin. Virchow largely accepted Mayer's anatomical findings, describing the bones as coming from a deformed and damaged imbecilic human, thereby lending to Mayer's opinion his unimpeachable reputation and influence. Virchow only had the opportunity to see the Neanderthal bones in person in 1872.

King changed his thinking, possibly as a result of Mayer's opinions, although his own opinions had tended towards the sample being more simian than human, and certainly not belonging to a *Homo sapiens*. King's paper, published in the '*Quarterly Journal of Science*' in 1864, by now far more cautiously titled '*The Reputed Fossil Man of the Neanderthal*', sets out his case. He added in a footnote that, '*In [the paper read to the British Association last year] I called the fossil by the name of *Homo neanderthalensis*; but I now feel strongly inclined to believe that it is not only specifically but generically distinct from Man.*'

In 1866, Professor Ernst Haeckel, the renowned German zoologist, naturalist, marine biologist philosopher and artist (whom Virchow, when his academic supervisor, had dismissed as '*a fool*') proposed *Homo stupidus*, which indicates clearly how Neanderthals were perceived at the time. Falconer proposed *Homo Calficus* in 1868, to acknowledge the find that predated the Feldhofer discovery made in Gibraltar: in classical times known as *Mons Calpe* or *Calphe*. Other names were also

proposed: in 1897, *Homo preimigenius*, already widely accepted in Germany; among many French authors, the name *Homo mousteriensis* was in routine use (after discoveries at Le Moustier, whose name is given to the Mousterian flint-working industry). All, tellingly, allocate the type to the genus *Homo*. Despite his own later misgivings, King's name (and spelling), *Homo neanderthalensis*, prevailed because it had already been accepted. As such, it was also immune to the 1904 change to German spelling convention, which saw Neander-*thal* become Neander-*tal*. Fuhlrott's sample, known either as 'Neanderthal-1' or 'Feldhofer-1', is the holotype Neanderthal specimen.

In 1868, under a rock overhang at a hill called Cro-Magnon in the Périgord Noir region of southwestern France, preparations for a new railway formation led to the discovery of the remains of five individuals, including one complete male skeleton, alongside flint tools and broken animal bones. This find was received very differently to that from the Feldhofer cave in the Neanderthal. The Cro-Magnon examples were recognised and accepted as being very old human remains. This discovery confirmed that humans, however ancient, had always looked the same as they looked today.

This uneasy accommodation of an uncertain, confused and distant past was again disrupted in 1886 by the discovery by Marcel de Puydt and Max Loehst of two skeletons at Spy, in Belgium. The morphology of both skulls was comparable to the Feldhofer example; one, in particular, seemed identical. They were found with primitive stone tools and the bones of extinct animals. While Virchow dismissed these as further examples of diseased and damaged modern humans, others could not accept the coincidence of the skulls' pathological deformity at such significant physical separation. Scientists were compelled to concede that an archaic people, certainly distinct from, but also similar to, modern humans had once inhabited parts of Europe.

From the 1860s onwards, numerous stone tools were excavated from the Dordogne region of Southwest France, suggesting that it had been a significant population centre. From 1908 onwards, a series of magnificent Neanderthal fossils was discovered there. The first was the

skeleton of an old man in a the bouffia Bonneval cave near the village of La Chappelle-aux-Saints, discovered by three 'modernist' Roman Catholic clerics, les Abbés Jean Bouyssonie; his brother, Amédée, and their colleague Louis Bardon. From a nearby cave at Le Moustier, which had previously yielded quantities of stone implements, came the skeleton of a youth. Other finds followed. The completeness of these fossils gave scientists the opportunity to compare and contrast modern humans with Neanderthals, and to replace subjective, qualitative speculation with objective, quantitative analysis. It is interesting that this comparison and contrast with archaic modern humans, Cro-Magnons, is the precept for most of the fictional literature that features Neanderthals.

The male skeleton from La Chappelle-aux-Saints, being the most complete, was selected to undergo detailed reconstruction at the Muséum National d'Histoire Naturelle, the French national natural history museum, in Paris. The Bouyssonie brothers took the sample to the diligent and respected palaeontologist Marcellin de Boule, whom they knew to be sympathetic towards their progressive but nonetheless clerical position on human evolution and history.

Despite the quality of the material, Boule's reconstruction embodies what are now seen as serious errors. He created a shuffling hunchback whose posture and gait would have been decidedly non-human. Perhaps even worse were the study's conclusions with respect to the subject's low intellect and base instincts, reflecting earlier pronouncements on the vacuous, dark, brutish nature of the Neanderthal character. He showed in detail how similar the vertebrae were to chimpanzee vertebrae and how, in this respect, they differed from human vertebrae. He also ignored the large endocranial cavity – which defines the volume of the brain – and chose to focus on the long, low skull, which he equated with the extremely low intellect of the great apes. He, like King before him, rated his Neanderthal man's intelligence and character as being more simian than human. These pronouncements distorted the public understanding and perception of Neanderthals for decades.

Boule's own academic position of authority was cemented in 1910 when he was pointed as head of the *Institut pour Anthropologie Humaine*. His

exhaustive and extensive study, *'L'homme fossile de La Chapelle-aux-Saints'* (The Fossil Man of Chapelle-aux-Saints), was published in three volumes between 1911 and 1913. Boule's work was considered so detailed, precise, credible and authoritative that, after its publication, very little was said or discussed to support the alternative hypothesis that Neanderthals were genuine human ancestors.

He wrote of the *'...brutish appearance of this muscular and clumsy body, and of the heavy-jawed skull that declares the predominance of a purely vegetative or bestial kind over the functions of the mind... What a contrast with the men of the next period, the men of the Cro-Magnon type, who had a more elegant body, a finer head, an upright and spacious brow, and who have left behind so much evidence of their material skill, their artistic and religious preoccupations and their abstract faculties – and who were the first to merit the glorious title of Homo sapiens!'*

If *Homo sapiens* was indeed a chronospecies, and Neanderthals were an ancestor population, there should, surely, be evidence of that in the continuous evolutionary line. The absence from the fossil record of any example that suggested a transition from Neanderthal to Cro-Magnon appeared to refute the possibility. This evolutionary discontinuity was reinforced in some locations by toolless, 'sterile' strata between deposits attributable to Neanderthals and those to Cro-Magnons. There are also noteworthy cultural differences between the two populations, such as the types of tools and artefacts they fabricated. Without an intermediate fossil, it was perhaps not unreasonable at the time to assume that the Cro-Magnons derived from some stock that had lived in Europe or elsewhere in the world during, or even possibly before the era in which the Neanderthals inhabited Europe and that they were therefore unrelated.

It appeared that Boule conceded only with reluctance that the Neanderthals merited inclusion in the genus *Homo*, but he was emphatic that they were a separate, inferior species to *Homo sapiens* that had deservedly long since died out. Thus, he perpetuated the negative and dismissive opinions that had been aired by King fifty years earlier. Boule's opinions influenced thinking, representation and depiction of

Neanderthals for decades to come. He himself persisted in proffering his views which remained resolutely fixed, in some cases repeating his earlier terminology. His work assumed almost canonical, orthographic status.

Writing in 1920 in *'Les Hommes Fossiles - Éléments de Paléontologie Humaine'* (Fossil Men, Elements of Human Palaeontology, 1923), he reiterated and reemphasised his position, and inspired future disparaging descriptions similar to his own. *'...This human type, which exhibits many characteristics of inferiority, must be known... by the name of Homo neanderthalensis. ...This fossil Man often exhibits an infantile morphology...the most surprising and striking traits of which are found in either the newly born or unborn infant Europeans. The crouching position, habitual to fossil Man and savage peoples is likewise an ancestral survival. Neanderthal Man represents a stage in this evolution certainly already far from the starting point, a stage closely resembling the modern state of man, but still quite distinct from it. ...[T]he uniformity, simplicity and rudeness of his stone implements, and the probable absence of all traces of any preoccupation of an aesthetic or of a moral kind, are quite in agreement with the brutish appearance of this energetic and clumsy body, of the heavy-jawed skull which itself still declares the predominance of functions of a purely vegetative or bestial kind over the functions of the mind.'*

Boule also considered the relationship between *Homo sapiens* and *Homo neanderthalensis*, not in linear evolutionary terms but in terms of two distinct types that at some point may have coexisted. He offered another, similarly prescient comment on the likelihood of interbreeding. *'Further, we cannot affirm than an infusion of Neanderthaloid blood, by way of hybridisation, never entered into other human groups belonging to the branch, or to one of the branches of Homo sapiens. But this infusion could only have been casual and had no great influence, as no modern human type can be considered as a direct descendent, even with modifications, of the Neanderthal type.'* Although he was eventually proved as incorrect in this gross assertion as he was for his skeletal reconstruction, Boule nonetheless informed opinion on this particular matter into the first decade of the 21st century. For the scientific gauntlet

this observation threw down, he is seldom given acknowledgement or credit.

Boule's study not only informed scientific opinion but also the artistic depiction of Neanderthals. The first of four of the more famous and widely reproduced is an image by the artist František Krupka based on Boule's reconstruction, and apparently approved by him, certainly at first; later, he distanced himself from certain aspects and the accompanying commentary. It appeared in 1909; first, in *'L'Illustration'* in Paris and shortly thereafter, titled *'An Ancestor: A Man from 20 000 Years Ago'*, in the *'London Illustrated News'*. It shows a hunched, hirsute creature, forward-leaning with malicious intent on his simian face; club in one hand, stone in the other, hiding behind a boulder outside a primitive, nest-like abode in a cliff face, waiting in ambush. Boule wrote of artistic depiction in *Les Hommes Fossils* that, *'...the artist is at full liberty to attempt to produce works of imagination, original in character and striking in appearance; but men of science – and of conscience – know too well the difficulties of such attempts to regard them as anything but pastimes and recreations.'*

The second comprises a series of wax models, commissioned by The Field Museum of Natural History in Chicago, and installed in 1929. The most familiar of these shows a hunched, pathetic figure; he is far less virile, capable or imaginative looking even than Krupka's depiction. The only exception to this general pattern is the third in this group; a depiction which appeared in the *'London Illustrated News'* in 1911. It was commissioned by respected British anthropologist Sir Arthur Keith, at the time custodian of the collection of the Royal College of Surgeons (where the Gibraltar skull resides); rendered by the artist Sir Amédée Forestier, and tellingly titled, *'Not in the 'Gorilla' Stage: The Man of 500,000 Years Ago.'*

It is the only well-known image of its era which, despite some incidental inaccuracies, suggests a decidedly 'human' being. It portrays a modern-looking Neanderthal male sat by a homely fire knapping a flint, the necessary paraphernalia by his side. Although it has something of the Victorian 'hearth and home' theme to its composition, it is both

sympathetic and informed in a way echoed by far more accurately informed modern works.

The fourth is '*The Flint Workers of the River Vezere*', a mural depicting one of several 'Impressions of the Pleistocene' commissioned by for the American Museum of Natural History in New York by prominent American palaeontologist Henry Fairfield Osborn. The work was rendered by the artist Charles R. King under Osborn's direction. It was installed in the 'Hall of the Age of Man' in time for the 1921 International Eugenics Committee, hosted by the museum and chaired by Osborn. It shown a Neanderthal family outside a cave entrance, alerted by some threat. They are shown mostly in profile, in order to highlight the morphology of their heads and bodies. The characterisations are almost laughably contrived; reminiscent more of cartoon characters than the serious depictions of which the accomplished Knight was eminently capable. They are in stark contrast to the graceful, thoughtful, clothed and adorned Cro-Magnons engaged in cave art, their activity illuminated by lamp-bearers, in the starkly juxtaposed '*Cro-Magnon Artists Painting in Font-de-Gaume, France.*'

Keith published a study titled '*Ancient Types of Man*' in 1912. In it, he does not make the same bold pronouncements on the Neanderthal character as Boule felt able to, based only on bone and skeletal morphology. He makes some prescient and some more fanciful pronouncements, but they are, nonetheless, very interesting in light of subsequent discoveries and possibilities. He wrote, '*...As yet we have only obtained a few glimpses of the men of this ... period. A fuller knowledge will show how this remarkable race stands to modern man. In the writer's opinion, the Neanderthal type represents the stock from which all modern races have arisen... At the first glance the native of Central Africa has little [physically] in common with the native of Central Europe, and yet an unprejudiced survey will show that on the whole [both] have a greater similarity in structure than either have to the Neanderthal type. ...Yet the Neanderthal type seems the parent stock, and it is probable that while Neanderthal man was the dominating race in glacial Europe, another branch of the same stock was shaping towards the modern form outside the bounds of that continent.*'

He added, *'...No intermediate forms have yet been discovered in Europe or elsewhere. The transition from one type [of archaic human] to the other appears to have taken place suddenly. ...The sudden change we, who [might] see the change taking place, know to be a replacement, not a transformation, of race. Glacial Europe was evidently the scene of a similar change of type; but in this case the change was greater than that now [being] seen in Australia, for a very ancient species of man was replaced by what is here named the modern type.'*

Finally, and of interest not only in light of continuously developing understanding of genetic engineering but also for the possibilities it creates for fictional depictions, Keith wrote at the conclusion of the 'Neanderthal' chapter, *'The peculiar characteristics of the Neanderthal type appear to be under the particular domination of the small pituitary gland at the base of the brain. When this gland becomes enlarged, as it occasionally does in the disease known as acromegaly, the Neanderthal characteristics are developed in the subjects of the disease in an exaggerated and bizarre form. The functions of the pituitary appear to afford a key to Neanderthal characteristics. There are grounds for believing that, as our knowledge of the body increases, it may be possible to reproduce in modern man by experimental features all the various features of head and body which characterise the Neanderthal type.'*

In 1915, Osborn published *'Men of the Old Stone Age, their Environment, Life and Art.'* Where it addresses the Neanderthals, it offers an almost hagiographic reiteration of Boule's work. He describes how Boule's *'...almost faultless monograph aroused world-wide interest in the Neanderthal race.'* He adds that *'...the Neanderthal skull is shown to be nearer to that of the anthropoid apes than to that of Homo sapiens. This conclusion, arrived at by [Gustav] Schwalbe, in 1901, has been more than confirmed by Boule's masterly study.'* Osborn also cites Aleš Hrdlička, Bohemian-American anthropologist and curator of the Smithsonian Institution's physical anthropology collections, in his opinion that *'... the Neanderthals partly evolved into the lower races of Homo sapiens... but even contribut[ed] to the higher race of the Cro-Magnons.'*

He also holds that traces of Neanderthal blood and physiognomy are not lacking even among modern Europeans. A contrary view is set forth [by the Author (i.e. Osborn)]... namely, the Neanderthals are a side branch of the human race which became wholly extinct. ...This view the author shares with Boule and Schwalbe...'

Osborn's concluding remarks on the disappearance of the Neanderthals are prescient. He writes, '*...There is some reason to believe that the Neanderthals were degenerating physically and industrially during the very severe conditions of life of the fourth glaciation, but the consequent diminution in numbers would not account for their total extinction, and we are inclined to attribute this to the entrance into the whole Neanderthal country of western Europe...of a new and highly superior race...'*

Grafton (later Sir Grafton) Elliot Smith, a noted Australian-born British anthropologist and professor at University College, London, wrote in his 1924 essay '*The Evolution of Man*'. In describing Boule's three-volume work as 'masterly', and in failing to offer any similar opinions to those proposed by Keith, it is easy to see where Grafton Smith draws the inspiration for this highly opinionated description based on the study of a selection of fossilised skeletal remains. He asserts that the Chapelle-aux-Saints fossil gives a '*...clear-cut picture of the uncouth and repellent Neanderthal man. His short, thickset and coarsely-built body was carried in a half-stooping slouch upon short, powerful and half-flexed legs of peculiarly ungraceful form. His thick neck sloped forward from the broad shoulders to support the massive flattened head, which protruded forward, so as to form an unbroken curve of neck and back, in place of the alternation of curves which is one of the graces of the truly erect Homo sapiens.*'

His description continues, '*...The heavy overhanging eyebrow-ridges and retreating forehead, the great coarse face with its large eye sockets, broad nose, and receding chin, combined to complete the picture of unattractiveness, which it is more probable than not was still further emphasised by a shaggy covering of hair over most of the body. The arms were relatively short, and the exceptionally large hands lacked the delicacy and the nicely balanced co-operation of thumb and fingers which*

is regarded as one of the most distinctive of human characteristics. The contemplation of all these features emphasises the reality of the fact that the Neanderthal Man belongs to some other species than Homo sapiens'.

Anthropology textbooks and museum dioramas of the post-Boule era, inspired and advised by his work as evidenced from the examples of Osborn and Elliot Smith, mostly tended to depict Neanderthals as having the same bow-legged, knees-bent, stooped posture, with slumped shoulders and hunched back. They are lumpen and hirsute, and their faces are shown as being human but always ugly and coarse. Their facial expressions range from total vacuity, through downcast and melancholy to primitively aggressive. Their appearances are characterised by poses and clothing that is strongly influenced both by condescending opinions of so-called primitive or 'savage' cultures and by Judaeo-Christian religiously inspired body modesty; their family relationships and circumstances by similarly influenced morality. Their activities tend to be depicted as low and generally banal.

While first Boule (and, by inference, later Osborn), then Keith commissioned their depictions based on interpretation of the same skeleton, the two images were rendered significantly differently by their respective artists. In each case, the commissioning scientist's own views on human evolution and the Neanderthals' place in it, seen above, were embodied into their reconstructions. The pictures represent, in simplistic but clear visual terms, two different sets of theories and opinions: some aspects of which are shared by both; some opposed. In having their depictions published in mass-appeal media, both scientists were attempting to influence popular opinion in favour of their particular view. With no other sources of reference for public opinion than whatever these scientists chose to publish outside purely academic literature, such articles as appeared in *L'illustration* and the *London Illustrated News* became the scripts for popular discourse, as did the later dioramas and murals on display in museums.

It could be said that Boule's depiction, in becoming fixed and definitive, had effectively become conceptually petrified and part of the fossil record

itself. The need for peer review and for academic papers to survey the literature to establish the foregoing 'state of the art' contributed to the perpetuation of the myth Boule had created. Whenever his work was cited and quoted it was given continued visibility by its continuous recirculation. Ironic, this, as these validation processes are intended to prevent uninformed and unreferenced speculation becoming accepted fact.

Perhaps the greatest irony to attend the issue of Boule's reconstruction is that when the 'Old Man' skeleton was re-examined in 1957 by anatomists William L Strauss and AJE Cave, their study '*Pathology and the Posture of Neanderthal Man*', reported in the *Quarterly Journal of Biology*, concluded that he had suffered from severe, deforming osteoarthritis. This alone was not, however, sufficient justification for the excessively hunched, stooped stance Boule gave him: nor was there any evidence that the man's toes were opposable, as Boule had shown. Their paper surmised that in his depiction, Boule had failed to present the facts evident in the skeleton and had created an image that reflected his own prejudices and his opinion that the Neanderthals were '*...the withered branch of an evolutionary line coincident with, but independent of, that line leading to man of modern aspect.*'

It was Strauss and Cave who first suggested the essential modernity and humanity of the Neanderthals, by offering that '*...if [the Old Man of La Chapelle-aux-Saints] could be reincarnated, and placed in a New York subway – provided he were bathed, shaved and dressed in modern clothing – it is doubtful whether he would attract any more attention than any other of its denizens.*' Images of this imagined occurrence are now used to attempt to portray the Neanderthals in a more favourable light, drawing attention as it does to their likeness in the broadest sense to modern humans.

Popular Culture and the Appeal of the Neanderthals

The long drawn-out acceptance of human antiquity and of the existence of Neanderthals as another form of now-extinct human life has interesting parallels with the current acceleration in discovery and understanding, and the emergence into accepted mainstream popular culture of a literary

genre which explores these ancient people, their lives and their environment. At first, detailed observation and description was not necessarily matched by bold imagination, either in science or popular culture. Thought and opinion remained resolutely orthodox, prescribed and constrained by long-established beliefs and traditions; received wisdom and Establishment opinion.

Now, few such religiously pious or other cultural constraints influence theory, opinion, depiction and description. Scientific activity and expression are restrained only by resources, ethics and morality. Cultural activity, while broader in potential scope and able to tend to the fantastical, has far more supporting information available than the first authors and artists engaging in the genre could ever have imagined might be possible. Both the scientific and the cultural depictions and descriptions of archaic humans reflect, to a degree, the contemporary science and the society and its continuously evolving mores in which, and for whom, they are created. Thus, each provides a metaphor for consideration of the other.

Popular culture, comprising literature and art, itself extending to cinema, is illustrative and, where it is properly informative, tends to avoid being overly didactic, in order that it can be seen as accessible and appealing: more entertainment rather than education. Ideally, authors and artists aspire that their work be both popular and commercially successful. Each form enables the creator to incorporate subtexts and meaning and to entertain, inform and educate, as they wish, in different ways.

Depiction in art is particularly powerful, as it is readily accessible and instantaneously effective. Visual depiction can inform and influence through both faithful and fanciful representation, as well as through the use of sublime or more obvious symbolism. It can complement or challenge an argument as well as reflect, refract and recolour it. By being able to offer a compelling and credible image or sense, an artist has the power to suggest that what is being depicted is somehow both 'known' and 'understood'. Popular opinion about what sort of people the Neanderthals were very likely still owes more to the depictions that were derived from Boule's work than to any number of subsequent academic

papers suggesting alternative views, despite the more recent portrayals of Neanderthals as 'people like us', albeit just a little different, that are progressively challenging and changing that view. The rate of change away from the opinions created by Boule's work is considerably slower, despite the weight of evidence, than the rate at which it helped to form and harden these opinions.

Novels are equally accessible in principle but require a different form of engagement to visual art. Art can be consumed passively and instantaneously, whereas a novel requires actively to be read and understood; and reading takes time. Novels can cover a period of time and a range of circumstances whereas an image offers only a snapshot, which is a fair reflection of how they are consumed. By using informed descriptive narrative, credible dialogue, appropriate action and compelling plot, novels can convey, among other things, character and morality. They can offer comparison and contrast between the archaic world and the contemporary world, and their respective societies and people, in a way that imagery, especially still images, can; but in a different way and to a different degree. Cinematic representation, in film and increasingly in popular documentaries, combines certain characteristics of both static art and literature while having its own unique characteristics.

For the development of popular opinion informed by popular culture, each medium represents one leg of a three-legged stool. One or other may give a stronger message and, by inference, one or another message may be weaker; but it is necessary for a broad and credible view that all three are present and are adequately strong.

It is possible for artists and authors depicting Palaeolithic-era hominins – early modern humans and Neanderthals – to commit errors when illustrating and discussing their general morphology and their likely appearance; their probable diet; artefact and tool-making; the climate of the time and the locale and the endemic fauna and flora. This is because these have all left exploitable, interpretable evidence. In recent years, a considerable amount of additional physical evidence has been found and interpreted, using far more powerful analysis techniques than were

available just a decade ago.

Authoritative facts and justifiable hypotheses are being evidenced by the likes of DNA sequencing, ice core sampling and complex spectroscopy. It is now possible to be wrong about the climate in a certain period, and to be wrong about habitat and diet. It is easier to make a mistake about these than it is about the people as individuals, and their culture, because there is scant evidence upon which to base what can, therefore, at best be no more than informed supposition and guesswork.

Early modern humans of the Cro-Magnon type left not only their skeletons to be discovered, but also evidence of their culture in the form of artefacts and lithographs. Anyone who has visited a publicly accessible painted cave, such as the Grotte du Pech Merle near Cahors in Southwest France, cannot but be moved in the presence of art that is bold, recognisable, representative and well over 20 000 years old. But it is neither possible nor appropriate to assess from the few artists' works that have been found what the artists themselves were like as individuals.

The Neanderthals, who were not what is loosely termed 'anatomically modern humans', also left their skeletons to be discovered. Those of somewhere around 400 different individuals have now been found. Despite their great age, these fossils have yielded DNA that can be extracted, sequenced and analysed. Plaque from their teeth has been analysed and inferences drawn about age, health, diet and lifestyle. And in recent years, Neanderthal artefacts, such as pierced shells and bird feathers and fire-hardened wooden spears have been excavated. Latterly, cave paintings have been attributed to them. Still, nothing definite is known of them as individuals, and nothing about their society and culture.

Although it is understood that they could speak, it is still not known for certain whether they used coherent speech and complex language to communicate, nor how it sounded. Guesses can be made about the extent to which abstract thought may have been evident in Neanderthal communities. Slightly better-informed guesses can be made about their relationships with modern humans, given the DNA evidence for interbreeding. Nonetheless, nobody depicting or writing about

Neanderthal society, and especially Neanderthal personalities and characters, can in any absolute sense be 'right' or 'wrong' about them as individuals.

The language and the depictions used in more modern works are more recognisable and often more acceptable to a modern audience than are older works. Contemporary works may draw on more detailed evidence that was available hitherto and may thus be more technically accurate where that is possible, and more relevant. But they are also just as likely to reflect the accepted and acceptable scientific and social opinion and comment current at the time of writing as anything depicted or written previously was a reflection of the same issues of its time.

When previous views are different to today's, and they are possibly no longer accepted or acceptable, it is easy to dismiss older work, despite the fact that relative to its social and scientific context, it may have been more prescient, original and challenging. It is easy to consider that the older works are somehow more 'wrong' while considering that more modern works are, by contrast, more 'right.'

The Neanderthals appeal not only to palaeoanthropologists and to other scientists but also to artists and authors because they enable investigation and discussion of what it means to be human, in the sense of being a *Homo sapiens*, and what it might have meant not to be human, while still being a human, in the sense of being a *Homo neanderthalensis*. In the age of apology for apparent, alleged and actual historical wrongs, it is also possible, especially for authors, to explore the ethical and moral implications of Neanderthal extinction, and the extent to which modern humans might have hastened, contributed to or deliberately caused it. Now that definitive genetic evidence for human-Neanderthal hybridisation through interbreeding between contiguous populations has been adduced, the appeal of the Neanderthals, and especially the nature of their encounters with modern, 'Cro-Magnon' humans, *Homo sapiens*, has been given an added, factually supported dimension.

Human Prehistory in Literature in the First Age of Discovery

To suggest that the second half of the 19th century was the golden age of human palaeontology would be wrong. If any age is the golden age, it is the present, thanks largely to advances in DNA analysis that has replaced speculation with hard fact derived from hard fossil evidence. For that reason, the second half of the 19th century is referred to in this context as the 'first age of discovery'. The depiction of archaic hominins, taken to mean modern humans and Neanderthals, in popular fiction began in France in the middle of the nineteenth century, when discoveries such as those at Neanderthal were being unearthed and while the acceptance of human antiquity in all its forms was still a matter being debated by the Establishment.

The prehistoric human genre as it is now understood began in France. In 1861, *'Paris Avant les Hommes'* (Paris before Man), by Pierre Boitard, was published posthumously; Boitard died in 1859, the year Darwin's 'On the Origin of Species' was published. It is often identified as 'the first prehistoric novel' and 'the first Darwinian narrative.' It is not so much a novel in the truest sense: it is more a fantastical narrative, taking the reader on a magical guided tour of the Earth from its far past as far as the appearance of primitive humans.

Samuel-Henry Berthoud produced *'Aventures des Os d'un Géant'* (Adventures of the Giant's Bones) in 1862, inspired by the paleontological research of the time. In 1865, in *'L'Homme Depuis Cinq Mille Ans'* (Man since five thousand years ago), he traced the human journey from the prehistory to the far future. Meanwhile, Jules Verne's *'Voyage au Centre de la Terre'* (Journey to the Centre of the Earth) reports the discoveries of Boucher de Perthes. In 1876, Élie Berthet produced *'Le Monde Inconnu'* (The Unknown World), *'Les Parisiens à l'âge de la Pierre'* (Parisians of the Stone Age) and in 1888 Ernest d'Hervilly related the *'Aventures d'un Petit Garçon Préhistorique en France'* (The Adventures of a Young Prehistoric Boy in France).

The most prolific and critically studied of the early French-language writers in this genre is J-H Rosny. This was the pseudonym of Joseph Henri Boëx, a Belgian. Joseph published as J-H Rosny; between 1893 and 1907, he wrote jointly with his brother, Séraphin Justin Boëx, under

the same pseudonym. After their split, Joseph published as J-H Rosny *aîné* (the Elder); Justin used the name J-H Rosny *jeune* (the Younger). It is clear to students of their work that Joseph, J-H Rosny *aîné*, was the more prolific of the two and the majority contributor to their joint works. In the prehistoric fiction genre, works attributable to J-H Rosny include 'Vamireh, roman des temps primitifs' (Vamireh, a novel of primitive times) published in 1892; followed in 1893 by 'Eyrimah' and in 1897 by 'Nomai, amours lacustres' (Nomai: a lakeside romance). The best-known of Rosny's works and the one which has attracted considerable scholarly attention, as well as wider popular interest, is 'La Guerre du Feu' (The War for Fire) published in 1909 and made into the 1981 Canadian film 'The Quest for Fire.'

Rosny benefitted from the recent and ongoing discoveries of a new branch of science, of which he was an assiduous observer. It has been said of his work in this area that, unlike the essentially didactic – informative and educational – objectives of authors such as Jules Verne, he preferred allusion and symbolism and set out not to create some form of literary reference but to create a literary *œuvre*. He was informed by the science of his time, drawing on Gabriel de Mortillet's description of Neanderthal appearance and characteristics. Had he been writing later, it is likely that he would have been similarly inspired by Boule's work, which was in progress at the time *La Guerre du Feu* was being written.

These early works of fiction were clearly informed by science. If not necessarily falling into the Science Fiction genre, they certainly conform to the general principle of being Fiction with Science. While not necessarily focussing on Neanderthals, since their existence was only then being accepted and was still a matter for debate, they offered the public a view of history that had not previously been explored through the medium of popular culture. Thus, they set the cultural conditions for all later works, whether they be 'hard', technically accurate scientifically informed fiction or superficially improbable fantasy, whose precepts have some basis in fact and in scientific understanding.

The Classic Literary Portrayals of Neanderthals

Academic studies, specifically of Neanderthals, in popular culture in the

English language all tend to include and to focus on three milestone publications: '*The Grisly Folk*', by HG Wells (1921); '*The Inheritors*', by Sir William Golding (1953) and '*The Clan of the Cave Bear*' by Jean M Auel (1980) (the first in her '*Earth's Children*' series); each separated, interestingly, by a generation gap of thirty or so years. Also worthy of note and study is 'Dance of the Tiger' by Bjorn Kurtén (1980 (English): originally '*Den Svarta Tigern*' (Swedish) 1978). Kurtén was, unlike Wells, Golding or Auel, an academic subject matter expert, having a Chair in palaeontology at the University of Helsinki from 1972 until his death in 1988. The representation of Neanderthals in each of these novels reflects the thinking about them as people and their relationships with modern humans, as well as certain of the social mores in the authors' own societies current at the time of writing. Inevitably, the authors' own prejudices are evident.

It is worthy of note when discussing *The Grisly Folk* that the short story published in the United States in the *Saturday Evening Post* on 12 March 1921 had the fuller title 'The Grisly Folk and their War with Men'. Just by dint of its very unflattering title, in long and short form, the novel suggests that Neanderthals are considered low and brutish in appearance, demeanour and behaviour: aggressive, predatory and ill-disposed towards humans. Humans whose noble superiority was not to be impugned by unfavourable comparisons to the primitive, somehow wilfully atavistic Neanderthals of the type characterised by Boule's descriptions and depictions.

Wells conjures up monsters, with features and behaviours that are reminiscent of predatory and competing fauna: bears, wolves and apes. Among their cannibalistic practices, his Neanderthals eat human children which is a literary artifice intended to appal and disgust. It is ironic that at the time Wells wrote *The Grisly Folk*, human cannibalism was still practised in some more physically remote parts of the world. These human practitioners would, presumably, also have been categorised as somehow inhuman, even sub-human, by most European, American and Asian writers.

It is worthy of note that among Wells' great *œuvre* are two works which

also describe Palaeolithic life: '*A Story of the Stone Age*' (1899) and '*The Science of Life*' (1929). In both, prehistoric humans are described more objectively and accurately than in '*The Grisly Folk*'. Students of the genre, and of Wells in particular, ascribe this not to his misinterpretation of the scientific knowledge of the time, but to the bad science that was prevalent at the time. Both the earlier and latter works were not poorly informed by the distorted opinions of the early 1920s. The images in '*The Grisly Folk*' are clearly derived from Boule's work and draw inspiration, if not specific references, from the pronouncements of the likes of King and Virchow; still informing opinion fifty and more years after they were published.

Golding's *The Inheritors* begins with a quotation from Wells' '*Outline of History*' but the story is in considerable contrast to '*The Grisly Folk*'. It is seen through the eyes of the Neanderthals, rather than those of the 'modern' humans. Golding portrays his Neanderthals as having a mixture of venal bestiality and innocent childishness. They are naïve, vulnerable and live in a stable and sustainable but precarious continuum. They seem animal-like because of their appearance and their low level of evolution. They are hirsute; they avoid water; they grin inanely with fear and they use scent rather than sentience, as many simian primates do. They have an unfamiliar way of recalling memories and their perception of them seems uncertain. Their needs are simple, basic and tend to the base. Their encounters with the newly arriving modern humans are laughably one-sided.

The Neanderthals, despite the advantages of being adapted to their environment, are unable to cope with the sudden intrusion of uncertainty and wilful malevolence into their lives, borne by the humans. While it shows the modern humans as the aggressors, displacing the Neanderthals merely by coming into proximity with them, it is clear that the prevalent scientific thinking of the day is of the mentally-underdeveloped Neanderthal; easy prey for the violent and capable humans who cannot but drive them out and onwards to eventual extinction. When asked of the research put into writing *The Inheritors*, Golding is reported as claiming he '*...had read all there was to read*' and added that, '*...if you found a contradiction between Neanderthal man as*

he is now and Neanderthal man as I wrote about him, my guess is you will find that it has been discovered since. It is interesting to speculate what influence Strauss and Cave's 1957 reinterpretation of Boule's depiction and their observation on the invisibility of a Neanderthal in the New York subway may have had on Golding's depiction.

Of the four, Kurtén's novel is the most technically sophisticated and factual: it even includes an addendum with comments on the environmental setting of his story, and a summary of his argument. In striking contrast to the characters in *The Grisly Folk* and *The Inheritors*, Kurtén's Neanderthals essentially 'human': comparable to modern humans but also different. Both groups – human and Neanderthals – lived in fixed locations. They had long distance contacts, complex beliefs systems and recognisably modern communications, relationships and social structures. Any differences in their outward appearance were superficial and reflect what was known at the time.

In '*The Clan of the Cave Bear*,' Jean M Auel's Neanderthals are also comparable to modern humans. These Neanderthals do not, for example, conform to a single stereotype; they are portrayed as being just as variable as modern humans in character, temperament and behaviour. Their daily lives revolve around a fixed base camp and the daily tasks necessary for survival. Their patriarchal social hierarchy is structured and purposeful; complex and ritualised. Her depiction of the Neanderthals and minutely detailed descriptions of activities such as flint knapping in the style practised by them is arguably flawless for its time; it was and continues to be lauded by anthropologists around the world. The book, the first in her '*Earth's Children*' series, was made into the 1986 film of the same name.

While the overall impression is of a civilised group comparable to modern hunter-gatherers, Neanderthals are also seen as more innocent, pure and spiritual than the humans that succeed them. They have an additional sense: access to the knowledge of past generations through regression achieved by shared ritual telepathy. The principal weakness Auel gives to her Neanderthals, which will be the principal cause ritually of their incipient extinction, is the fixedness of their ways which contrasts

starkly with the capacity of humans to adapt and change. They are portrayed as a species separate from, and incompatible with modern humans, which limits the extent to which they can be seen as 'human'.

Plot analysis of each of these four works by students of the genre has revealed a common theme. In each, the Homo sapiens characters begin with a conceptual or a physical journey, the necessity of which has been brought about by a change. They overcome tests and trials which they endure and in which they succeed and finally achieve some end goal. This gives meaning to the journey and challenges from which they have emerged triumphant. Importantly, the Neanderthals are mostly incidental to the key, 'human', narrative and tend not to be the focus of the principal theme. Whereas the humans triumph, overcome and can continue, the Neanderthals are doomed to extinction simply through contiguous coexistence with humans. This may or may not have been the principal cause of their eventual extinction. It seems likely that it is at least part of the reason. In this respect, this theme is a reasonable reflection of the ultimate fate of the Neanderthals.

Depiction and Representation Themes and Examples

Aside from the historically representative replacement of Neanderthals by modern humans that is explored in classic Neanderthal fiction that studies life in the Pleistocene, there are several recurring themes that provide the vehicle for the depiction and representation of Neanderthals in popular culture. Broadly, these are: discovery of remnant Neanderthal populations in isolated locations by modern voyagers or explorers; Neanderthal survivors living among the present population; alternative worlds in which Neanderthals live and prosper; time-travelling Neanderthals coming to the modern world and time-travel by contemporary humans to the Neanderthal world; and the resurrection of Neanderthals by humans, either as clones or hybrids, using genetic engineering. It need not be said that of all these, only one has any 'hard' scientific basis for validity and that the others tend more towards inventive fantasy. A few selected examples are described for interest. By necessity, the selection is extracted from the English language titles and is focussed on depictions of Neanderthals, rather than broadly on

Palaeolithic humans.

Of the relatively few contemporary stories set exclusively in the Pleistocene; their focus is on the relationships between the different humans present at the time. *'Ki'Ti's Story, 75 000 BC - Winds of Change, a Prehistoric Fiction Series on the Peopling of the Americas'* published in 2012 is the first of a series of novels by American writer Bonnye Matthews. It is a coming of age story of a girl predestined to lead her people. It is the tale of how three different groups of people, Neanderthals, Cro-Magnons, and, somewhat implausibly, Homo erectus meet and become 'the People'. The story begins as they race to avoid the ashfall from a super-volcano, which is modelled on the eruption of Mount Toba. The story explores Neanderthal life based on interpretation of up-to-date science.

Lost World and surviving remnant themed stories owe much to Sir Arthur Conan Doyle's 1912 novel *'The Lost World'* and to *'The Land that Time Forgot,'* published in 1918 by Edgar Rice Burroughs; the second novel in his *'Caspak'* trilogy. In the Neanderthal fiction genre based on lost worlds and surviving populations, *'Dian of the Lost Land'* is a 1935 novel by American writer Edison Marshall. It follows the usual template for lost world adventures. Essentially, an expedition visits a hidden world in the Antarctic populated by people who are more or less identical to the Cro-Magnons and whose hereditary enemies are essentially Neanderthals. The eponymous Dian is their living goddess ruler.

The surviving Neanderthals in modern society theme is explored by, among others, *'The Gnarly Man'* by American writer L. Sprague de Camp, which appeared in the magazine *'Unknown'* in June 1939. It is about a Neanderthal Man, originally Shining Hawk but now called Clarence Aloysius Gaffney, who is an immortal, 50 000-year-old Neanderthal. He gained immortality when struck by lightning in his youth and has survived from the Pleistocene into the present on his wits and on the periphery of society and events. At the time he is employed in a freak show as 'Ungo-Bungo', the ape-man. Ungo-Bungo is approachable but circumspect about his past and reluctant to submit to medical examination. With persuasion, he reluctantly consents in return for

surgery to correct some old injuries. He discovers just in time that the surgeon who is to perform his operations secretly intends to dissect him. Having escaped, he sends his apologies and regrets to those who have befriended and aided him.

'*The Alley Man*', a short story by American writer Philip José Farmer, was originally published in '*The Magazine of Fantasy and Science Fiction*' in 1959. It is clearly inspired by '*The Gnarly Man*'. It tells of the life of Old Man Paley (the Palaeolithic man), who may or may not be the last Neanderthal still alive in the 20th century. He is seen battling against the false inheritors of the Earth

'*The Ogre*' by Avram Davidson, a Jewish-American author was published in *If - Science Fiction* magazine in July 1959. It recounts the presentation of a gift to a museum. The donor, a new member of staff describes how in the mid-sixteenth century, a boy in rural Germany had been snatched by a forest ogre as a companion for its own sick child. The ogres all die eventually and are buried in their cave. The human child returns and, once rehabilitated, his story is consigned to the village archive. The donor spends several years subtly trying to locate the cave. When he finally does, he unearths the remains and recognises the skeletons as Neanderthal. His gift to the museum is a skull: more, the promise of the remaining skeletons. The museum director sees an opportunity for himself and, ironically, kills the kindly professor and buries him in the museum cellar. '*The Ogre*' is a Neanderthal survival story which, as some scholars have done, associates inherited memory of the Neanderthals with folk tales of ogres.

'*Eaters of the Dead*' is a novel by Michael Crichton, published in 1976. The story is about Ahmad ibn Fadlan, a 10th-century Muslim Arab, who travels with a group of Vikings to their settlement. Ibn Fadlan and the Vikings do battle with the 'mist-monsters', or 'wendol'; a tribe of vicious savages suggested by the narrator possibly to have been relict Neanderthals, who go to battle wearing bear skins (this affectation being the origin of the term '*Berserker*'). The novel was adapted into the 1999 film '*The 13th Warrior*.'

'*Neanderthal*' is a novel written by American writer John Darnton,

published in 1996. The plot revolves around two scientists sent by the US government to search for a missing anthropologist. Their only clue is the skull of a Neanderthal. Carbon dating shows that the skull, which should be around 40,000 years old, coinciding with conservative estimates for the time of Neanderthal extinction, is actually only 25 years old. The Russian and American governments are competing to study the surviving Neanderthals in the remote mountains of Tajikistan, in order to learn more about their 'remote viewing', based apparently on their superior eyesight and capacity for telepathy. The Neanderthal population is divided into two tribes: one is peaceful and lives in a valley. The other is violent and cannibalistic and lives in the mountains. The explorers are captured by cannibal Neanderthals and must try to escape which they hope to do without jeopardizing the peaceful tribe. Inevitably, it is necessary to train the peaceful tribe for war. The novel explains that a completely peaceful society like that was doomed in any case and would have been destroyed soon by the mountain tribe. It is also interesting that the presence of modern humans changes the Neanderthals and hastens the destruction of their society.

In '*The Silk Code*' by American author Paul Levinson, published in 1999, a police forensic investigator pursuing murder cases encounters bewildering and unfamiliar biotechnology among the Amish; a community known to eschew modernity. A sub-plot follows a young boy on a voyage of discovery in the past. He encounters the 'Singers', who are heavy-browed, heavy-jawed, stocky and enormously strong but who communicate by singing. His quest is to find out why people whom he knows develop unknown, fatal diseases that turn them into 'Singers' before they die. He discovers that the Neanderthals harnessed the natural world and have survived. The forensic investigator discovers, through a convoluted plot, that the biotechnology the Amish are using was developed by the Neanderthals. The story also shows, through complex forensic means, including people dying of mysterious diseases and appearing in death to resemble Neanderthals (and whose bones show they are 30 000 years old when carbon-dated), that there are Neanderthals still living in the modern world.

'*American Neolithic*', by American author Terence Hawkins, published in

2014, is set in a near-future, dystopian American society where creationism holds legal sway over theories of evolution. After an unusual-looking suspect who lives on the fringes of society is accused of murder, a DNA test shows that he is not human: he is a Neanderthal. He and a few others of his kind have been living in secret in a 'nest', in an abandoned New York building. The suspect's lawyer reveals his client's genetic identity in public and both become embroiled in a nationwide storm of debate and legal action over the theory of evolution. The story is highly flavoured with political and social observations, imagery and symbolism. Whereas the Neanderthal man eschews violence and is contemplative and, the modern human population of the United States is portrayed as profoundly apathetic and ignorant. Described by reviewers as '*...a towering work of speculative fiction*', this cautionary tale explores what it is to be human and what it is to be human-like, but not like a human, in a society created by modern humans.

Among the Alternative Worlds and Alternative History theme is '*The Goblin Reservation*' by American writer Clifford D. Simak, published in 1968. It is set in the distant future when the Earth has been transformed into a university planet where creatures from all over the galaxy come to study, teach, and be entertained. One of the facilities is Time University: devoted to slipping through time and discovering the truth about past events. Entities from the past are brought forward in time to be interviewed, studied and to provide entertainment for the people of the future. Among these are 'Alley Oop', a very smart, if at times crude, Neanderthal rescued from certain death in the past and educated in the future.

'*Down in the Bottomlands*' is a novella by American writer Harry Turtledove, first published in 1993 in the magazine '*Analog*'. It takes place in an alternative history where the Atlantic Ocean did not reflow the Mediterranean Sea. The story concerns a field biologist from a *Homo neanderthalensis* nation who indirectly uncovers a plot to flood the bottomlands by triggering a seismic event that will lead to flooding. This will benefit a rival, *Homo sapiens*, nation. It thus perpetuates the suggestion that the two are incapable of peaceful coexistence.

'The Neanderthal Parallax' is a trilogy of novels written by Canadian author Robert J. Sawyer. The three volumes are *'Hominids'* (2002), *'Humans'* (2003), and *'Hybrids'* (2003). It depicts the effects of the opening of a connection between two versions of Earth in different parallel universes: the world familiar to the reader, and another where Neanderthals became the dominant intelligent hominid. The societal, spiritual and technological differences between the two worlds form the focus of the story. The first contact between the two parallel but different worlds occurs at the Sudbury Neutrino Observatory in Sudbury, Ontario, which is also the location of a scientific research facility in the Neanderthal world.

In *'The Neanderthal Parallax'* certain features of the respective societies are sufficiently different for the circumstances to enable comparison and contrast and to explore the meaning of these things in contemporary human society. These include such things as environmental awareness and sustainability; collective endeavour such as agriculture, work and their rewards; gender roles and relationships; crime and punishment; inclusion and diversity; imposed and voluntary eugenics and religion and beliefs. The story ends before any large-scale intermingling and rationalization of the two races' science can begin, so the ultimate outcome of detailed comparison between these viewpoints is unknown.

In the time travel theme, *'The Ugly Little Boy'* by the Isaac Asimov is a science fiction short story first published in the September 1958 issue of *'Galaxy Science Fiction'* magazine under the title *'Lastborn'*. It deals with a Neanderthal child brought to the present day in a time machine. As the boy cannot, for technical reasons, be too far from the machine, the organisation who has transported him hires a nanny to look after him. At first, she finds his appearance repulsive. Soon, however, she begins to regard him as her own child. She grows to love him; she realises that he is far more intelligent than she first imagined; she attempts to create a proper childhood for him, as far as is possible. Her maternal love for the boy brings her into conflict with her employers, for whom he is more of an experimental animal than a human being. When sufficient data has been gathered from studying him, it is intended that he return to his own time. She realises that he is too 'modern' and too 'human' to return. In

attempting to prevent it, she is accidentally transported back with him. Asimov has said that this was his second- or third-favourite of his own stories.

In 1992, *'The Ugly Little Boy'* was expanded into a novel of the same title in collaboration with author Robert Silverberg (published as *'Child of Time'* in the UK). It introduces the boy's Neanderthal tribe, who are shown sympathetically. They are articulate and live in a complex and sophisticated society, contradicting the view of them as 'primitive brutes' the scientists had developed in their assessment of the boy. The two storylines converge when the nanny decides to go back to the past with the boy. Her arrival coincides with the crisis point in the relationship between the Neanderthals and the Cro-Magnons. Both see her as a goddess to be worshiped, which averts conflict. The ending suggests that in this 'modified' past Neanderthals and Cro-Magnon would cooperate; a bond cemented by common worship of the goddess and her boy. Neanderthals would then not become extinct but could coexist with the Cro-Magnons, possibly interbreeding with them, which would change the whole of subsequent human history.

Advances in technology and public awareness of cloning technology were brought sharply into focus with the unveiling of 'Dolly' the sheep; the first surviving, successfully cloned large mammal, born in 1996. In *'Raising Abel'* by American writing duo W. Michael and Kathleen Gear, published in 2002, the authors explore the controversial issue of human cloning and genetic engineering. A human anthropologist has secretly cloned embryos from glacier-frozen cells and implanted these into human host mothers. The resulting children, four years old in the novel, have superior capabilities which counter the traditional view of the stereotypical dumb Neanderthal. His purpose is to have living examples of other human species which will debunk the biblical 'creationist' view of human existence and evolution. The scientists involved in the plot are targeted by creationists for brutal assassination which will ultimately lead them to the children for whom the same fate may be expected. While principally a thriller, the story of humans pursuing Neanderthals to extinction and religiously inspired ideas denying their existence and any link to modern humans is also a human palaeontological allegory.

'*Relic*' is a novella by American author Johnathan Brookes, published in 2013 and the first in a series. Intriguingly, while Brookes is credited as the author, the text is by Michael Polia. Brookes says that he gave documentary evidence of a genuine, military genetic engineering programme to Polia, who converted it into the novella. In the story, a secretive military unit wants to embody Neanderthal characteristics into humans to create super-soldiers, who possess enhanced strength, robustness and resilience. DNA is extracted from fossil Neanderthal remains and combined with that of a scientist, who incidentally has an unusually high Neanderthal DNA quotient. The story includes anthropological and biological insights and explores the social and moral issues of such a project, as well as worst case scenarios of a covert military project which has potentially catastrophic global significance. 'Relic II' is the sequel, which follows efforts to hide the evidence and to keep the information, and a child born as a result of the experiments, from the hands of contractors who are intent on using the information for their own ends.

In his eleventh book of the Sigma Force series, '*The Bone Labyrinth*', published in 2015, American author James Rollins explores the complex issues of the origins of human intelligence and the phenomenon on 'hybrid vigour'; the improvements that can result from interbreeding between closely-related species that may have been evident in early human-Neanderthal hybrids. The story begins with the discovery by a group of scientists working in a remote site in Croatia of a subterranean Catholic chapel, hidden for centuries, which holds the bones of a Neanderthal woman. In the same cavern system, elaborate primitive paintings tell the story of an immense battle between tribes of Neanderthals and monstrous shadowy figures. One of the scientists is investigating the origin of human intelligence and in her laboratory is working with a *homosimian*: a hybrid that has Gorilla and Neanderthal genes. The archaeologists are attacked at the same time as the primate research centre. The Sigma Force operators uncover a dark conspiracy; one that will use genetic engineering to not only trace the evolution of human intelligence to its source, but to resurrect an ancient foe and threaten the future of humanity. The novel combines science, technology

and folklore to explore what it is to be human and how what humans are today are derived from their genetically complex past.

There is an addendum to this section, which is a separate genre that might reasonably be described as 'popular science literature.' In recent decades, scientists have produced non-fiction works which are not only educational and informative but also entertaining. This has parallels with, for example, the scientifically informed depictions commissioned by Boule and Keith which appeared in '*L'illustration*' and The '*London Illustrated News*'. They are written by today's palaeontology and palaeogenetics grandees, whose names appear in any serious internet search for information on the Neanderthals. Often, they are very 'human' stories that describe not only the Neanderthals but also describe the author's engagement with their work and with the subjects of their work. These include the likes of books by renowned palaeontologists such as: '*In Search of the Neanderthals – Solving the Puzzle of Human Origins*,' (1993) by Professor Chris Stringer of London's Natural History Museum and Professor Clive Gamble of Southampton University; '*Lone Survivors: How We Came to Be the Only Humans on Earth*,' by Chris Stringer; '*The Humans Who Went Extinct: Why Neanderthals Died Out and We Survived*,' (2010) and '*The Smart Neanderthal: Bird catching, Cave Art, and the Cognitive Revolution*' (2019) by Professor Clive Finlayson, director of the Gibraltar Museum.

Since the decoding and publication of the Neanderthal Genome in 2010, books by palaeogeneticists studying the Neanderthals and their relationships with modern humans through their DNA have joined those written by palaeontologists. The definitive work that includes this momentous achievement, among other momentous achievements, is '*Neanderthal Man: In Search of Lost Genomes*,' by Professor Svante Pääbo, Director of the Department of Genetics at the Max Planck Institute for Evolutionary Anthropology in Leipzig. The most recent is '*Who We Are and How We Got Here: Ancient DNA and the New Science of the Human Past*,' (2018) by Professor David Reich, of the Department of Genetics, Harvard University.

Conclusion

It is the discoveries and the opinions of today's scientists that provide today's scientific opinion. Authors depicting and describing Neanderthals can only be credible and authoritative, in the contemporary context, if their work is informed by these scientists' work. Understanding and knowledge have increased beyond what earlier generations may have believed possible. But even in this, the real 'golden age' of human palaeontology, the principle remains as it has been since the Palaeolithic fiction genre emerged, that realistic fictional depictions and descriptions of the day must still be informed by the science of the day, regardless of by how much and when it may be superseded by the science and knowledge of tomorrow.

The more we discover about them, it seems the more fascinating and intriguing the Neanderthals become. The more we learn, the more appropriate it is that art and literature depict and describe them using that new knowledge. The Neanderthals fascinate us and have done ever since scientists realised that there had been a species like us. Learning about the Neanderthals has led to research revealing that they were not the only other human species on Earth along with our ancestors. The more we learn about the Neanderthals, the more we learn about ourselves. Studying and writing about the Neanderthals, especially about modern humans and Neanderthals is a complex conceptual instrument that reflects, refracts, recolours and reveals not just who they were but who we were, who we are, and what we might be.