



Mrs Mistle Thrush...



...with her babies

The first tree to blossom in our garden is the *Umbrella Magnolia*. When we arrived at Agecroft it was in the middle of the lawn we wished to use as a tennis court! We replanted it nearer the house, where it struggled for 20 years, until it suddenly decided to grow at an enormous rate, and turned into the perfect climbing tree for grandchildren, just like the one sculpted by Vigeland in the Oslo park. Now every year son Mark has to prune it back three foot!

It is a glorious tree to watch through the seasons. The flower buds form at the beginning of winter when the astonishing long red seedpods, that look like oversized bananas covered with red jellybeans, are still hanging from the branches. In early spring, before any leaves form, the buds blossom into large soft leathery flowers of the most dazzling white you can imagine. The oldest flower fossil yet discovered is that of the magnolia, dated at an unbelievable 100 million years! When the flower petals fall the foliage starts to grow and eventually covers the tree with a mass of enormous parchment-stiff leaves of the most luscious green that turn to a blazing russet in the autumn.



Umbrella Magnolia

Planting trees and watching them grow is without doubt one of the most satisfying tasks one can undertake and compares to watching one's own children grow! I am not surprised that many primitive peoples still worship trees. When Charlemagne became a Christian he forbade the worship by a German tribe of an ancient oak called *Irmisul* on which they sacrificed humans by hanging them from the branches and letting them bleed to death to please the gods! They refused to obey his command so he had the tree cut down and all the people put to the sword then burnt the dead on a giant bonfire thereby establishing Christianity as the only religion!



Another of our favourite trees is the *Robinia* that turns the most stunning yellow, but unfortunately they are short lived, has died and been felled. It was like losing a friend. England is blessed with deciduous trees so it is not only specimens like Robinia that give us golden colour in the autumn, but also the beeches and hornbeams, oaks and ash, willows and chestnuts.



Robinia, pseudo acacia

One of Margie's joys is to collect a fallen apple from an old cider tree and, having first crushed it, feeds bits to the horses that occupy the fields surrounding the orchard. It is her special joy to share this moment with a grandchild, especially when the mares have foals. Margie has had an ongoing love affair with horses! It started with 'Daisy-Roots' on the farm and has continued spasmodically throughout our marriage. I took my favourite photo of Margie on horseback in the Atlas Mountains of Morocco. The country was wild and the scenery spectacular with magnificent bright blue skies. To enjoy all this on horseback while England was shivering in the bitterly cold March east wind as it howled through the white *blackthorn* blossom was almost too much to take, but we managed somehow, and for a whole sunny week!



Margie's Moroccan Mount

A souvenir-seller visited our hotel and spread the lawn with local pottery. He also set up a table to display Cambrian fossils. One in particular caught my eye because it looked quite different to all the trilobites I had ever seen, having a spine on its head. I found out later that it was only a common *arthropod*, a group of creatures that includes everything from lobsters to centipedes. However, common or not, some arthropods lay eggs through their elbows while others urinate through their heads! Mine was only 1½ inches long but 500 million years old. I gave it to grandson William as it was his father Tim who had introduced the family to fossil hunting by organising a trip for his 12th birthday to the famous Jurassic cliffs of Lyme Regis to hunt for them in the slippery grey clay. We found some spectacular fossils, but golly did we get in a mess doing so!



Arthropod, 500 million years old

Spiral ammonites are common in Somerset and Tim discovered several in the sandstone walls of Agecroft. He also found one in a quarry in Wiltshire that was a foot across and whose worm-like body had a cross section as round as an orange. Once upon a time the sea was seething with these creatures!

Rocks hold more surprises than just fossils of long extinct animals. If you go back further in time you find the evidence of amazing cyclical patterns in the earth's climate. Walking along the cliff edge with the family in north Cornwall this year we came across a quite incredible example of strata that had been laid down on a sea bed long before being stood on end and then worn down to look like a barcode on the back of this book! The repeating pattern recorded such a vast stretch of time that it made my mind reel.



Tim measuring 'time' on the rock strata of north Cornwall

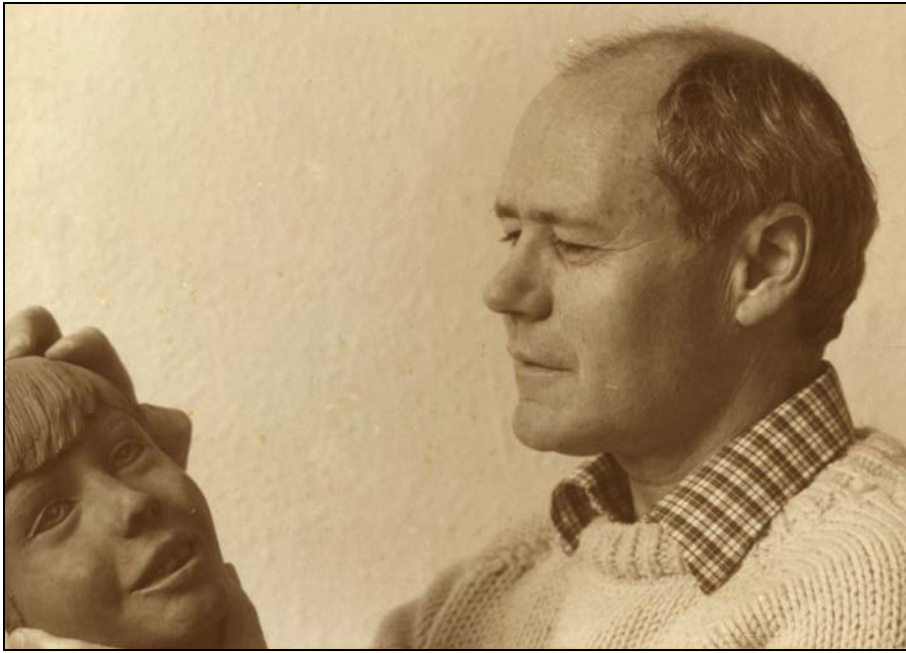
I have never enjoyed visiting zoos although I do realise their value and the essential role they play for children who have little hope of ever seeing the animals in the wild. When Margie and I were in Florida putting up a sculpture we went to Sea World to watch the *dolphins* and it turned out to be one of the happiest mornings we have ever spent. The animals were so obviously enjoying showing off, you could not but help join in the fun.

To think that they were originally land mammals that returned to the sea is quite staggering! Darwin once said that he believed if a bear swam around in a river eating insects long enough it would, after several million years, turn into a whale! I read he always regretted having said that, but I think it sums up whales rather well, as *humpbacks* swallow up to two tons of tiny *shrimps* a day!



Dolphin

I have already written about my passion for babies' feet so I won't go into that again, but I do believe that the greatest evolutionary miracle of all is our ability to walk upright. Not only is that a miracle in itself, but it also frees our hands! I believe one of the greatest pleasures in life comes from using one's fingers. From watching a pianist at the keyboard to a woman with her knitting needles, is a visual joy. Dexterity is miraculous to watch from making sausages to milking cows, even watching a really good typist, or my young friend David programming my computer! Being a sculptor has allowed me to enjoy some of this pleasure. Although not quite in the same bracket as playing the piano or even knitting, modelling clay with your thumbs is one of the most satisfying actions imaginable. Whether you are modelling the human figure before moulding it or digging out the clay afterwards, getting your fingers in there to do the work is sheer bliss. The feel of the clay in your hands is very sensual as I am sure the artist who modelled the Tuc d'Audoubert *Bison* 17,000 years ago knew all too well. [p 982] Scientists tell me that to control our thumbs takes more brain power than is used in the whole of our chest, including breathing and heart action! I am also told that the natives in the backwaters of the Amazon spend more time grinding shells into discs (using their thumbs) to make necklaces for adornment than hunting game in the forest to eat!



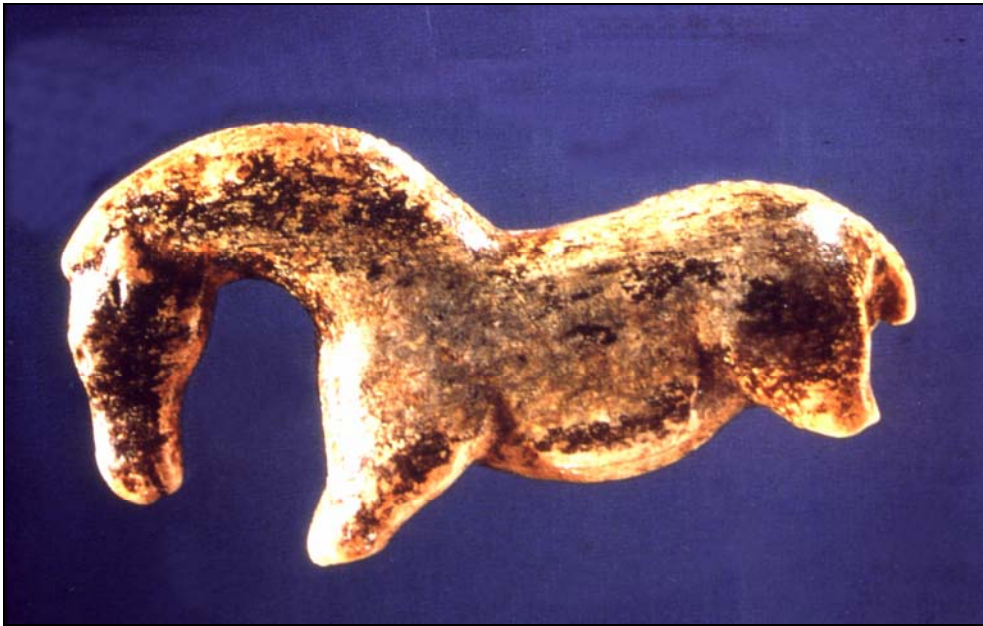
Modelling clay with your thumbs...



...or digging it from a plaster mould...

Homo sapiens is obsessed by *creativity*, and *sculpture* is one of the oldest ways in which we show it. The creative instinct is deep inside all of us and I am sure that during the long European winters our Neolithic ancestors spent hours

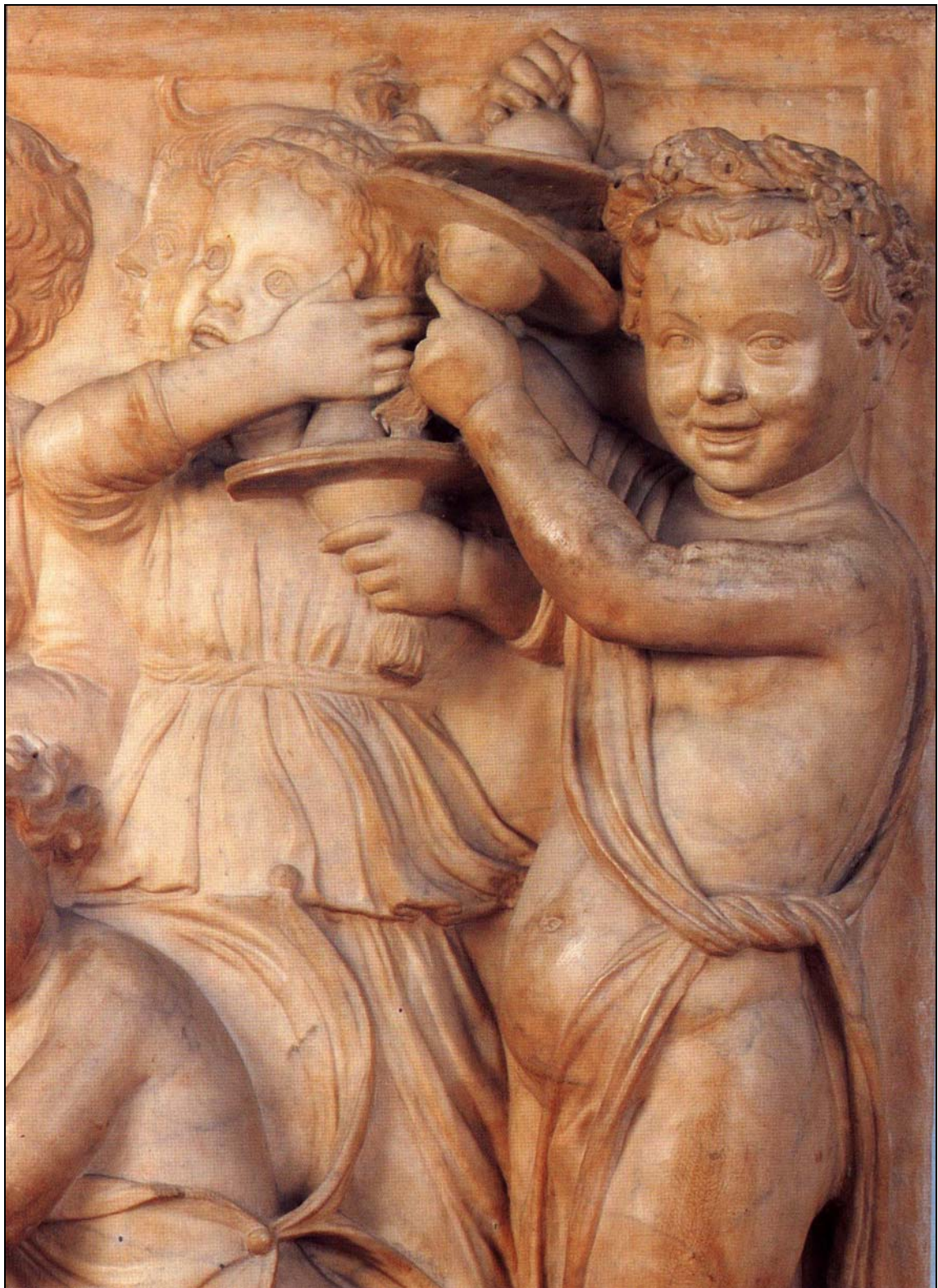
carving figures like the 2½ inch long masterpiece named the Vogelherd Horse, sculpted from a tiny piece of mammoth tusk around 32,000 BC.



... or carving the 'Vogelherd Horse'...

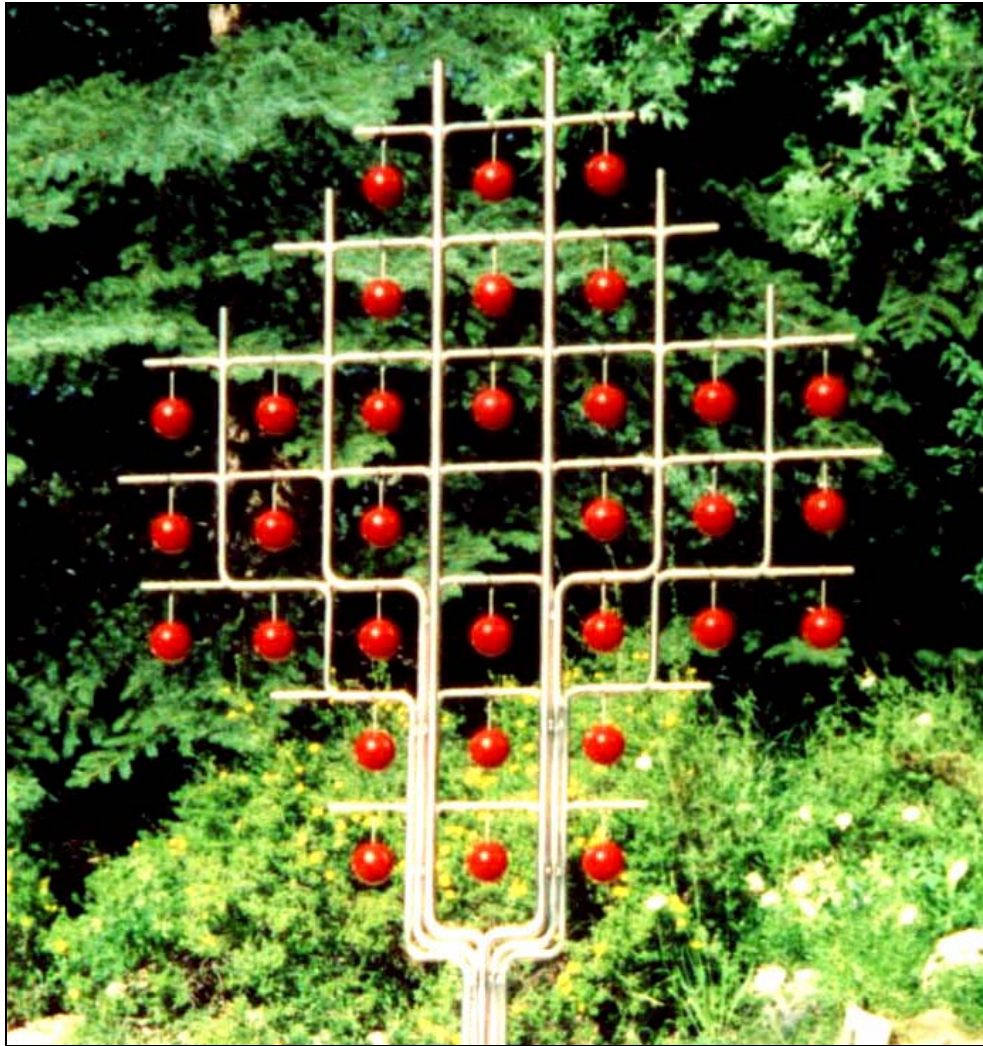


...or knapping a 'Mayan' flint...



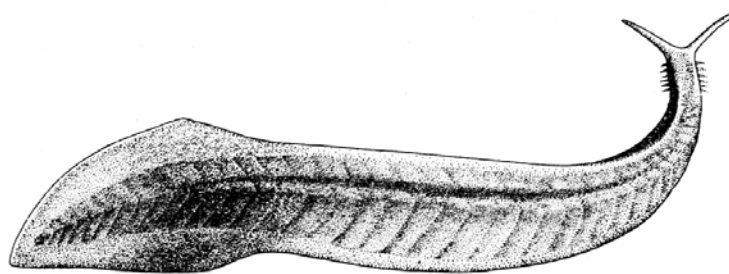
...or carving marble as only 'Luca della Robbia' could do...

...it is creativity that drives us forward



'Culture' or 'Tree of Knowledge'

Culture is our Master. The ape's hair has been replaced with a *cloak of culture* to hide *Homo sapiens's* nakedness and although we have the brains to solve the solitaire puzzle using two hands at the same time, we should always remember that we are descended from a little flat worm named *Pikaia* that was nearly wiped out by the Cambrian Extinction. The fossil was discovered high in the Rocky Mountains in the *Burgess Shale* by Charles Doolittle Walcott in 1909.



Pikaia

Dated at 530 million years, Pikaia is the oldest recorded *Chordate*. Being a chordate means that it has a stiffened nerve rod along its back, which is the bit that eventually evolved into *Homo sapiens's* spinal column! Pikaia is the ancestor of not only humans, but also everything from shark to robin to orangutan, according to Peter Jay Gould. If Pikaia had not survived the Cambrian Extinction, none of us would be here! This irrefutable fact convinces me that we are truly unique beings and all alone in a very large universe!

Everything one learns about *evolution* is sobering. Many scientists have stated that in their opinion 99% of all forms of life that have evolved in the past are now extinct! And yet the vast majority of people living in the world today believe either that, *evolution is nonsense*, or, just as unbelievable, *that it has ceased*, and that *Homo sapiens* is the final step in the process of development! For me, and in the broadest sense, the Big Bang was just the first *recorded* event in the *process of evolution*, which has no beginning and no end, *all matter being eternal*. (p 1245 Epicurus *Physics*)

With regard to Mankind's time clock scientists claim it is now thought to have started ticking a mere seven million years ago in Africa with the primate named Toumai, near Lake Chad in southern Sahara seven million years ago. This ape creature slowly evolved into Heidelbergensis by 800,000 years ago. Heidelbergensis *walked* out of Africa and peopled the entire world from Britain to China. It is thought that Heidelbergensis evolved into the Neanderthal people that occupied Europe for 200,000 years, dying out 30,000 years ago. While the Neanderthal peoples were gambling around Europe, *Homo sapiens* evolved in the Rift Valleys just south of the Equator in Africa. We have proof from our mtDNA that although we may have shared a common ancestor with the Neanderthal millions of years ago, we have no close genetic link with them.

We now have a record of the earth's climate over the last 420,000 years. This has been obtained from the 2 mile long Vostok ice core recently drilled in Antarctica. Over the last 420,000 years there have been *five major interglacial periods* separated by *four ice ages*. The time between ice ages averaged 110,000 years and the sea levels during this time vary approximately from 0 to 600 foot. The sea level *presently stands at 400 foot* on this scale, but at the time of the dinosaurs the sea level was at 600 foot, *200 higher than now*, while at the height of the last ice age 20,000 years ago it was at 0, or *400 foot below the present levels*.

Around 80,000 years ago the sea levels were low enough for a clan of Modern Humans to cross from Ethiopia to Yemen at the southern end of the Red Sea, at a place called *The Gates of Grief*. Scientists can tell this from the mtDNA that the women carried across the water and passed to their children, proving that every single modern human living *outside of Africa today* is descended from those women. (*Out of Eden* by Stephen Oppenheimer. p 1243)

Surely the question we should ask ourselves is "Why should this process of human evolution stop?" It just isn't possible that we are the final product! Evolution is *continuous*, a never ending process.

In fact, we are very fortunate to have got this far as 74,000 years ago the Earth's most recent eruption of a super-volcano took place in Sumatra at a place called Mt Toba. This eruption created one of the largest lakes in the world. It is 1,400 foot deep and covers an area of 329 square miles!

Much more important than the scenic change left by Toba was the dust and gas cloud the eruption ejected into the Earth's atmosphere that was so great it blocked out the sun and caused a six-year-long winter that was followed by a 1,000-year Ice Age! Scientists such as Professors Stanley Ambrose and Chris Stringer have estimated that only *10,000 adults* survived the eruption! The world's present population of billions of humans are the descendants of this handful of survivors. The Toba eruption split the population of the world in half by burying southern India with 15 foot of ash! The catastrophic conditions left tiny pockets of survivors to the east and west of Sumatra, regionalising their evolution as they adapted to the new environments, like Darwin's finches. Not for many thousands of years did the survivors mingle again when they met in Siberia. The 2004 Boxing Day tsunami that occurred off northern Sumatra could indicate that the magna chamber below Toba is refilling!

CLICK HERE: www.BradshawFoundation.com. *Peopling the World*

I believe the next generation of *Homo sapiens sapiens* is already here and I call them *Homo tex*. They are the product of the present *intelligent technological* explosion and have already made themselves the masters of our destiny through the computer and the internet, just as the Neanderthal were mastered by *Homo sapiens* who possessed better organising skills.

I see all this as very exciting, just as all the previous chance happenings of evolution have been. It was a colossal leap forward when Modern Humans escaped 'Out of Africa' only 80,000 years ago. We colonised Australia by boat 60,000 years ago, painted Chauvet 35,000 years ago, built Stonehenge and the Pyramids, created magnificent Art, as well as inventing the wheel! Incredible things have been achieved in the last 100 years, such as *Walking on the Moon*. Imagine what *Homo tex* will do over the next 100 years? Then imagine what *Homo futurus*, the people that follow *Homo tex*, will achieve! *Will they escape from the Earth?* If so how far will they travel out into in the Universe? Imagining the amazing possibilities leave me gasping like a fish out of water! I keep on remembering that my mother flew on the first commercial flight to Paris in 1920, with only room for two passengers. Now we have a Space Station!

In 1933 a professor, with the magnificent name of Fritz Zwicky, suggested that most of the universe was *invisible*, and proposed that *Dark Matter* accounted for the evolution of all cosmic structure after the *Big Bang* when *Space and Time* came into existence. My friend Carlos Frenk and his colleagues at the Institute of Computational Cosmology, Durham University, have created a computer simulation of the 'Standard Model of the Universe' that they calculate consists of 23% *Dark Matter*, made up of infinitesimal particles they call *WIMPs*.

To prove the existence of a WIMP, experiments are taking place right now underground in a potash mine near Durham. Added to the 23% of Dark Matter, the universe is made up of 4% *Visible Matter*, the stuff we can see and Epicurus called *atoms*. The missing 73% is an unknown called *Dark Energy*!

The Hubble telescope has recently photographed the universe's 'shadow' proving that the universe soap bubble is expanding, or, to put it bluntly, being torn apart! The scientists are proposing that alongside our bubble are other bubbles and that they are all joined together by umbilical cords of gravity that pass through the *Black Holes* that gobble up our universe's visible and invisible matter and spew it out the other side through *White Exits* as *Parallel Universes*!



*'Journey' reflected in Hubble's fisheye
Institute for Computational Cosmology quadrangle, Durham University*



Carlos Frenk, 'Journey' and our 'Quad'



Matisse Goldfish guard the Hubble lens under 'Journey'



Starburst
Institute for Computational Cosmology



Damon unveiling 'Force of Nature' outside the Peter Ogden Centre

Carlos promised to take Damon and me down the potash mine to look for WIMPs after the unveiling of the sculptures. True to his word Carlos, Mike and Alie drove us to Boulby Mine. We donned bright red suits, boots and helmets then set off for the main shaft after a lecture by our guide Jamie on what to do with our gas masks if there was an underground explosion!



'Dark Matter' explorers Damon and Carlos

The mine is 4,000 foot deep and has more than 300 miles of drives that are the size of a main road underpass extending for three miles beneath the sea towards Denmark! Each year a further 30 miles of tunnels are dug. The potash lies in a thick bed above a bed of rock salt, the remains of a fossil sea that existed 250 million years ago stretching between England and Germany.

The cage holds 12 people, and as there were only six of us, we were quite comfortable for the ride down into the underworld, that took only six or seven minutes, all in the pitch black. We reached the salt strata and started along the drive towards the specially built *Dark Matter* laboratory.

After walking for about five minutes we arrived at a door set into the wall, and, feeling like 'Alice in Wonderland', we passed through into a small grey room furnished as a building site canteen. Here Carlos initiated us into the sacred 'Rites of Dark Matter'. Wearing plastic bonnets over our boots, Carlos led us into a side room through a shower curtain. With the tension mounting and the adrenalin pumping we climbed through it and found ourselves in a completely empty gallery, some 100 foot long! It was all a bit like the final scene in the film *2001*, but no furniture. I am not sure what I had expected to see 4,000 foot under the North Sea, but it certainly wasn't an empty grey room!

To be truthful the room was not quite empty because there was a trestle table with what looked like a 'Mr Henry' vacuum cleaner sitting on it. We were told that this was an early model 'Zeplin', and contained four kilograms of the noble gas, Xenon, and that *if* a WIMP hit the nucleus of a Xenon atom, a detector would pick up the signal. The problem is, although 1,000,000 WIMPs continually pass through each cubic centimetre of the Earth, travelling at hundreds of miles per second, not one has yet bumped into a Xenon atom!

It was all a bit hard to fathom and made me think of the story about the Lone Ranger and Tonto going camping in the desert: *After they got their tent set up, both men fell sound asleep. Some hours later Tonto woke the Lone Ranger. "My friend, look towards sky, what do you see?" The Lone Ranger replies, "I see billions of stars." "What does that tell you?" asked Tonto. The Lone Ranger ponders for a moment. "Astronomically speaking, it tells me there are millions of galaxies and potentially billions of planets. Theologically, it's evident that God is all-powerful and we are small and insignificant. What's it tell you?" Tonto replies, "Someone has stolen our tent!"*

It was time to return to the surface so we walked back to the lift. Several miners joined us there so when the lift arrived we were packed into the cage for a very cosy trip back to the surface; twelve sardines in a tin!

It had been a fascinating day, and reconfirmed my decision 53 years ago in Kalgoorlie, that mining was not for me! I am not quite sure what difference the discovery of Dark Matter will make to *Homo sapiens*, but I guess just looking for it is what makes us unique amongst Earth's creatures. Man's *motivating force* is the *quest for knowledge*, and Dark Matter is the *Holy Grail* of the 21st century. Next will come *Dark Energy*, but that will probably have to wait for the evolution of *Homo futurus*. What happens in between is anyone's guess, but it is certainly all staggering to think about.

There is an astonishing journey lying ahead of Mankind because one of the things *Homo futurus* will surely retain is *Homo sapiens's* 'Spirit of Adventure'. Even if Antarctica's 30 million cubic miles of ice do melt and the sea rises 200 foot, submerging all the densely populated areas of the earth, Mankind will survive, as we did after Toba. If Yellowstone's super-volcano blows up (the scientists say it is now over due) and the world's population is again reduced to 10,000 adults, *Homo futurus* will evolve one day in the very distant future.

The Aztecs believed that their ingenious cog calendars predicted that the Earth was going to end on December 23rd 2012. As my personal clock is due to stop on July 12th 2009, disappointingly I won't be here to witness the event! Maybe I should 'keep bugging on', as Churchill used to say in the Second German War, just to see if the Aztecs were right? It would be a pity to miss such a spectacular show!

Rising in the morning and looking out at the day from my window to appreciate the wonderment of Nature is one of the great joys of my life, and as long as I can do this I have no right to complain about anything, only rejoice. If it has snowed in the night the world seems to have been baptised. Surely the joy that comes from *being aware* of the beauty of Nature is Man's greatest gift.



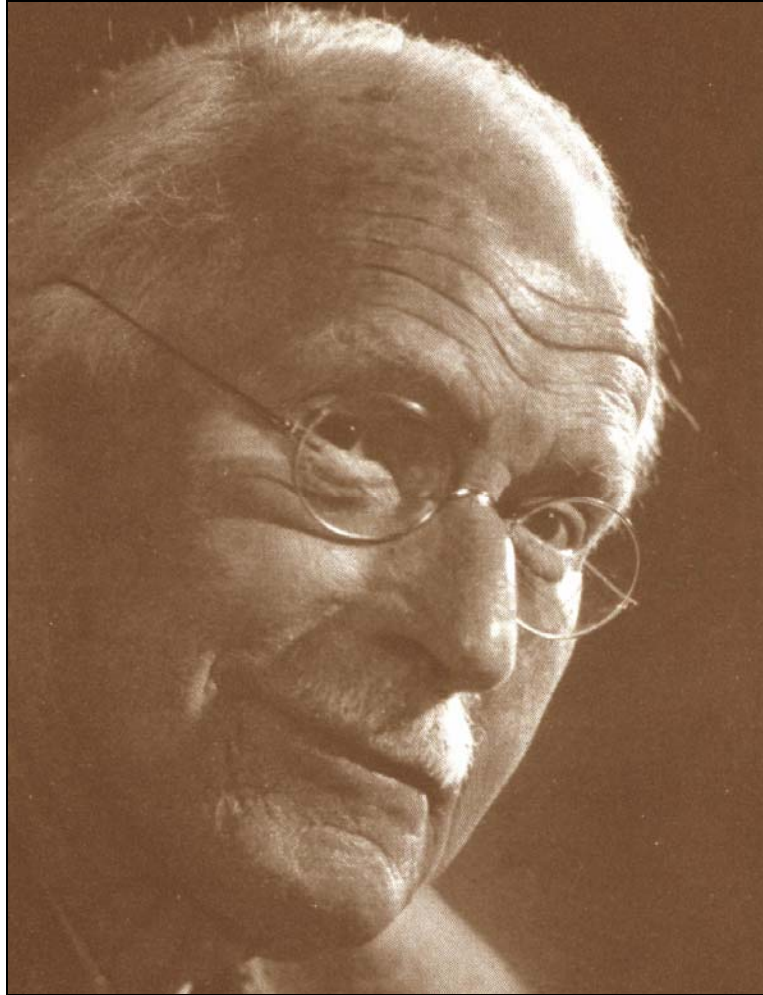
Winter view from my Agcroft bedroom window

Charles Darwin's *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*, has had a greater impact on Man's understanding of ourselves than any other revelation. In his pocketbook for 1837 he wrote: *In July opened first note-book of the Transmutation of the Species. Had been greatly struck from about the month of previous March (while still on the voyage of the 'Beagle') on character of South American fossils, and species on Galápagos Archipelago. These facts (especially the latter) origin of all my views.*

He asked, "Why should remote islands contain such diversity?" His answer was that isolation, plus time, plus adaptation to local conditions, leads to the origin of new species. *It seemed more logical than assuming they had been created and placed in the Galápagos individually by a supernatural power.*

In 1837 such thoughts were considered blasphemy. In January 1844 Darwin wrote to his friend Sir Joseph Hooker, *At last gleams of light have come, and I am almost convinced that species are not (it is like confessing a murder) immutable.*

Isolation, plus time, plus adaptation to the environment, leads to the *Origin of Species*. To me this points to *Mankind being totally unique in the Universe.*



C G JUNG, aged 83