**Genesis: The emerging story of who we are and where we’ve come from**

(By Merv Dickinson, PhD – April 2015)

Throughout history, the worldview at the heart of virtually every culture has been a religious worldview, at the heart of which in turn has been a creation story that explains how we came to be here and our place in the cosmic scheme of things. The story typically attributes divine intent to our creation and assures us that we have a significant role to play in the ongoing drama. Believing that our creation story is a true and accurate account also reinforces our sense of belonging and commitment to those who hold the same worldview, and usually confirms our prejudice that we – our particular tribe, nation, ethnic or religious group – are superior to, and more divinely favoured than, others. So the Biblical creation stories in the opening chapters of the Book of Genesis, thought to have originated in the 10th century BCE, introduce the core theme of the Judaeo-Christian narrative that for so long has shaped our Western worldview – namely, that we have been created by God in his image, have subsequently fall into sin with all its attendant consequences, and need to be restored again, by our faith and ethical behaviour, to a right relation with each other and our Maker.

Since the Scientific Revolution of the 17th century, and particularly since the publication in 1859 of Darwin’s *On the Origin of Species,* the Biblical narrative has been increasingly eclipsed by a quite different creation story that yields a very different understanding of who we are, where we have come from, and what if anything we may construe to be our *raison d’être.* Born of continuing archaeological, biological and anthropological study, this new creation story remains a work in progress, with many unanswered questions and a good deal of ongoing debate. There is widespread consensus, however, about its broad outline – and, however different it may be from what has for so long underpinned our Judaeo-Christian worldview, what remains consistently the same is our need throughout the whole of our history to have *some* creation story.

This paper is a summary presentation of a small portion of this developing story, which in its entirety spans nearly 14 billion years since the universe is thought to have been born. It is a brief but reliable account of what we currently know about our human origins – from our emergence as a primate 2.5 million years ago until our last great exodus from Africa 60,000 years ago. It is offered with the hope that it may be useful to any who are disinclined to struggle through the many far more academically sophisticated works that tell this story in greater detail and that have informed this paper.1 It is presented in seven sections:

* Our primate ancestors
* The big brain experiment
* Our extinct human predecessors
* A “Garden of Eden” update
* The world of early *Homo sapiens*
* The Great Leap Forward
* Epilogue

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1. These include

* Bryson, Bill, *A Short History of Nearly Everything* (Toronto: Anchor Canada. 2004)
* Oppenheimer, Stephen, *Out of Eden* (Johannesburg: Jonathan Ball Publishers, 2003)
* Rifkin, Jeremy, *The Empathic Civilization* (New York: Jeremy P. Tarcher / Penguin, 2009)
* Wade, Nicholas, *Before the Dawn* (New York: Penguin, 2006)
* Wells, Spencer, *The Journey of Man: A Genetic Odyssey* (New York: Random House, 2003)

**Our primate ancestors**

We begin this “human origins” portion of our creation story by locating ourselves among the primate branches of Earth’s so-called “tree of life” and noting the points at which we and our primate forbears emerged. The dates assigned to this timeline are far from settled, in part because new species do not emerge abruptly but through a long and drawn-out process of speciation, and in part because new fossil finds require ongoing revision. The following “tree” and timeline, however, albeit in a greatly simplified and abbreviated form, represent the current scientific consensus.

***Hom***

**Species**

***Homo***

***sapiens***

**Genus**

***Homo***

**Tribe**

***Hominini***

**Family**

***Hominidae***

**Infraorder**

***Simiiformes***

**Order**

***Primates***

We are members of the species *Homo sapiens,*

in the Genus *Homo,* which includes all other now-extinct species of *Homo,*

in the Tribe of hominins (*Hominini*), which includes all species of *Homo,* plus those in the genera of *Australopithecus, Paranthropus,* and *Ardipithecus,*

in the Family of hominids (*Hominidae*), which includes all of the above, plus the Great Apes (chimpanzees, bonobos, gorillas, gibbons and orang-utans),

in the Infraorder of *Simiiformes*, which includes all of the above, plus the *simian* (or *anthropoid*) Old World and New World monkeys.

in the Order of Primates, which includes all of the above, plus the *prosimian* lemurs, lorises, and tarsiers.

67 million years ago, the first primates emerged in the Class of mammals. They were forest dwellers who lived extensively in trees and were distinguished, among other things, by opposing thumbs and grasping feet, nails instead of claws, a more upright posture, and forward-facing eyes with stereoscopic vision. Over millions of years they diversified into many distinct groups throughout the Eurasian continent. A member of one such now-extinct group was Ida – about the size of a cat and looking somewhat like a modern lemur – who lived c. 47 million years ago and whose fossilized remains, discovered in 1983 in Germany, represent the oldest primate specimen yet found.

43 million years ago, early primates diversified into *anthropoids* (leading eventually to monkeys, apes and humans) and *prosimians* (leading to lemurs, lorises, and tarsiers).

37 million years ago, anthropoids diversified into New World and Old World monkeys, with the latter marking the first arrival of primates in Africa. One of these, known as “the Dawn Ape”, who lived in Egypt 33-35 million years ago, was a fox-sized anthropoid with an anatomy and teeth that would later characterise fully developed apes.

25 million years ago, apes diversified from Old World monkeys. One of the earliest of these, an extinct genus named *Proconsul,* appeared in the fossil record in Eastern Africa. With no tail, a weight of 38 kilograms, and a brain capacity of 150 cubic centimetres, he was the predecessor of all the later Great Apes.

20 million years ago, the Great Apes began to disperse around the world. Those that went east into Asia evolved into the gibbon and later the orang-utan. Those that stayed in Africa evolved still later (9 million years ago) into gorillas, and then (5-6 million years ago) into chimpanzees and bonobos. Given our relatively recent common ancestry, it is not surprising that humans are 98.4% genetically the same as chimps. In fact, there is more difference between a zebra and a horse, or between a dolphin and a porpoise, than there is between you and a modern chimpanzee.

A particularly dry spell in Africa at that time appears to have driven some tree-dwelling apes out into the grasslands, to which they adapted by standing upright on two legs, learning to hunt other mammals and use primitive stone tools, and gradually developing bigger brains. These were the hominins in the genera *Australopithecus, Paranthropus* and *Ardipithecus* that appeared in Africa’s Rift Valley as early as six million years ago. The skeletal remains of one of these*,* found in Ethiopia in 1994 and variously dated to between 4.4 and 3.9 million years ago, belonged to a female of the species *Ardipithecus ramidus.* “Ardi,” as she has been named, was 1.2 metres tall, weighed 50 kilograms, and was probably bipedal. “Lucy” was another – a three-year-old female of the species *Australopithecus afarensis,* whose 3.18 million-year-old skeletal remains were also found in Ethiopia in 1974. She was 1.1 metres tall and weighed 29 kilograms. With shoulder blades resembling a young gorilla’s, she probably looked somewhat like a chimpanzee. But she was definitely bipedal and walked with a gait not unlike our own – as confirmed by the famous Laetoli footprints, found by Mary Leakey in 1978, left for posterity in some volcanic ash in what is now Tanzania by a Lucy-like hominin. With a cranial capacity of between 375 and 500 cubic centimetres (only slightly larger than that of a chimpanzee), Lucy probably had enough brainpower to live in a group of up to 70 members.

The African Rift Valley stretches for 2000 miles from Ethiopia in the north to Malawi in the south. It was here that the first species of the *homo* genus – *homo habilis –* made its appearance some 2.5 million years ago, probably evolving from a smaller-brained *australopithecine*. The still larger-brained *homo erectus* emerged some 500,000 years later, and our own species, *homo sapiens,* with a brain 50% larger again, emerged 200,000 years ago.

[**The big brain experiment**](http://emergingworldview.blogspot.com/2010/08/big-brain-experiment.html)

The awakening of self awareness that distinguishes *Homo sapienms* it coincides with the development of bigger brains. Compared with other mammals, primates such as chimpanzees and orang-utans have huge brains. And compared with our primate ancestors, the human brain is larger still. In the 2.5 million years since the *Homo* genus emerged, our brain has tripled in size over that of our hominid ancestors, and doubled in size over that of the first Homo species, *Homo habilis.*   
  
 Brain size is relative to body size and doesn’t necessarily reflect the creature’s level of intelligence. Whales and elephants have brains many times the size of ours, but don’t come close to us in terms of cognitive ability. So scientists calculate instead what they call the "encephalization quotient" (or EQ). It is the ratio of *actual* brain weight to the *expected* brain weight of a typical animal of that size. An EQ of 1 means that the ratio of the animal’s brain weight to body weight is typical for animals of comparable size. Here are some examples:  
  
                    Homo sapiens            7.44  
                    Dolphins                    5.31  
                    Chimpanzees             2.49  
                    Rhesus monkeys        2.09  
                    Elephants                   1.87  
                    Whales                      1.76  
                    Dogs                         1.17  
                    Cats                          1.00  
                    Sheep                        0.81  
                    Mice                          0.50  
                    Rats & Rabbits          0.40  
  
This means that our human brain is 7.44 times larger than the average for an animal of our size, while the brain of a mouse is just half the size of what would be the average for an animal of its size.

EQ is not the same as IQ, but it does seem to vary with the level of intelligence a species requires to survive in its particular niche. Leaf-eating creatures surrounded by food, for example, require less intelligence, and hence a relatively smaller brain, than insect eaters that need intelligent strategies to capture their prey. Predator species generally have higher EQs than prey species. Apparently, the more a species needs to think, the larger is its relative brain size. Social animals, especially those who live in highly interactive groups, also tend to have higher EQs. A survey of 38 genera, including gorillas, chimpanzees and humans, showed that species living in larger groups have larger cerebral cortices. It seems that larger groups require greater cognitive capacity in order to maintain cohesion in their complex social networks.  
  
 The expansion of the brain’s relative size is due largely to the evolution of a cerebral cortex – that layer of grey matter that covers both hemispheres of the cerebellum. A distinguishing feature of mammals, it expanded by 7% every ten million years during the last 65 million years of the Cenozoic Era. Today, among living mammals, an average of 57% of the brain’s surface area is devoted to neo-cortex. The increase was most dramatic among primates. In living monkeys and living and fossil hominids, the ratio averages 75%, and in humans it rises to an impressive 80%.  
  
 The neo-cortex is the centralised processing system that integrates information supplied by a mammal’s senses to create a picture of its world. As more sophisticated sensory receptors and a more complex cerebral cortex evolved, so too did the brain’s power to symbolically represent the world. A more and more detailed mental picture of the world gradually emerged, until eventually there arose the very elaborate worldviews that frame our human perception of the world.

What triggered the invention of this neo-cortex? We don’t know for sure. But it evolved in tandem with endothermy – the ability of mammals to maintain a constant body temperature. While this had huge survival value, it was also very costly. A mammal requires 5-10 times more energy than a reptile of similar body size just to maintain its body temperature. And brains themselves are energy gluttons, consuming up to 20% of the available energy. Meeting these energy requirements demands much greater efficiency in food gathering, which in turn requires a more detailed mental picture of the environment. Enter the cerebral cortex with its talent for constructing mental maps! – the talent that has exploded virtually without limit in *Homo sapiens.*  
  
 Still another implication of large brains is the anatomical fact that the birth canal of females who walk upright is not large enough to deliver a baby with a full-grown brain. Although a wider birth canal had already developed in *Homo erectus*, there is still a limit to how large the head of a human foetus can be and still pass through the birth canal. The evolutionary solution was to delay the full development of the human brain until after birth. Only when a baby is a year old does its brain growth slow, and even then it doesn’t stop. The brains of teen-agers are still a work in progress. The frontal lobes – which contribute judgment, inhibition, and self-awareness – may not be fully connected until as late as age 25. No other primate has this pattern of brain growth and such a prolonged period of childhood dependency, requiring a massive investment of shared parental care.    
  
 All of this provides the seedbed of human culture. Large brains, a burgeoning neo-cortex, heightened awareness, elaborate mental maps of the world, and a prolonged childhood during which we learn and absorb a shared worldview – all these come together to make human culture possible. All of these are correlated. But can we ever say what causes what? Correlation is not causality. Did endothermy trigger the development of larger brains? Or was it our coming together into more complex social networks? Was our greatly expanded neo-cortex the *cause* of human consciousness? And is human consciousness the *cause* of human culture with its shared worldviews? Perhaps. Or perhaps all of this, including the Big Brain Experiment itself, is simply the manifestation of evolution’s playful meandering towards greater complexity and heightened awareness.

**Our extinct human predecessors**

*Homo sapiens* is not this planet’s first experiment in big brains. Prior to our arrival on the scene 200,000 years ago, a number of other *Homo* species preceded us and, for the most part, survived many times longer than we have before becoming extinct. It remains to be seen how long we will survive. Although there is still considerable lack of consensus regarding their lines of ancestry and progeny, they have been identified from their fossil remains as:

*Homo habilis* (2.6 – 1.4 million years ago)

*Homo ergaster* (2.5 – 1.7 million years ago)

*Homo erectus* (1.9 million – 100,000 years ago)

*Homo antecessor* (1.2 million – 800,000 years ago)

*Homo heidelbergensis* (600,000 – 230,000 years ago)

*Homo neanderthalensis* (230,000 – 24,000 years ago)

We will look briefly at just three of them..

*Homo habilis* (2.6 – 1.4 million years ago)

About 2.6 million years ago, at Turkana in northwest Kenya, a species of *Australopithecus* (probably *A. africanus*) evolved intothe first species of the *Homo* genus. A hunter and meat-eater, *Homo habilis* or “handy man” is so named because of his use of flaked stone tools for killing and dissecting other animals. It was the beginning of the Stone Age. The remnants of tools found at a mass production site at Lokalalei, west of Lake Turkana, and dated to 2.35 million years ago, suggest that the tool makers there had enough smarts to plan their raw material procurement and manage the production process.

The male of the species stood about 1.52 metres tall and weighed about 45 kilograms. His face was still primitive, but his brain size (660-700 cc) was 50% larger than his *australopithecine* forbears. His brain shape is also more humanlike, suggesting that he may have been capable of rudimentary speech. Despite the many theories that have been proposed, we still have no idea why hominid brains suddenly began to grow.

Their life would have centred on survival, with energy devoted primarily to meeting their physical needs. They never learned to harness fire. Their sense of time probably did not extend much beyond tomorrow. Nor is there any hint of the death denial that later emerged in Neanderthals in association with burial rituals. For *habilis,* no food is death, and a full stomach may have been as much immortality as they hoped for.

*Homo erectus (1.9 million – 100,000 years ago)*

*Homo erectus* and *Homo habilis* probablyshared a common ancestorand co-existed in Africa for about 500,000 years. But unlike *habilis,* *erectus* quickly migrated out of Africa. His fossilized remains, dated to as early as 1.8 million years ago, have been found from the Atlantic coast of Europe to the Pacific coast of China.

The nearly complete skeleton of a 9 – 12 year old boy (“Turkana boy”),who died 1.54 million years ago, gives us the best picture of *H. erectus.* Although still sporting protruding jaws and thick brow ridges, he looks more human than his predecessors – long-limbed and lean, very strong, and intelligent enough to spread successfully over a vast area. Brain size averaged 1000 cc – 50% larger again than that of *habilis –* and may have included a Broca’s area in the frontal lobe associated with speech.

Almost wherever *erectus* went, he left behind his signature tool – a teardrop-shaped, flint hand-axe. A recent excavation at Olorgesailie in Kenya’s Great Rift Valley has revealed a 10-acre site where these so-called Acheulean tools were mass produced in incalculable numbers from 1.2 million to 200,000 years ago. For a million years it operated as a well organised “factory” for fashioning new axes and re-sharpening blunt ones. Strangely, no human bones have ever been found there. It seems that *H erectus* went somewhere else to die.

Theylived in small self-sustaining bands of 15-30 people in semi-permanent cave shelters, began using animal skins for clothing, and were the first to harness fire – perhaps as early as 1.6 million years ago and certainly since 800,000 years ago. Since there is no evidence that they cooked food, a fire in the hearth may have contributed both to physical warmth and to a sense of unity and intimacy within the group. The bones of a 1.7 million year old woman reveal that she had lived for months with an agonizing condition before dying, indicating that someone had looked after her – perhaps the first evidence of tenderness in human evolution. And the oldest known remains of a purpose-built hut, found north of Tokyo and dated to 500,000 years ago, testifies to their evolving technology and cognitive ability.

When *Homo sapiens* emerged in Africa 200,000 years ago, with a brain yet another 50% larger than that of *erectus,* they simply out-competed their smaller-brained predecessors. And by the time *sapiens* arrived in China c. 50,000 years ago, there was no longer any evidence there of *erectus.* In fact, there are no *erectus* remains in China after 100,000 years ago. It seems likely that a deep freeze either drove them away or killed them off before *sapiens* arrived. Whatever happened, this now-extinct predecessor deserves our respect, for they walked the Earth for close to two million years.

*Homo neanderthalensis (230,000 – 24,000 years ago)*

In 1856, three years before Darwin published *On the Origin of Species,* a skull was discovered in the Neander Valley of western Germany. It belonged to the first hominid ancestor to be discovered – Neanderthal Man. Recent evidence indicates that they shared a common ancestor with modern humans – probably *Homo erectus.* Theydominated Europe, the Middle East, and parts of western and central Asia for some 200,000 years until *H. sapiens* arrived and displaced them. Indeed, current genetic evidence suggests that interbreeding took place with *H. sapiens* 80,000 – 50,000 years ago, resulting in 1 – 4% of the genome of Eurasian people having been contributed by Neanderthals.

Males stood about 1.7 metres in height; females were about 150 centimetres shorter. Like *erectus,* they had a protruding jaw and receding forehead. Their brain size of 1450 cc was equivalent to that of modern humans. What distinguished them anatomically were their heavy bones and powerful muscles. They would have been extraordinarily strong by modern standards. Almost exclusively carnivores, they hunted large animals such as mammoths and endured brutally hard lives. As a species they were magnificently resilient and practically indestructible.

Neanderthal culture is identified with its cave dwellings, extensive use of fire, personal ornaments, well-wrought stone implements, and skin-covered huts more advanced than those of any preceding peoples. Painted scallops and cockleshells found recently in Spain suggest that they had a capacity for symbolism, imagination, and creativity similar to *H sapiens.*

The Neanderthals lived in a dramatic universe filled with spirit powers that required symbolic rituals and sacrifice – the earliest signs of a religious mode of consciousness. Almost inaccessible sanctuaries in high mountain caves show cave-bear skulls ceremonially disposed in symbolic settings. The bear is a venerated beast whose powers survive death and are effective in the preserved skull. The burial of their own dead also suggests a life to come. A 10-month-old Neanderthal baby, whose remains were discovered in a cave in northern Israel, was deliberately laid to rest in a small niche in the cave. The jawbone of a red deer that had been offered as a sacrifice was lying on the infant’s pelvis – clearly an attempt to cope with the imprint of death on the Neanderthal psyche.

Neanderthals were competitively replaced by *Homo sapiens* within the past 50,000 years. They disappeared from Asia 50,000 years ago, from Europe 30,000 years ago, and finally from Gibraltar 24,000 years ago.It was probably natural selection that did them in. Modern humans were more efficient hunters and would have gradually excluded them from their food resources. What Neanderthals could only do with brute force, modern humans accomplished with tools and brains.

**A “Garden of Eden” update**

The Bible describes our human origins as deriving from a single set of parents in a place called the Garden of Eden. Although we are still far from consensus on the matter, that mythical account is not far removed from what anthropologists and geneticists are now telling us.

The name *Homo sapiens* (Latin for “wise man”) was coined in the early 18th century by a Swedish botanist, Linnaeus, who recognised that all humans were part of one species. But he also believed that this species was divided into distinct sub-species or races. And when evolutionary theory became popular in the 19th century, it was widely believed that these races – identified as African, Native American, East Asian, and European – had evolved at different times and in different places. The theory sat comfortably with Europeans. It meant that they were the most recent and therefore the most advanced race to evolve, while the others, especially the dark-skinned Africans and Native Americans, were downright primitive by comparison. It found further support when the philosopher Herbert Spencer coined the phrase “survival of the fittest” – (a phrase that was never used by Darwin) – and used it to justify the social divisions inherent in late-19th century Britain. So now there was scientific justification for believing not only that the Aryan race was superior to all others, but that people who occupied the top strata of society deserved to be there since they must be more “fit” than the mere peasants.

By the end of the 19th century this widespread belief had given rise to the eugenics movement – (“eugenics” means “good birth”) – which in 1907 gave birth in Britain to the Eugenics Education Society with the objective of improving humanity’s gene pool by selectively breeding those thought to be most highly evolved. Supported by the best scientific evidence of the time, the elite loved it. Within a few years it was being used in the United States to justify the forced sterilization of people thought to be subnormal, and from there it was only a short step to the Nazi death camps and the systematic extermination of Jews, gypsies, homosexuals, and other supposedly inferior groups.

In the 1960s, we were still finding scientific justification for such thinking. In *The Origin of Races* (1962), Carleton Coon (1904-1981), a Harvard professor and president of the American Association of Physical Anthropologists, advanced the “multi-regionalism hypothesis,” arguing that five distinct subspecies of *Homo sapiens* arose independently, at different times and places, from a common ancestor, *Homo erectus.* Some, he said, such as the Mongoloid and Caucasoid races, reached the *Homo sapiens* stage in evolution before others and thereby succeeded in achieving a higher degree of civilisation than others, such as the Congoid (Negroid) race. Not surprisingly, American segregationists opposing the Civil Rights Movement of the 1960s seized upon Coon’s theory to justify their racial discrimination.

Since then the debate has continued to rage. In 1987, an analysis of mitochondrial DNA declared that all modern humans descended from one African population within the last 140,000 years. It was a serious blow to multi-regionalism. But by 1992, that study had been largely discredited. Then, in late 2000, a Swedish study of mitochondrial DNA again seemed to demonstrate that all modern humans emerged from Africa within the past 100,000 years and came from a breeding stock of no more than 10,000 individuals. It began to look like the multi-regionalism hypothesis was dead. Indeed, most scientists who have studied the matter now seem to agree that all modern humans evolved in Africa within the past 200,000 years. Their direct ancestor was probably the species *Homo heidelbergensis* that appeared on the scene in Africa some 500,000 years ago and then migrated into Europe. Those that went to Europe later evolved into *Homo neanderthalensis*, while those that remained in Africa evolved into *Homo sapiens.* In *The Journey of Man* (2003), geneticist Spencer Wells (born 1969) claims to have identified our ancestry even more specifically as Mitochondrial Eve – the African great-great- .... grandmother of us all who lived about 150,000 years ago.

Where did Mitochondrial Eve live? Where, in other words, was the Garden of Eden where our first parents originated? We don’t know specifically, but it was almost certainly somewhere in the Great Rift Valley. A recent genetic survey suggests that a region on the coast of southwest Africa near the Kalahari Desert, at the southern terminus of the Rift Valley, may be our place of origin. It is now homeland to the Bushmen or San people who represent a direct link back to our earliest ancestors. But at that time, the San occupied a much larger area that stretched from southern Africa up the east coast as far as present-day Ethiopia – so the Garden of Eden could have been anywhere within that Valley.

How did this one family of humanity develop distinctive physical traits among different geographic groups – the traits that we used to think represented separate “races”? Some 60,000 years ago, *Homo sapiens* began to leave Africa and spread across the globe to colonise the entire planet. The physical traits that distinguish modern geographic groups subsequently developed as an adaptation to local environmental conditions. So skin colour varies with the intensity of sunlight in a given region to ensure the necessary absorption of Vitamin D. It has nothing to do with racial identity. We really are one family.

Or are we? In actual fact, the multi-regionalism hypothesis is far from dead. Where, for instance, did the aboriginal people of Australia come from? Spencer Wells and others argue that they migrated there from Africa. But there’s a problem. Although modern humans are thought not to have left Africa before 60,000 years ago, human remains dating to 62,000 years ago have been found at what was once Lake Mungo in the interior of Australia. Even if our dating is off by a bit, migrants from Africa would certainly have had to hustle in order to arrive first in Indonesia, then build ships and navigate a few hundred kilometres of open sea, and finally move 2000 kilometres inland from the northern Australian coast to Lake Mungo.

In 2001, Australian anthropologist Alan Thorne (1929-2012) reported that mitochondrial DNA from the oldest of the Mungo residents was genetically distinct. It is no longer found in living humans, as it should be if he was descended from the people who left Africa 60,000 years ago. More recently, Thorne’s theory of “regional continuity” has found support from the findings of Oxford geneticist Rosalind Harding, reported in a 2006 article in the *American Journal of Physical Anthropology.* The theory contends that the *Homo* genus is not divided into different species at all, but that there has been a continuous evolution of only one species – *Homo sapiens –* who migrated out of Africa almost two million years ago and dispersed throughout Europe and Asia. We were, according to Thorne, already in Indonesia, and only a short sea voyage away from Australia, long before we even began our migration eastward.

I, for one, would like to believe that we are all one family that originated in an updated version of the Garden of Eden somewhere in Africa. But the supporting evidence is not nearly as clear as we might like to think. With any kind of luck, a revival of the multi-regionalism hypothesis will not also revive the racism that we are having such difficulty in leaving behind. The moral of the story seems to be this: Be careful lest you too quickly embrace supposedly “hard evidence” that seems to support your own personal prejudices and predilections.

[**The**](http://emergingworldview.blogspot.com/2010/09/world-of-early-homo-sapiens-200000.html) **world of early *Homo sapiens***

“Multi-regionalism” and “regional continuity” theories aside, the general consensus is that the first modern humans, or “early *Homo sapiens,”* emerged in the African Rift Valley about 200,000 years ago. They maintained a relatively stable existence on the grasslands and in coastal regions of Africa until about 75,000 years ago when a rapidly accelerating Ice Age may have forced them to adapt in ways that some anthropologists call the Great Leap Forward. Then, some 60,000 years ago, in the Great Migration, they left Africa to colonise the world.  
  
 Although his direct ancestry remains unclear, it seems likely that *Homo sapiens,* like his Neanderthal cousins in Europe, evolved from *Homo heidelbergensis*. Three fossil skulls found in Ethiopia and dated to 160,000 years ago are the oldest human remains yet discovered. His average brain size of 1485 cubic centimetres is almost 50% larger than that of *Homo erectus* and slightly smaller than that of the Neanderthals. His appearance is distinguished from other *Homo* species by his nearly vertical forehead, very much smaller or non-existent eyebrow ridges, smaller teeth, a prominent chin, and a more gracile skeleton.  
  
 There are indications that, sometime after 160,000 years ago, four separate groups travelled south to the Cape of Good Hope, southwest to the Congo Basin, west to the Ivory Coast, and northeast to the coast of the Red Sea. Then, about 125,000 years ago, a group travelled across the Sahara and up the Nile to the Levant. Human remains found at sites in present-day Israel indicate that we were there from at least 110,000 years ago. From the end of the Illinoian Ice Age 130,000 years ago until the onset of the Intermediate Ice Age 80,000 years ago, the Levant was effectively an extension of northern Africa, with similar climatic conditions and animals. It would have been relatively easy to follow the animals out of Africa. But then, soon after 80,000 years ago, modern humans abruptly disappeared from these sites. The encroaching Ice Age turned the Levant and North Africa into desert and killed off the animals on which humans had relied for thousands of years. Those who had left Africa during warmer and wetter times either died off or migrated back to Africa.   
  
 They were hunter-gatherers who lived in small bands – (necessarily small since the game in any region was limited) – comprised of a few family groups based on long-term monogamous relationships, with both parents caring for their children. Survival was less an individual thing than a group achievement. And because survival depended on cooperation and the equal distribution of food to everyone, the bands were egalitarian. There were no elite, no social stratification, and no formal leadership. Decision-making would have been consensual. Nor was there any formal division of labour. While women probably took greater responsibility for gathering and men for hunting, each member of the group would have been skilled at all tasks essential for survival. And for those too old or infirm to carry their weight, there is evidence that they were cared for by the group.  
  
 Surviving in the open grasslands would not have been easy. Maintaining a fire throughout the night helped keep the big cats at bay, but it required intelligence and cooperation for humans to hunt game that was much faster and stronger than they. As early as 165,000 years ago they had discovered a new way of fashioning tools by heating silcrete to a high temperature in a fire’s embers to create sharper stone flakes, which made possible the invention of stone-tipped spears and harpoons. But still the hunting of big game presented a challenge. It seems to have been accomplished by running the prey to exhaustion and then closing in for the kill at close quarters. *Homo sapiens* had emerged as a relatively hairless creature who perspired, so they could run for extended periods of time and still maintain their internal body temperature. Their large prey, while swifter over short distances, could not maintain that pace. Panting rather than perspiring, they needed to stop periodically to avoid overheating. Eventually the pursuing humans would run them to the ground.   
  
 Although primarily nomadic as they followed game from one region to another, they maintained central campsites (hearths and shelters) as home bases. Because their population was sparse – estimated at only one person per square mile – a given band would have hunted an area of perhaps 60 square miles from a single home base before moving on. While there is still widespread disagreement on the subject, organised violence between bands seems to have been rare. The low population density, the abundance of food resources, the lack of any reason to hoard food beyond the group’s immediate needs, the survival value of cooperation, and the advantages of collaboration on hunting expeditions probably all contributed to the relative peacefulness of this period in our otherwise war-ravaged history.  
  
 Their diet consisted primarily of meat, fish, shellfish, leafy vegetables, fruit, nuts and insects. With a gradual drying up of the African interior that began 120,000 years ago, humans were attracted more and more to coastal environments where they could migrate easily along the coast and make their living from the sea. The cooking of shellfish is evident as early as 164,000 years ago at a site called Pinnacle Point in South Africa; large dumps of clam and oyster shells, dating from 125,000 years ago, have been found in Eritrea on the eastern Horn of Africa; and large 6-foot-long catfish were being caught with barbed fishing points 90,000 years ago in what is now the Democratic Republic of the Congo.

Our now extinct ancestors began cooking their food at least 250,000 years ago and perhaps much earlier. Because cooked food, and especially cooked meat, delivers significantly more energy for less effort, it would have contributed to the growth and maintenance of our larger brains. It probably also contributed to our becoming more sociable as we brought food back to the central cooking area. We can imagine the band gathering at the end of the day, kindling a fire in the hearth both to cook their food and ward off animals, and then settling in around the fire to eat, laugh, sing, and enjoy their emerging ability to converse in spoken language, in a scene not unlike that which has been repeated countless times to the present day.  
  
 Archaeological evidence tells us more about the cosmology and religious practices of European Neanderthals than it does about that of contemporaneous *Homo sapiens* in Africa – but we may reasonably assume that they were similar. For both, it would be the animals – their nearest neighbours – that played a central role. Neanderthals’ veneration of the bear in mountainous sanctuaries is matched by evidence of animal worship in the Tsodilo Hills in the Kalahari desert. A giant rock resembling a python, and a secret chamber inside a cave there, is accompanied by broken spear points (dated to 70,000 BCE) that had been offered as a sacrifice. The python is still worshipped by present-day !Kung San hunter-gatherers who are descendants of the early humans who first devised the practice. Similarly, the discovery of “butchered” human bones at both European and African sites may point to a ritual post-mortem bone cleaning for presumably religious reasons. And one of the skulls found in Ethiopia has grooves cut into it in a manner suggesting that it was carried around after death – possibly as part of an ancestor worshipping ritual and indicating a belief in some kind of afterlife.  
  
 It is unlikely that they were much concerned about their own death. While memory would have delivered some notion of the past, their orientation in time would have been predominantly the simple present. With little sense of time or causality, they would not easily have imagined their own death.  Nor would they have been able to plan far ahead. They would have responded to their environment either immediately or after only a short delay.  
  
 The worldview at this stage can be described as *animistic* and *magical.* Animism is the belief that, like oneself, everything is conscious and animated by some life force. It makes for a dramatic universe filled with spirit-powers. Magical thinking arises from the tendency at this stage to confuse psychic and external reality – an inability to fully differentiate the mental image of an object from the object itself. In the world of magic one manipulates an external object by manipulating an image or symbol of that object – as in sticking pins into a Voodoo doll. So in primitive hunting rites, a man draws the animal in the sand before dawn, and when the first sun-ray touches the drawing, he drives a spear into the drawing. Later he slays the animal and performs a ritual dance at evening. But in his magical world, the symbolic act and the actual killing of the animal are inseparable. One cannot happen without the other. Still today we have not totally outgrown such magical thinking. Many people continue to engage in symbolic acts either to bring good luck or to ward off misfortune.

### [The Great Leap Forward](http://emergingworldview.blogspot.com/2010/09/great-leap-forward.html)

We seem to like very much the idea of making a “great leap forward.”  In 1958 Chairman Mao used the phrase to describe his plan to modernise China’s economy. And “New Age” enthusiasts like to think that humanity is now making a “quantum leap” in consciousness. But the original “great leap forward”, according to many anthropologists, occurred sometime between 75,000 and 50,000 years ago when *Homo sapiens* became a species driven by language and culture. An explosion in our capacity for symbolic thought and self-awareness, accompanied by breakthrough developments in spoken language, brought with it an accompanying explosion in cultural creativity.   
  
 Over what period of time these advancements took place remains a matter of debate among anthropologists. One theory holds that a leap into “behavioural modernity,” or what is sometimes called the Upper Paleolithic Revolution, occurred almost suddenly some 50,000 years ago – perhaps as a result of a genetic mutation or a reorganization of the brain that led to a major advance in language. Proponents of this theory, known as the “big bang” theory of human mental evolution, base their evidence on the abundance of artefacts, such as artwork and bone tools, that appear in the fossil record after 50,000 years ago – indicating, they suggest,  that prior to this date *Homo sapiens* lacked the cognitive skills required to produce such artefacts. Jared Diamond I(born 1937), an evolutionary scientist at UCLA, contends that, prior to this time, there is little evidence of cultural change. But then, coinciding more or less with our exodus from Africa to colonise the world, there is a sudden flowering of tool-making, sculpture, cave painting, body ornaments, and long-distance trade  
  
 An alternative theory – the Continuity Theory – holds that behavioural modernity resulted from a gradual accumulation of knowledge, skills, and culture over tens of thousands of years of human evolution. Advocates of this view, such as Oxford geneticist Stephen Oppenheimer (born 1947), contend that evidence of modern behaviour can be found at a number of sites in Africa and the Levant from a much earlier time. A ritual burial with grave goods, for example, has been uncovered at Qafzeh in Israel and dated to 90,000 years ago. Continuity theorists believe that what appears to be a later technological revolution is probably the result of increased cultural exchange within a growing human population.  
  
 The truth may lie somewhere between the extremes of these two theories. From about 75,000 years ago there appears to have been a marked acceleration in the development of human language, cognition, and culture. The evidence for this consists primarily of artefacts found at Blombos Cave, 30 meters above the sea on the southern tip of South Africa. Here we find the earliest undisputed evidence of art, dating from 76,000 years ago, in the form of bracelets, beads, rock art, and ochre used as body paint. Blombos cave is also famous for its abstract engravings on red ochre from the same time. Together with the beadwork, it suggests that inhabitants of the cave had a complex sense of symbolism and a sufficiently developed language to describe the symbolic meaning that the beads and engravings represent. Here was the first tangible evidence of advanced, abstract thought.  
  
 Why should our ancestors have gone out of their way to collect high-quality red iron oxides? With cross-hatched patterns carefully etched onto its surface, the red ochre has to be culturally significant. Some scholars regard it as the first evidence of Stone Age lipstick – as if, almost suddenly, people wanted to paint their bodies. Coincident with this is evidence that clothing also originated in Africa 75,000 years ago. It would of course have been useful when *Homo sapiens* left Africa and ventured into colder climes – but that migration did not take place until some 15,000 years later. It would seem that our taste for jewellery, fashion, art and cosmetics all emerged at about the same time. But why? Was it all about sexual attraction and signaling one’s genetic fitness with rare adornments? Was it evidence of prestige and status? In this stringently egalitarian society, could it be the first evidence of social ranking marked by material possessions? At the very least, such developments point to a more organised society, with communication through language, symbolism, and rituals. And whether they occurred abruptly or more gradually, it seems clear that there was a significant advance in human cognition and culture from 75,000 years ago, leading to the African exodus of 60,000 years ago. The question is “Why?”

Climate was almost certainly a factor. With the onset of a new Ice Age some 80,000 years ago, our relatively settled life on the African savannah was forced to change. By 70,000 years ago it was getting downright nippy in the northern hemisphere. Great sheets of ice were bearing down on what would later be Seattle and New York.  In Africa a 10-degree Celsius drop in the average world temperature, as well as the fallout from the eruption of a super-volcano in Sumatra, brought extensive drought to the interior, forcing early humans to coastal regions where they could survive on seafood. Genetic evidence, however, suggests that they nonetheless suffered a massive decline in population at this time – dwindling to as few as 2000 individuals. *Homo sapiens* was literally on the brink of extinction. The upside was that, in adapting to these difficult conditions, our species also became a whole lot smarter. The deep-freeze and drought may have been the catalyst for the Great Leap Forward, favouring intelligence and more complex social structures as life became more difficult.   
  
 It may also be that just a few small genetic mutations at this time gave us these amazing minds and the power of abstract conceptual thought.  Whatever the trigger, none of these changes could have occurred without the development of language and the social networks that language makes possible. More specifically, the Great Leap Forward depended on our mastery of *syntax* – the ability to create multi-word sentences that are structured with a subject, verb, and object. How those parts of speech are arranged varies from one language to another. English and most other languages are characterised by a subject-verb-object (SVO) syntax. An SOV structure is used by a few languages; VSO and VOS are used by about 15% of languages; and OSV is the rarest of all. But whatever the structure, our ability to communicate complex meaning depends on our understanding and use of syntax. It’s what distinguishes human from ape communication.  
  
 Just why we should have crossed the syntax barrier at this point in our history remains unclear. It parallels the development of language in children and seems to require the maturation of certain brain structures. Children begin to speak by babbling. At about 12 months, they begin to use actual words. Over the next year there is a massive expansion of single-word vocabulary and the emergence of two-word sentences. Between two and three years of age, children begin to put together three-word sentences with syntax. This is the stage in individual development that corresponds with the Great Leap Forward in humanity’s development.  
  
 It was all necessary in order to make possible the next stage in our development when, some 60,000 years ago, we began to leave our African homeland and spread into Europe and Asia. During the next couple of thousand years we had walked around the coast of South Asia and reached Australia. A later wave of expansion took us into the Middle East and then on into Europe, Asia, and the Americas. A species that had almost been made extinct rallied to populate the entire world. And what set it all in motion happened first in Africa, in a Great Leap Forward that marked our initiation as modern humans.

**Epilogue**

Those in Western societies who had long felt reassured by the Biblical account of their divine origin and their special place in the cosmic drama did not adapt easily to this new account of their being descended from an ancestral Ape via natural selection of traits generated by nothing more than random genetic mutations. An early showdown between proponents of these competing stories took place on 30 June 1860, just seven months after the publication of Darwin’s *On the Origin of Species,* at a meeting in Oxford of the British Association for the Advancement of Science. So important was the occasion to members of both the religious and scientific communities that more than a thousand people crowded the debating chamber, with hundreds more being turned away. Samuel Wilberforce, the Bishop of Oxford, was the chief spokesman for the Judaeo-Christian understanding of things, and, despite his being well versed in evolutionary theory, insisted that the world had been created by God on 23 October 4004 BCE. He then proceeded to ask his equally learned opponent, the biologist T. H. Huxley (also known as “Darwin’s Bulldog”) whether his familial tie to the apes was by way of his grandmother or grandfather. To which Huxley is said to have responded by whispering to a friend, “The Lord hath delivered him into my hands.”

Since then the controversy has continued, with creationists and advocates of “intelligent design” doing what they can to hold the line against encroachments by Darwinians who, like biologist Richard Dawkins, often conflate evolutionary theory with atheism. What is at stake is not so much the historical accuracy of one or the other story. Clearly, the evidence-based account of our origins as described in this paper has, for all but the most intransigent Biblical fundamentalists, won that contest hands down. The issue is whether the emerging creation story can, without some mythical overlay, satisfy our seemingly deep-seated wish to believe that our being here is more than simply a cosmic accident. The emerging story is still capable of evoking a measure of wonder and awe with its account of a nearly 14 billion year journey from the explosive birth of the universe to the birth of you and me.

We may no longer believe in miracles, but it at least borders on the miraculous to think that a creature made of recycled stardust should have evolved into one with sufficient intelligence and self-awareness to know that he is a creature made of recycled stardust.

Whether or not our new creation story prompts us to conclude, as Nietzsche first announced and as Dawkins never tires of reminding us, that “God is dead,” it does, despite our lingering wonderment, go a long way towards undermining the sense of transcendent meaning and significance that our Western worldview once delivered. “The ancient covenant is in pieces,” wrote French biologist and Nobel laureate Jacques Monod (1910-1976). “Man at last knows that he is alone in the unfeeling immensity of the universe, out of which he has emerged only by chance.” **2** Little wonder that many today have come to feel, as humorist Woody Allen not so humorously said, “impotent against the overwhelming bleakness of the universe.” He went on to describe his own life as a “meaningless experience with some small oases. You can sit down and hear a Mozart symphony, or you can watch the Marx Brothers, and this will give you a pleasant escape for a while. And that is about the best that you can do. Each person distorts life in a way that enables him to get through. Some people distort it with religious things. Some people distort it with sports, with money, with love, with art, and they all have their own nonsense about what makes it meaningful. But nothing makes it meaningful. In the end everyone goes to his grave in a meaningless way.” 3

Such is the spiritual legacy for many of our new creation story. Can it be integrated into a worldview that supports a deeply satisfying sense of meaning and inspires us to reach for the highest and best of which we are capable? Might it encourage us to take charge of our own ongoing evolution and build a sustainable global community born of respect for each other and the biosphere to which we belong? Or will it underpin instead a worldview that supports only the cynical attempt to anaesthetise ourselves as best we can against the absurdity of our situation by voraciously consuming as much of this planet’s resources as we can before it’s finally “game over”? Like the new creation story itself, our emerging worldview, whatever it may be, remains a work in progress.

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2. Jacques Monod, *Chance and Necessity: An Essay on the Natural Philosophy of Modern Biology* (New York:

Alfred A. Knopf, 1971), pp 112-113, 138.

3. Reported by Robert E. Lauder in an interview with Woody Allen, entitled “Whatever Works: Woody Allen’s World,”

published in the 15 April 2010 issue of *Commonweal Magazine.*