US

THE WHO, WHAT & WHY OF MANKIND

Dr. Roy Murphy

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In loving memory of
T.A.B Whitaker Esq. MBE
& P.G Mustoe

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Preface

Whatever the field of study, the drive to provide an answer to the most profound of questions is the ubiquitous search for truth, which is the underlying premise of science. Who are we, what are we and why are we, are some of the oldest philosophical quandaries humanity has ever asked. The answers to most of these questions have historically fallen at the feet of the myriad religions around the world who dare to renew, refresh and re-invent the word of God, to give meaning, hope and guidance on one hand, and on the other; rules, fears and dependencies.

I can hear the groans already from those who subscribe to differing flavours of fundamentalist ideologies, and of course, each and every one has amazingly happened upon and guessed the correct version of historical astrotheological literary religious hybrid, bound by perpetual sermonising which provides meaning and relevance to today's society. Most of all, they speak pearls of wisdom directly to you. Filtered and interpreted via hierarchical vessels of God, giving answers and comfort which is sought by so many; providing solace, peace and contentment for countless millions worldwide.

As a general rule, I speak so ambivalently about religion as I have seen and continue to be partisan to the good that religion can have in our lives. Science is the search for truth. Instead of magically uplifting words of encouragement from edited and mistranslated words of scriptures of ancient man, and when seen through the un-blinkered eyes of science, these tales of old taught as fact have as much meaning today as this year's best selling, new transliteration and interpretation of the works of Nostradamus, or today's tabloid horoscopes; each using the well defined and documented 'Forer Effect', giving perceived extra

weight to a more generalised phenomenon which is of limited and subjective validation due to belief expectancy, or what is simply known as a self-serving bias.

Science has always distanced itself from religion because of the empirical nature of its results. Religious faith requires the denial of observation in order to preserve a belief, whereas science adjusts its views based upon observations.

These observations are then documented, becoming the basis for ongoing research; whereby, indicatively weighted and peer reviewed research results become hypotheses with an abundance of positive Six Sigma data-sets, begetting unequivocal acceptance as fact unto the greater scientific community with its adoption by leading scholars and the greatest minds in the world, which slowly filter into our educational text books.

This book strips away the perceived necessity to circumnavigate the foibles and subjective interpretations of what each and every person's idea of spirituality is, or any remedial definitions of the soul or afterlife.

This book aims at combining the facts we already know about humanity and presents them in a way that most people can comprehend, leaving any interpretations or subjective matters of the heart aside, in order for you to decide where this takes you on your own journey of discovery.

Walk with me now on a journey of past, present and future; discovering what it means to be human...and the questions and answers we discover along the way.

Dr. Roy Murphy

CHAPTER 1

Earth History

Depending upon your book of choice, either space is our final frontier, or in the beginning God created The Heavens and The Earth. Science tells us that there is a lack of data to confirm either statement and strongly suggests beyond reasonable doubt, that neither are true.

Science does however give us a wealth of empirical data with a very precise set of calculators of universal truths, and yet the vast majority of the world will inevitably, seemingly obstinately, in spite of all of this knowledge, continue to believe in the mystical and magical writings of ancient man.

This is not a story to boldly go where no book has gone before, but an irrefutable and empirical chain of documented events that describe what we know with absolute certainty in a manner that the typical, rational person can comprehend. This is however a journal of empirical information; a wealth of known knowns, condensed into a handy encyclopaedia of knowledge, and for those who have neglected these truths so far are either going to mock in order to preserve their belief, or lead a real sea change of thought processes that evokes ferment instead of invoking mysticism, for a true understanding and set of philosophical reasoning's, rather than the forced perspective of scriptures, formed inside the superstitious depths of hallowed antiquity.

This will be a bitter pill to swallow for any Seventh Day Adventist or any other Millerite based flavour of Presbyterian polity.

For others, there will be a sliding scale of acceptance, although science does not begin to pander to any of them.

Science is the unified and universal voice of the continued search for truth. Billions of people on our planet will tell you that God is the only truth, and one which can only be found through Him as it is written in the scriptures. These scriptures are the majority of the monotheistic religions, of which there is a choice of around 730 established major religions, which, in turn, are broken down into about 3200 sects.

Christianity for example, is just one of those religions, yet has over 200 major sects of beliefs containing their own unique traditions and interpretations, currently nearing 41,000 different Christian belief denominations that make up 2.1 billion people. It seems that the odds of winning the lottery are considerably more favourable than the permutations of an individual happening upon the correct religious set of beliefs, if there is such a thing; yet, nearly 84% of the population of the planet subscribes to a belief system of one entity or another, with promises of some form of reincarnation, or the promise of everlasting life for the most benevolent and subordinate of subjects.

Thankfully, science also agrees with everlasting life. For anyone who studies particle physics, or has an understanding about the creation of our universe will understand the undeniable truth that all of the energy in the universe has always been there and always will be there, which should at least bring some comfort to those of an atheist persuasion. To fully understand the requirements of life we must first understand how our home planet came about, and where that fits in over the course of the cycle of our universe. When we say universe, we mean all of the matter created by the last 'Big Bang' event that continues to emanate outwards today. Without going too deep into Loop Quantum Cosmology or String Theory, there is a consensus now among scientists that reinforces Einstein's original theory of the Cyclic Model that emulates a scaled up version of everything else in the Universe. Now that we understand more about the nature of Dark Matter, which allows for the second law of thermodynamics to remain true, our universe and other universes outside of our own can

theoretically expand and retract with eternal creation, reformation and contraction of universes, causing perpetual and cyclical 'Big Bangs' and 'Big Crunches'.

Our universe at the point of the last 'Big Bang' some 13.82 billion years ago, instantaneously ignited all of the energy that exists into a chain of energy degradation, which, in turn, over billions of years created all of the elements that exist in our world today. This degradation is the transfer of energy from one form to another, and from that single point in time until right this very moment has continued its rate of degradation throughout the Universe. You may get an image in your mind of an explosion from a single point of origin like a firecracker going off. Physicists see it slightly differently due to the homogeneity of sub atomic particles and their relation of travel and subsequent interactions would not only have been logarithmic in speed but also rippled like raindrops on a pond; all rippling out, in all directions and from all directions. Matter and antimatter; pushing, pulling, creating, destroying and interacting with all of the quanta that makes up the standard model of particle physics.

After the initial expansion the sub atomic energy particles would have slowly formed the basic forms of electrons, protons and eventually neutrons. It would have taken thousands of years in our expanding universe to cool sufficiently for the creation of the electrically neutral atoms.

Prior to the formation of the Universe there existed fleeting matter and antimatter, which if existed in equal quantity prior to the Big Bang, would have negated any mass in our universe by the annihilation of quanta; in turn, the opposing forces which would render equilibrium upon its instantaneous ignition. It is this differential of matter and antimatter which gave polarity, thus mass, to subatomic particles. If you are not a Particle Physicist, these comprehensions can remain elusive without prior learning of at least a moderate understanding and a basic grounding in A’ Level Physics. As this book is to assume an eager interest, yet, foundation understanding of the subject, one will assume only basic levels of the comprehension of Physics, without patronising the more erudite reader; a balance at this early stage that I

am quite conscious will become increasingly more difficult, as we traverse through many aspects of the who, what and why of mankind.

In Particle Physics, antimatter is a material composed of antiparticles, which have identical mass as particles of ordinary matter but have an opposite charge and quantum spin.

In Quantum Mechanics, quantum spin is an intrinsic form of angular momentum carried by elementary particles, composite particles (Hadrons) and atomic nuclei. In some ways, spin is like a vector quantity; it has a definite magnitude and in some approximations as having a direction. The angular momentum of the nuclei of elements have either circular orbits and even elliptical orbits, but the 1922 deflection of particles experiment known as the Stern-Gerlach experiment, named after German physicists, Otto Stern and Walther Gerlach, who illustrated the basic principles of quantum mechanics, observed that all of the particles that possessed angular momentum cannot be accounted for by angular momentum alone.

It wasn't until more than 90 years later, in May, 2013 that the last results from the Large Hadron Collider (LHC) at CERN (The European Organisation for Nuclear Research) came in from the final experiment before closing down operations prior to its 2 year upgrade. CERN's Isotope Separator On Line-Detector (ISOLDE) facility discovered the existence of 'Fat-bottomed Nuclei'. It is these octupole, or pear shaped nuclei which have been found within the heavier elements such as radon and radium, that gives us the unequal quantities of matter and antimatter in our universe; and it is this inequality that allowed the Big Bang event to produce all of the mass of particulate matter that exists in everything in our observable universe. It is this extremely tiny, sub-atomic level nuance that allowed all of the material to build our periodic table and all of the matter that exists today. In our perceivable three dimensional umwelten, nothing was actually created at the Big Bang as it was already there; it was merely just switched on by the event, subsequently being given mass.

Over billions of years, the coalescence of ever complex and heavier particles derived from the formation and subsequent decimation of relative nebular hot spots, woven into the fabric of our young

universe; still in the throes of spewing out new stars in a violent struggle for space around pockets of various insidious soups of noble gases, attracting latent star dust from previous such events.

Whole star systems and successive bands of supernovae threw out yet more heavy material; ripped apart instantaneously in incredible and incomprehensible volumes. This nebulosity would coagulate under its vast mass and would spiral into itself by its perpetual consumption of its nebulae, attracting more mass which, in turn, pulled in more and more material by its increasing gravitational forces.

Like giant vacuum cleaners, galaxies would form, swallowing up whole star systems and other galaxies, consuming the most massive early systems that would later become perfect nurseries for the formation of hugely dense neutron stars. Neutron stars are formed when star systems or the centres of whole galaxies become so dense, that it going supernova (a stellar explosion due to gravitational collapse or sudden reignition of nuclear fusion of a degenerate star) causes it to collapse upon itself, imploding inwards, rather that exploding outwards; feeding upon the nebulosity of other nearby star systems.

These emissions of electromagnetic radiation are thrown outward from their poles, and their spinning creates an electromagnetic lighthouse effect; the pulses of which we can pick up today from Earth which are called Pulsars.

Even more massive events that become the centres of nearly all large galaxy systems contain what we call Supermassive Black Holes, where the luminosity of the very energetic, active galactic nucleus emits epic amounts of energy as a quasi-stellar radio source, named a Quasar. Tending to inhabit very young and active galaxies, quasars which emit a thousand times more energy than our own Milky Way Galaxy (which contains 400 billion stars) are the most luminous, powerful and energetic objects in our universe.

From this point on, it is pertinent to have an element of distinction between passages of time, so I will be using the scientific norms of portraying Millions and Billions of years using the contractions Ma, Mega-annum (10^6) and Ga, Giga-annum (10^9) respectively. Ma and Ga are used as constants in the world of science,

circumnavigating differentiating between long UK versions and short US versions of either, which have different numbers of zeros by a power of 3. So; Ma (Million years ago), Ga (Billion years ago).

Our Solar System began with the coagulation and subsequent ignition of our star, the Sun, around 4.57 Ga. A giant molecular cloud containing mostly Hydrogen and Helium formed our Sun and probably many of the other stars in close proximity around us in our Milky Way galaxy. Today, when we look up into the night sky The Milky Way is part of the visible spectrum of the cross-section of our orbiting spiral galaxy which contains more than 400,000,000 stars, which perceivably from Earth with the naked eye, forms the swathe of the milky mass of pinholes that illuminates a clear night's sky, from whence its name derives.

The nebulous dust clouds that were caught in the orbit of the Sun were set in motion prior to its ignition by the ever increasing mass of particulate substrates that became the turgid centre of our solar system. The outer bands of this orbiting dust cloud started to rub together, creating electrically static charges which attracted smaller particles nearby. This snowballing of attraction created many growing clumps of dirty snowballs, gaining mass and adding to its gravitational potential. Each greater ball of coagulated muddy grains derive from star dust; various elements left over from previous stellar supernovae wandering the depths of space, only to be caught up in a trajectory toward the most powerful nearby gravitations, inevitably forming and growing the various floating bodies in the solar system.

Absorbing greater masses of these globular balls of dust and gasses, the stellar dust vacuum cleaners started swallowing up more and more space debris, adding to the growing volumes of coagulated matter that would eventually form the planets of our solar system.

The rocky inner planets of our solar system differ greatly in composition from the gas giants of Jupiter, Saturn, Uranus and Neptune. Our early protosun comprised a disk of gas, hotter at its centre, causing the rock-forming elements to condense forming the inner terrestrial planets of Mercury, Venus, Earth and Mars, whilst at further, outer reaches, elements of ices and gases formed the gas giants.

By around 4.558 Ga, Earth had coagulated into a rocky mass about two thirds its size today. Devoid of water, this hot, baron land was scalded on its surface by the Sun's heat, blasted by radiation, and building internal temperatures inside due to huge pressures from its own increasing gravity and its own compressive pressures under its ever increasing mass.

For hundreds of thousands of years, Earth was bombarded daily by hundreds of house sized meteors as the biggest planets swallowed up everything in their orbital pathways. These meteors would strike the young Earth at rock melting velocities, unto a protoplanet devoid of any discernible atmosphere to slow down their trajectories; re-melting the surface of the thin crust, too regularly under fire from incoming missiles of rock and ice to cool down upon on its surface.

As Earth grew, it reached much the size it is today around 4.54 Ga, with much of the water ice it received from icy comets over hundreds of thousands of years, boiling off into the thin atmosphere that would slowly dissipate back into space, due to the Sun's electromagnetic radiation that was much stronger then, than it is today.

Around 4.527 Ga, a Mars sized planet named Theia, which existed in a cross-elliptical orbit with Earth, collided in a massive planetary impact. Mantle material from both Earth and Theia were strewn into space in a brilliant fireball of molten rock. Much of this ejected material became caught in Earth's gravitational pull, placing a rapidly cooling ball of planetary matter into orbit around a young Earth. This event is the story of the creation of Earth's only satellite, our Moon.

Earth, now decimated by this lunar forming collision had completely melted; from its reformed surface, devoid of atmosphere or crust, boiling in a furnace of molten lava down to its epicentre, now white hot. During this period, the Earth was so hot that the elements contained within started to form internal strata, with the heavier elements such as iron, sinking to its core. It is this iron core which created the Earth's magnetic field which in turn gave the young planet polarity. The Earth with its new magnetic field would now act as a

barrier to dangerous solar flares that boil off Earth's fledgling atmosphere, protecting it from dissipating into space.

Armed with a thickening atmosphere, Earth could now receive ice comets and frozen debris from the solar system's ice belts without boiling away the water and evaporating it back into space by the ionization from the Sun's electromagnetic radiation. Oceans could now form under the protection of Earth's magnetosphere.

By 4.46 Ga, Earth in a form that we would vaguely recognise today was fully formed, with steaming hot, shallow seas and variably unstable landmasses spewing out choking amounts of sulphur. This emerging world of rapid surface cooling would continue to increase its liquid water reserves, which reached ocean forming volumes by around 4.0 Ga, marking the end of the first great period named the 'Late Heavy Bombardment' and the first signs of cellular life.

The power of the gravitational forces of the Moon would have an effect upon the growing expanses of open water on the new planet; and the Sun, having an effect on its internal iron core, creating electrothermal currents which move molten magma in a conveyor belt around the depths of our young planet, causing massive tectonic movements, earthquakes and volcanoes.

The Moon itself would have also contained much of Earth's water in its early formation, but the problems that early Earth encountered were also to be reproduced on the Moon. Without enough mass to hold strong enough levels of gravity and without a magnetosphere, meant the Moon's small atmosphere and the water held within it would quickly dissipate back into space. This caused the barren landscape of the extremes of hot and cold we observe today with the waxing and waning of the Moon around our Earth in relation to the Sun.

By 1.1 Ga, in the late Precambrian epoch, a great supercontinent named Rodinia housed landmasses which would later form parts of North Africa, India, and Antarctica along the equator. This was a late Proterozoic 'Ice House' epoch, much like today, except the archaic landmasses that would form China, Arabia and parts of Australia would be ice covered at the North Pole and at the South Pole, the archaic

landmasses that make up today's West Africa, Amazonia, Laurentia, Alaska, parts of Siberia and Scandinavia, which by 650 Ma would breakup into landmasses that become split by the Panafrican Ocean in the west and the Panthalassic Ocean in the east.

By 514 Ma, during the late Cambrian epoch, animals with hard shells started to appear. The continents were flooded by shallow seas. The supercontinent of Gondwana had now formed and was located near the South Pole. The middle Ordovician epoch of around 458 Ma, had featured ancient oceans named the Paleo-Tethys Ocean and Iapetus Ocean, which separated the barren continents of Laurentia, Baltica, Siberia and Gondwana. The end of the Ordovician was one of the coldest times in the history of our planet.

Throughout Earth's history, the planet has undergone extreme events know as 'Snowball Earth', whereby virtually the entire planet was covered in ice. Three times that we know of and a possibility of a fourth over the last 2.5 billion years, Earth has fallen into a cataclysmic cooling period.

The initiation of a snowball Earth event would involve some initial cooling mechanism, which would result in an increase in the Earth's coverage of snow and ice. The increase in Earth's coverage of snow and ice would, in turn, increase the Earth's albedo, which would result in a positive feedback of cooling; whereby, if enough snow and ice accumulates, runaway cooling would result. This positive feedback was facilitated by an equatorial continental distribution, which allowed the ice to accumulate in the regions closer to the equator, where solar radiation is most direct.

Many triggering mechanisms accounted for the beginning of each snowball Earth event, such as the eruption of a supervolcano, or a reduction in the atmospheric concentration of greenhouse gases such as methane and carbon dioxide, changes in solar energy output, or perturbations of the Earth's orbit. Regardless of the triggers, initial cooling resulted in an increase in the area of the Earth's surface covered by snow and ice, with the additional blanketing reflecting more solar energy back to space, further cooling the Earth and further increasing the area of the Earth's surface covered by yet more snow and ice.

This positive feedback loop eventually produced a frozen equator as cold as modern-day Antarctica. The carbon dioxide levels necessary to unfreeze the Earth have been estimated as being 350 times what they are today; about 13% of the atmosphere. Since the Earth was almost completely covered with ice, carbon dioxide could not be withdrawn from the atmosphere by release of alkaline metal ions weathering out of siliceous rocks. Over 25 million years, enough CO_2 and methane, mainly emitted by volcanoes, would accumulate to finally cause enough greenhouse effect to make surface ice melt in the tropics, until a band of permanently ice-free land and water developed; this would be darker than the ice, and thus absorb more energy from the Sun; initiating a 'positive feedback'.

On the continents, the melting of glaciers would release massive amounts of glacial deposits, which would erode and weather. The resulting sediments supplied to the ocean would be high in nutrients such as phosphorus, which combined with the abundance of CO_2 would trigger a cyanobacteria population explosion, which would cause a relatively rapid reoxygenation of the atmosphere, and may also have contributed to the rise of the Ediacaran biota and the subsequent Cambrian explosion; a higher oxygen concentration allowing large multicellular lifeforms to develop. This positive feedback loop would melt the ice in geological short order, perhaps less than 1,000 years; however, replenishment of the atmospheric oxygen and depletion of CO_2 levels would take further millennia.

Destabilization of substantial deposits of methane hydrates locked up in low-latitude permafrost would also have acted as a trigger and a strong positive feedback for deglaciation and warming.

The Ordovician era marks two extremes. Very cold at its end around 460 Ma, yet at the beginning around 485.4 Ma, the planet was extremely hot; due to high levels of CO_2, around the world, marine waters would have been around 45°C (113°F).

In the Silurian epoch of around 425 Ma, Laurentia collided with Baltica, closing the northern branch of the Iapetus Ocean and forming the "Old Red Sandstone" continent. Coral reefs expanded and land plants began colonising the barren continents.

By the early Devonian epoch around 390 Ma, the early Palaeozoic oceans were closing, forming a "pre-Pangaea". Freshwater fish were able to migrate from the southern hemisphere continents to North America and Europe. Forests grew for the first time in the equatorial regions of Arctic Canada.

During the Early Carboniferous (365 Ma) the Palaeozoic oceans between Euramerica and Gondwana began to close, forming the Appalachian and Variscan mountains. An ice cap grew at the South Pole as four-legged vertebrates evolved in the coal swamps near the Equator. By the Late Carboniferous (306 Ma) the continents that make up modern North America and Europe had collided with the southern continents of Gondwana to form the western half of Pangaea. Ice covered much of the southern hemisphere and vast coal swamps formed along the equator.

The Permian era held the greatest extinctions of all time. By the late Permian (255 Ma), vast deserts covered western Pangaea as reptiles spread across the face of the supercontinent. Here, 99% of all life perished during the extinction event that marked the end of the Palaeozoic Era. The supercontinent of Pangaea was mostly assembled by the early Triassic of around 237 Ma, allowing land animals to migrate from the South Pole to the North Pole. Life began to rediversify after the great Permo-Triassic extinction, with warm-water faunas spreading across the Tethys Ocean.

By the Early Jurassic (195 Ma), south-central Asia had assembled. A wide Tethys Ocean separated the northern continents from Gondwana. Though Pangaea was intact, the first rumblings of continental break up could be heard. The supercontinent of Pangaea began to break apart in the Middle Jurassic. In the Late Jurassic (152 Ma) the Central Atlantic Ocean was a narrow ocean separating Africa from eastern North America. Eastern Gondwana had begun to separate from Western Gondwana.

During the Cretaceous the South Atlantic Ocean opened. India separated from Madagascar and raced northward on a collision course with Eurasia. North America was still connected to Europe, and Australia was still joined to Antarctica. By the end of the late

Cretaceous (94 Ma) the Earth as viewed from space is now starting to resemble the globe we all know today.

In the area of modern day Chicxulub along the Gulf of Mexico around 66 Ma, the impact of a 10 mile wide comet caused global climate changes that wiped out the dinosaurs and many other forms of life. By the Late Cretaceous the oceans had widened, and India approached the southern margin of Asia.

The middle Eocene 50.2 Ma, India began to collide with Asia forming the Tibetan plateau and Himalayas. Australia, which was attached to Antarctica, began to move rapidly northward.

By 20 Ma, Miocene Antarctica was covered by ice and the northern continents were cooling rapidly. The world by now has taken on a "modern" look, but Florida and parts of Asia were still flooded by the sea. By 14 Ma the world resembled much as it does today.

When the Earth is in its "Ice House" climate mode, there is ice at the poles. The polar ice sheet expands and contracts because of variations in the Earth's orbit, known as the Milankovitch cycle; with the last expansion of the polar ice sheets taking place about 18,000 years ago, terminating the end of the Pleistocene era around 11,700 year ago.

This vague introduction to our planet and its origins as loosely described for the last 15 minutes may seem like a fleeting chronology of random geological facts, yet every stage is significant to our time on Earth today. From this point, the dawn of civilisation takes place, with humanity and its story, which when viewed on a geological timescale, is blindingly evident we are causing the most profound changes to our only home. The scars we are leaving behind today have not been seen on Earth at this scale and at this rate for over 4 billion years.

Yes, the world's CO_2 levels have now surpassed 400ppm which is a massive jump geologically in such a short space of time. The world's media is full of ambivalence about global climate change. Deniers who say it's just a new form of taxation for carbon this and carbon that: Yes, when put into this context the money created from green energy is crazy and completely unnecessary. The world should be more acutely aware that governments trying to ratify carbon exchange

and policy are creating big business off the back of these green credits. On the other hand, the left-wing greenies who picket around the world are alarmists at our so-called, immediate and imminent danger. Somewhere in the middle is a logical pathway for change. The world has endured and fully recovered from extreme events and much higher levels of so-called 'pollutants', that we will produce even at present or accelerated outputs for another 100 generations, but if this is your attitude then you are missing the point. All of these changes are blindingly fast. When you compare the geological timescale of the changes humanity is making to our planet right now to the speed of plate tectonics, the creation of mountain ranges, the meandering of river systems; these changes are significantly profound, scarring land, sea and air.

Whether you are a global warming denier, a hardcore left-wing greeny, a climate alarmist or someone who plainly doesn't see any problem at all, as it doesn't really affect us that much, should know one thing: If anyone thinks for just one second, that the processes of 7 billion people amidst a population explosion, who all need food, water, electricity and transport; who burns hundreds of millions of years of carbon deposits in coal, gas and oil in just 150 years, and who will continue to do so imminently at a global incremental rate of 8% per year, climbing year on year at an accelerating rate; that pumping all of this shit into our balanced ecology will have no immediate impact on humanity, is an absolute imbecile. Fact.

CO_2 is good for the planet. The more of it in our atmosphere, the better plants grow. Animals can grow bigger and metabolisms grow slower in response, meaning we can potentially live longer lives. The fact is mankind is tilting the balance of all ecological processes that exist in our world today. Life will survive; life will adapt, but at what cost? Not all of it will survive. Extinctions are happening at a rate 1000 times higher than normal historical background levels. We won't have enough drinking water to supply demand as our mountain glaciers that supply the vast majority of the population starts running out due to accelerated climatic melting. This is happening now. I'm not an alarmist. This is a fact.

The millions of people who live on river deltas and low lying coastal cities around the world will be displaced by cataclysmic flooding by increasing freak weather events and rising sea levels. This is happening more and more frequently, killing hundreds of thousands of people every year. Not in my back yard! Don't care? Good for you and your failed conscience; go and see these people. See whole generations of families ripped apart by turmoil. Look into their eyes as they beg you to save them. Look into the whites of your brother's and sister's eyes and tell me you don't care.

Scientifically speaking, humanity right now is doomed for imminent hardship, death and misery, as each generation is bequeathed the gift of our forefathers. We are not approaching it, we are not at that point now; we are passed that point! The global effects of our ignorance do not heal as soon as we change our ways, they take time to re-balance. Our grandchildren will already pay the price for our actions of yesterday. Our world will get warmer, even though we are technically still in an ice-age. This is a chemical inevitability. Fact.

Our population is exploding and the world we live in cannot sustain us in our prolific ways and mentality anymore. The motions of accelerated warming are upon us, we cannot change that now. I do not subscribe to the media hype about global warming. As a scientist I deal with empirical data. I have been privy to this data, week after week at source, living it, breathing it for over 20 years. The message gets mixed up by people's hang ups and misunderstandings about freak weather events, build-up of ice in parts of Antarctica, bad summers, cold winters, and other apparent notions that climate change is not real, drastic, imminent and completely man-made. This, is just weather.

For me, that is another book in itself, as the dynamics of climate is complex, but not unfathomable as many would suggest. There are also negating facts which mask the data into giving skewed results, such as the relocation of trade winds and jetsreams, the phenomenon of Global Dimming, rendering the true parameters of climate models to miss the mark without all of the known parameters taken into account. To me, it is very simple mathematics. The numbers just don't compute.

It takes a skilled Polymath to envision the chain of events from data as they unfold.

I deal in computational data models every day. It is my life; it's what I do. The truth is sad, but not without hope. We are now poised to make a significant change in our world. Not pay lip-service or start pandering to some governmental target for ratification of this and that goal. This does not work when mankind isn't fully aware of the consequences it is facing. Sadly, many people will die before the consciousness of the populous truly starts to understand. Mankind is currently teetering upon a precipice of annihilation, not of its home, this will endure; but of itself.

If everyone truly understood just 50% of the contents of this book, we would have enough knowledge to change our fate as a race.

It is imperative that we shed the skin of our historically decadent pasts, throwing away the cults of ancient man, becoming self-aware as a symbiotic culture on Earth which sees harmony and balance on this amazingly diverse and beautiful planet we call our home. We only have one planet that we live on. Let's start the shedding of everything we think we know about the world, and start seeing the truth that will become our salvation.

CHAPTER 2

Religion

There are still remote places on Earth today that resemble the earliest arenas for the proverbial spark of life to perpetuate in the proving grounds of our beloved planet. Tiptoeing around the delicate religious connotations of casually throwing in the words "spark of life" mid sentence, does not invoke, nor require the hand of God to do so, when one fully understands the laws of physics, chemistry, thermodynamics and the inevitable decay of The Universe; a paradox that was known and understood by the great Austrian physicist, Erwin Schrödinger, when he wrote the book, "What is life", in 1943. The self-reinforced delusions of religious faiths requires at this point to scream from the rooftops "Blasphemy!", in the way that fundamentalist institutions deal with empirical matters that are in direct contradiction with the holy books that they covet. For all religions, to imply that the personification of the Gods of religious beliefs new and old are not the creators of everything, and the simple act of questioning the validity of such things, as science does, is an act in itself of blasphemous heresy. This fear of persecution, fear of sin, fear of judgement, fear of not progressing to the promised lands of eternal fountains of everlasting youth; to whichever side of the personification of the God of which one subscribes, is deemed to sit next to, hides a ubiquitous duality that exists within every religion.

The day and the night, the heavens and earth, the light and the darkness; these good versus evil dualities exist in the countless iterations of astrotheological worship since ancient times.

Since the waning of the last interglacial period, marking the end of the Pleistocene era 11,700 years ago, the start of the Holocene saw a spark of religious ferment. Modern Humans, Homo Sapiens *Sapiens,* were already 40,000 years established out of Africa in subsequent waves of migrations, powered by the nomadic wandering in the early eras by way of coastline filtering and the following of seasonal migration paths of grazing herbivores; later by way of large organised families, splitting off from known routes due to either famine, failing crops, or from being too large a group to sustain itself, based upon local wildlife and food reserves.

The profound animalistic instincts, to eat, to reproduce, to conquer, to war over possessions, for mating rights and the drive to protect your family over this period was not only at its height, but the temperance of modernity had yet to be instilled upon the brutal populous by way of religious strongholds. Rage, lust, hunger, jealousy and fear urged an exponential explosion of the like never before seen in any previous mammalian population. This is what drove and perpetuated the rapid expansion of our species, armed with art, language, tools and a sense of self, remorse, loss and death.

Due to our morphology, our rich and varied diet, our bipedalism, our ability to hunt over great distances whilst controlling extremes of body temperature; our opposed thumbs that give us great dexterity and accuracy; and now, with our newly honed skills of forethought and reason; we are the first species on this planet to be able to pass memories of skills learned to more than one generation.

The ability to develop grunts and gestures into dialects, colloquialisms, and finally into a decipherable, modular language, gives a species the power of informed choice; to face the future of winters and harvests ahead. To dwell on lost family members and depict stories of past events in paintings and artwork, using paints, trinkets, beads and collectables, now becoming desirables and worthy of trade, and all with a quantifiable price.

Nomads to settlers, opportunists to conservationists, foragers to stockpilers; from this point, humanity remained forever mindful of tomorrow instead of just living for today; traits now recognised as

uniquely human activities. Agriculture, husbandry, farming, plantations and trade, not only did this give mankind the impetus for profound change of daily thought patterns, but the most dramatic change in all of this, is the way mankind inadvertently paved the way to what became the greatest barrier to the continued enlightenment of humanity, in its extremely short amount of geological time as the dominant species on this planet.

The ebbing and flowing of climate and its affects upon vegetation and its migration paths over millennia, created rapidly changing niche markets for the resourceful human to quickly adapt to its surroundings, dominating the new spaces created. The pervasive nature of early humanity spanned land bridges across frozen tundra. Continents, long separated by oceans, were once again navigable by foot; as was the much of today's Mediterranean which was some 100m lower during the early parts of the Holocene.

North Africa has seen the cyclical nature of the retreat of dense boreal forest during the heights of the last great ice ages, yet within our short human history, North African temperate forests gave way to rich rainforests which rapidly migrated south during the late Neolithic period of recent human history. During the Ancient Egyptian dynasties, forest was replaced with Savannah and by the eras from classical antiquity to the Ottoman Empire, parts of Egypt where engulfed by vast swathes of desert up to a depth of 180m, forming an area of North Africa the size of the United States.

Subtle changes in the amount of heat energy reaching the planet where the conditions are right, can cause significant movements in the trade winds and delicately balanced jet streams. The Sahel, Africa's major ecoclimatic zone, which spans the hot, arid Sahara Desert with the Sudanian Savannahs, that stretches right across North Africa from the Atlantic Ocean in the west, to the Red Sea in the east. The Sahel region controls the major weather systems of North Africa, especially the major annual monsoon season. Minor changes to the climate can have major affects upon this delicate balance, and even today, the major droughts that have struck countries in the Sahel area over the last

30 years are at the mercy of the Sahel system dropping its rain belt far enough north year after year.

Severe droughts have been documented in this area for hundreds of years. In the middle 15th century, the Sahel was under what is known as a Megadrought, which lasted for 250 years. The Sahara is as large now as it was 13,000 years ago and has historically also been much larger than it is today. During the interim, the whole area became much wetter and land became very fertile along the Nile delta, where the civilisation of Ancient Egypt arose to create the magnificent, awe inspiring monuments for which modern Egypt remains so infamous for today. Say "Egypt" to almost anyone around the world and it will almost certainly evoke images of the Sphinx of Giza and a pyramid or three. Popular modern visions of archaeological conquests by colonials during the turn of the last century of Mummies, Pharaohs, cats and hieroglyphics, have been depicted and glamorised on the silver screen for generations, and the mysticism of Tutankhamen's touring sarcophagus has instilled wonder the world over.

Perihelion is one apsis that describes the orbital distance of our planet in relation to the Sun. Often called Perigee and Apogee for nearest and furthest events; *peri* meaning "near" in Greek and "helion" from the Greek *Helios,* which means "Sun". Perigee and Perihelion refer to the context of the closest to the Sun that the Earth gets, during its elliptical orbit. With a more acute tilt in Earth's axis and the Earth reaching perihelion 9000 years ago, this vast swathe of North Africa has continued to receive less rain as the Sahel's monsoons fall at lower latitudes, and so, the Sahara devours the land and its ancient relics of a once lush and fertile Egypt.

Sedentarisation, the process of the transition from a nomadic lifestyle to a society that remains in one place permanently occurred some 14,000 years ago in the Levant region of Asia Minor, soon followed in this region we now call Anatolia, a derivative of "east" in Greek, soon followed by other civilisations around the world by the end of the Pleistocene. This area around modern day Syria, Israel, Palestine,

Jordan, Lebanon and Iraq, was navigable with ease across the eastern border of Cyprus to southern Turkey, when the Mediterranean Sea was much lower than it is today.

Neolithic civilisations gave way in the Anatolia region to Bronze age Hattians 4,500 years ago, followed by the Akkadians, followed by Assyrians, followed later still by the Old Kingdom Hittites. The mixing pot of the world; waves of migrations in and out from Europe, Africa, Balkans, the Russian Steppes, from India, Mongolia and from the Middle East and Far East Asia. These essential old world trade routes gave way throughout recent history to Lydians, Scythians, Babylonians, Kaskians, Georgians, Ottomans, Parthians, Romans, Turks, Kurds, Greeks and many, many more. The epicentre of this mixing pot of empires was Mesopotamia. Situated in the "land of rivers", the name given to the Tigris-Euphrates river system which corresponds to modern day Iraq, north-eastern Syria, south-eastern Turkey and smaller parts of south-western Iran, Mesopotamia is considered to be the western cradle of civilisation. In the heart of Mesopotamia around 6,500 years ago, the region's settlers grew into the land of the civilised kings, prehistoric peoples that are now catchily named today as proto-Euphrateans or Ubaidians, but historically named the Sumerians. As prehistoric Mesopotamians, the Ubaid people who settled upon the alluvial plains of the Tigris and Euphrates Rivers brought their long cultural history from settlements that date as far back as 7,300 years ago. The Ubaid period appeared in greater numbers around 6,500 BC, and these settlements over time became one of the first great civilisations of human history who popularised the adoption of the wheel some 5,500 years before present. The Sumerians had a primitive democracy where disputes which were formally settled by a council of one's peers, later became a kangaroo court of local community.

Proto-writing systems from the early Neolithic period were ideographic mnemonic symbols as far back as 9000 years ago, which conveyed information, yet was devoid of any linguistic content. Sumerians developed the Cuneiform script 5,400 years ago, starting as a system of pictographs. This developed later into a wider range of

abstract characters and later spawned many new Cuneiform languages and inspired Old Persian Cuneiform, which incorporated a semi-alphabetic script.

From 70,000 years before present until the development of agriculture some 10,500 years ago, there were less than 1 million people on Earth. During the time of the Sumerians there were still less than 20 million people on the planet. The technology from this period wasn't just limited to the adoption and utilisation of the wheel and the creation of cuneiform, they also gave us arithmetic and geometry, irrigation systems, the lunisolar calendar, leather, waterskins, bags, harnesses, boots, sandals, bronze, saws, chisels, hammers, nails, hoes, axes, knives, arrowheads, swords, daggers, armour, chariots, scabbards, harpoons, glue, and the highlight for many of us; beer.

To assign a date when this happened or write a number of how many years ago this was, try and think now how different life was for your great-grandparents. Some may say the good old days, the younger generation may even gasp at the lack of modern technology; no phones, no television, no computers, no social media, my goodness, how on earth did they survive!? This my friends, is just 3 generations back.

Your parent's, parents', parents. There were less than 2 billion people on this planet, not the 7 billion people there are today.
Write it down, 7,000,000,000. Seven thousand million people!

Just as it was in the days of your great-grandparents, there are more people alive today, right now, than has ever existed in human history. So, let's put things into perspective. Just 3 generations ago, nothing existed that we would recognise today as modern technology. Even the machines of industry; trains, cars and photography bear little resemblance to today's iterations. The technology of the Sumerians was 25,000 generations ago! One of the main problems why people have trouble with large numbers like this is that they lose all concept of time. To quantify it in this way makes the numbers seem impossibly great, unless when one tries to comprehend the passage of time in recent human history in units of generations.

Would it have been easier in ancient times to comprehend such numbers? The short answer to the layman of hallowed antiquity, is no.

Shy of the digits of fingers, toes and if they were very lucky, an Abacus, (another Sumerian invention) would any comprehension of such numbers be limited to items of equal number as a reference.

To speak of the ancients and reel off lists of numbers is easy; to allow someone to truly understand the perspectives and fully comprehend in a meaningful way the details, is not only very difficult for some to grasp, but essential when it comes to understanding the passages of time over much greater distances on a logarithmic scale of exponential levels of time, distance and space.

Mankind is a newcomer to planet Earth, far removed from the origins of The Universe. If our universe was born 14 billion years ago, man did not “appear” until about 13.996 billion years later. If such time were represented by one 24-hour day, with the Big Bang occurring at 00:00 hrs, then Man did not arrive on the scene until 23:59:58 hrs. Man’s allotted time during one 24-hour day would represent a measly two seconds.

The learned Sumerian scholars, however, understood time, astrology and mathematics very well, and their scribes were the first documented accounts of civilisation writing down their beliefs. These beliefs became extremely inspirational in later Mesopotamian mythology, religion and astrology.

"*An*" was the full-time god, equivalent to "heaven". In fact, the word "*an*" in Sumerian means "sky" and his consort "*Ki*", means "Earth". "*Enki*", was the god of beneficence, ruler of the freshwater depths beneath the earth. As a healer and friend of humanity, who in Sumerian myth was thought to have given mankind the arts and sciences, industry and the manners of civilisation. "*Enlil*", was the lord of the ghost-land. His gifts to mankind were said to be the spells and incantations that the spirits of good, or evil were compelled to obey.

"*Inanna*", was the first deification of Venus. She was the morning (eastern) and evening (western) star. There were two sun gods "*Utu*" and "*Sippar*" and finally the moon god "*Sin*". There were literally hundreds of minor deities and the Sumerian gods had specific associations with different cities, and their religious importance

depended greatly upon the waxing and waning of each city's political power of the time.

The scribes of Sumerian religion were based heavily on astronomical observations and was the birthplace of astrotheological stories that became the working template for every single religion thereafter; giving birth to thousands of Gnostic, Monastic and Pagan derivative religions including the ancient Near East religions, the monotheistic Abrahamic religions of Judaism, Christianity and Islam, the Dharmic religions of India including Hinduism, Buddhism, Jainism and Sikhism; the hundreds of Taoic religions of East Asia including Confucianism, Shinto, Chen Tao, Cao Dai, Hao Hao, Jeung San Do, I-Kuan Tao, Chondogyo, Mahayana Buddhism, Chan Buddhism and Shamanism; also, not forgetting Contemporary Paganism and its subsequent renaissance of Heathenism, Druidism, Occultism and other marvels such as Jewish Wicca Semitic Neopaganism, Spiritual Humanism, Reconstructionism and Queer Paganism.

The Luvian pantheon of Anatolia exerted a very strong influence on the ancient Greek religions, whilst Assyro-Babylonian religions heavily influenced Archaemenid-era Zoroastrianism and Judaism. Christianity, the newest of the Gnostic astrotheological literary hybrids, is so, because of the heavy borrowing and strong influence of Egyptian, Greek and Mesopotamian religious traditions. Plagiarism is replete throughout both Old and New Testaments borrowing many transliterations of spells from the Egyptian "Book of the Dead" and whole stories lifted directly from the Sumerian poem "The Epic of Gilgamesh". Christianity, being the latest incarnation of Gnostic literary hybridisation, exploded onto the map after very humble, mystic and insular beginnings. The timing of which was driven by both astrology, as the procession of the equinoxes entered into a new age; and the martyrdom that the Roman Empire gave early Gnostics for the conviction of their beliefs.

To understand the importance of both of these facts, we first need to understand what was driving the Roman Empire at the time,

what was the sequence of steps that led to its downfall and the uptake of Christianity throughout this realm over the coming centuries?

At the height of the great Roman Empire, it controlled more than 6 million square kilometres of land, ruling 50 million subjects in modern day Europe including Greeks, Etruscans, Gauls and Egyptians, all united as a single civilisation. Once the furthest outreaches had been conquered, Rome's greatest challenge was to win the allegiance and loyalty of its subjects. The people of newly conquered and assimilated areas became citizens, and were urged to embrace the Roman culture and traditions. To enable this, the great distractions of public animal slaughter were put on show in the various amphitheatres that were cropping up all over this vast land. In just one year in 80 AD, Emperor Titus staged the slaughter of over 9000 wild animals for the amusement of the cheering mob, which later became the beating heart of the empire. Countless Lions, Tigers, Elephants and Giraffes were brought across from great distances to die in front of frenzied audiences. In a single celebration of successful conquests in battle, Emperor Trajan, presented to the arenas 10,000 gladiators, slaves and criminals, doomed to savage and brutal combat for the amusement of the screaming crowds. These games of death were organised as violent propaganda machines, using spectacularly cruel displays of drama and excitement. Zealous crowds would gather many hours before tournaments to assure the very best viewing positions in the great arenas. These games were far more than just games and entertainment for the masses, they were the very essence of Roman-ness for the empire to admire.

From the very early days of the empire, Rome had a unique way of attaining and keeping the loyalty of new citizens. In the very early days, Rome was just a small, insignificant village with little power at all, outside of its vicinity. By 350 BC it had existed as an independent power for more than a century. Her influence spread slowly south, into the lower boot and heel of Italy. Rome's immediate neighbours, the Etruscans, Samnites, and Latins were the first people to be assimilated into the young empire.

It was the first case in history for conquered people to be given new citizenship, bringing forth more loyal subjects, who would later be

consigned into battle, fighting for the greatness of Rome. Taking on the new laws, customs and the adoption of Latin as a unified language, was to be the basis of western civilisation for the next 1000 years. The culture of being a republic, the new empire gave its citizens safety in numbers, military protection, an established legal system; the riches of the spoils of war and rich mineral deposits drove an early economic boom. Parts of Rome's early success was due to the geographic position of its rich soils, near perfect growing climate and the long growing season of the most fertile land in Europe. What was once a small collection of farms and provinces was now encroaching into the realm of a new world order, to be carbon copied and spread throughout the lands. Rome had conquered her first great enemy in Carthage, in the north of Africa in 146 BC, which changed the face of Rome forever. By this time, Rome had conquered most of Italy and many parts of the Mediterranean coastline and parts of northern Africa.

Up to 140 BC, Rome was still a democratic republic, which had now grown into an ever increasing empire, controlling more than 400,000 square kilometres of land and more than 4 million people who lived under Roman rule. The spoils of war rapidly brought massive wealth to the economy as Rome devoured new lands. The riches plundered from the lands during conquests included jewellery, gold, ivory, spices, art and a new kind of commodity; slavery. From Carthage alone there were 250,000 soldiers enslaved, 150,000 Greeks, 100,000 Gauls, tens of thousands of Spaniards, Germans, Thracians, Syrians and Jews who all became Romans against their will.

At its peak, the Greek island of Delos became the empire's greatest slave market, selling up to 10,000 slaves per day. In Rome's rural economy, this flood of slave labour had a huge impact. Whilst peasant soldiers were away fighting the wars, rich aristocrats would either buy or steal the land, farming it with slave labour. The perpetual expansion, spoils of war and slave labour drove the continuous cycle of the empowerment of the Roman Empire.

The great city of Rome became the only place to be for any budding entrepreneur and was certainly the best place to be if you wanted to make money. The growing divide between Rome's rich and

poor was huge. Rome would import anything. If you were rich enough, you could buy anything that your heart desired, as Rome was indeed the glorious marketplace of the world, and a haven for the wealthy. The cargo imported was spectacular in both quantity and quality. Jewells, gold, marble, silk, fur, spices, ivory, papyrus and linen all arrived daily by the shipload. Romans were veracious consumers of wheat, oil and wine. It was a heavenly place where connoisseurs could sample the finest examples their empire had to offer. However, the only thing that Rome exported was Roman-ness. Their armies spread the unified language of Latin, as well as a single currency, laws, customs and ideals. Conquered cities and villages were transformed into majestic cities built of marble and stone. With these construction techniques and with magnificent, awe inspiring architecture that man had never before seen, Rome laid down the foundations of many of today's modern towns and cities. During the second century BC, Roman builders discovered the properties of mixing volcanic ash with lime, which they called Cementium. This was the world's first true concrete, and the reason why so much of ancient Rome still survives today.

Rome built cities in a very orderly and structured fashion, laying out streets in a grid system, like many modern cities do today. This template was so successful that the same city was built more than 600 times in Africa alone! Many of today's modern cities including London, Paris and Bonn were built directly on top of their Roman foundations. Roman architecture still remains the image of power and order throughout today's western world.

Apart from Rome itself which grew slowly and organically over centuries with its tight, twisty roads and snaking back alleys, the perfect template created time and again for a Roman city would always include temples, baths, theatres, large open public spaces and of course, great roads. A marketplace was always essential, as was a brothel, and every important city would have at least one amphitheatre.

One of the most famous symbols of Rome, the Colosseum was the template for amphitheatres throughout the empire. Even today, before skyscrapers and places of worship, a modern city will build a

stadium as a symbol of its arrival. Arenas were so important during this time, as it symbolised the greatness of Rome to its people.

Gladiators, popularised by the silver screen were usually criminals, slaves or prisoners of war, who became specially trained to fight in the arenas of death. As depicted in Ridley Scott's epic turn of the century film, Gladiators who fought bravely or had frequent or famous victories could earn the chance to win their freedom. This would appease the desires of the people to feel as if they shared the experience of battle, from watching historical re-enactments in great arenas, giving pride and strengthened allegiance to the empire.

Land enveloped by Rome is today divided by more than 40 nations. From the Atlantic to the Euphrates, from the Sahara to Scotland, more than 3 million square kilometres. An impressive network of paved roads over 85,000kms connected the empire, meaning that the armies could get to anywhere in Rome within a matter of weeks.

Beginning in 31 BC, the famous *"Pax Romana"* was a period of splendid peace and prosperity for the great empire. Two glorious centuries of peace and order, blessed Rome and all of her colonies. During this period the empire continued to grow, shifting eastwards, adding Mesopotamia, Syria and Arabia. The empire now stretched 5,000kms from end to end, with the hearts and minds of Romans believing that the greatness of Rome would be eternal. In fact, over 1000 years, the great city of Rome, even though it was much bigger than any other city in the world, never exceeded one million people. After 106 AD, the empire also ceased to expand.

Rome, as an empire produced the best crops in the land, with Romans thinking this would last forever. The physical boundaries of Rome were halted by the Sahara desert in the south, the Atlantic Ocean to the west, and a climate boundary to the north. Expansion did encroach into Germania, but Romans refused to venture too far into land where they could not grow olives and grapes. Beyond the olive and the vine, Romans ran into northern Europe, beyond the Black Sea, thinking it was a very strange place indeed. Germania was seen as a strange world of Barbarians. This odd vegetation boundary was full of

beer drinkers, a place of harsh winters in a land where people cooked with butter rather than with olive oil. Life for Romans was wine; the most important commodity of the land.

So, the final push took them eastwards to the last great conquest of Dacia, a rich empire located in modern day Romania. The Emperor Trajan had great victories there in 106 AD; bringing spectacular spoils back to Rome. There were tens of thousands of slaves, over 160 tons of gold and 150,000 tons of silver. It was enough to completely transform the city of Rome. Grand new monuments were built which included Trajan's Column, which depicted every phase of the Dacian war. There were enough treasures to have great victory celebrations, 35 continuous days of games and festivities. It was a grand and glorious period of opulence and awe inspiring displays of excess. Never would there be splendour on this scale ever again. Silver mines throughout the region started to dry up. Currency having previously been solid silver now only contained 40% of this precious metal. Africa had been so extensively hunted, that the wild animals used for these grand games were much scarcer, becoming harder to come by, even leading to the extinction of the Moroccan Elephant. The literature of this period speaks of massive amounts of greed and corruption, with many Romans now seeing the ridiculous extremes of wealth as a vice. No longer expanding, there were no more spoils of war to upkeep a very expensive and resource hungry empire. Taxes rose quickly and tax avoidance became prevalent. Defence was Rome's greatest expense. Maintaining the empire was so expensive, Emperor Marcus Aurelius tried to solve the problem in the same way that Romans always had, by going to war.

In 162 AD, he invaded the Parthian Empire in the east, marking the end of the *"Pax Romana"*, a war in which the overextended and out of practice legions where destined to lose. The only thing the legions brought back was a plague of disease that ultimately killed 5 million people, a full one third of the Roman Empire.

Barbarians that had been building up on the borders, seized their opportunity to strike at the heart of the empire and crossed the Danube, forcing the once dominant legions to retreat with extensive losses.

Rome would never recover from this onslaught. The ensuing revolt of the people was driven by martyrdom, by the public displaying of religious conviction that was to throw a new alternative to the people of an empire which was in great despair.

Christianity was the new hero of the hour for millions of people, and the degradation of a once great nation was rapidly being replaced with the Orthodoxy as a last ditch attempt at regaining the power over the people of Rome by instilling a single set of beliefs as the single monotheistic religion of the State. The original martyrs, who were early Christian Gnostics, were a very small group of Apostles who were spreading the word of the new age. This was the reaffirmation of the new age of Pisces and the shedding of the old age of Taurus. The Gregorian calendar adopted in the western Christian world today, was not introduced until Pope Gregory XIII signed its decree on the 24th February, 1582. There are still more than 30 official calendars other than the Gregorian calendar in use by many other religions today. The calendar was backward calculated to the time of the new age, the reverse precession of the equinoxes that early Sumerian cultures understood thousands of years before the dawn of Christianity.

Axial precession is the movement of the rotational axis of an astronomical body, whereby the axis slowly traces out the shape of a cone. In the case of Earth, the precession of the equinoxes is also known as a lunisolar precession, or precession of the equator. Earth goes through a complete precessional cycle in a period of 25,772 years or roughly about 1° every 72 years. The positions of the stars slowly change in both equatorial and ecliptic longitude. During this cycle, Earth's north axial pole moves from where it is now, within 1° of Polaris, in a circle around the ecliptic pole, with an angular radius of about 23.5 degrees. This precession of the equinoxes was observed by early astronomers prior to the first millennium BC. An early depiction of many of today's signs, Aries, Leo, and Taurus are documented by Mesopotamian Chaldeans. Further back, early Bronze Age Babylonians had anthropomorphised Gemini, "The Twins", and Cancer, "The Crab". The twelve signs of the zodiac are 30° segments of the sky of the northern hemisphere that revolve around Polaris, the North Star. In

each 30° segment, the most prominent constellation of stars were anthropomorphised, which means to be assigned human motivations, characteristics, or behaviours towards inanimate objects, animals or natural phenomena. Many of the signs were given attributes which match the conditions that appear on Earth. For example, Aquarius is often shown as a man holding a pitcher of water. Aquarius, the water bearer, marks the coming of the spring rains, the time of sewing seed. Virgo is always represented as a young woman holding a sheaf of wheat. The sheaf of wheat represents the time of the harvest. The Gregorian calendar starts at 1 AD, the carefully calculated beginning of the new age of Pisces, marking the start of the Christian faith.

In 203 AD, in a Roman arena in the North African city of Carthage, now in the modern day Tunisia, members of an eastern cult were rounded up and publically tortured for the amusement of the jeering crowds. Their crime: Religious conviction.

One of the victims that day was a woman named Perpetua.

Perpetua was born in 181 AD of noble birth, a beautiful 22 year old married woman and nursing mother, who was determined to stand by her faith. Her father begged her to renounce her faith and save her own life, yet she declined. She explained that she must be true to her cause. She was separated from her baby and imprisoned. In prison, Perpetua kept a diary. A tragic testament to the power of her faith, more so, as she was caught with her pregnant slave named Felicity who would suffer the same fate of being offered to the lions.

One night she had a dream. She dreamt that that she was in the arena, fighting for her life. A demonic serpent was trying to prevent her ascent into heaven. As she struggled to climb the bronze ladder, Perpetua overcame the serpent through the power of her faith. There are various depictions of these dreams depending on which transliteration you read, however she was a real person by all accounts and not a myth, as were many of the later martyrs which were written into history much later on.

The next day, on the 7th March 203 AD she was sent into the arena to face the hungry lions that were to tear her apart. The lions

refused to go near her and walked away to the dismay of the screaming crowds. A Gladiator was sent in for the kill, but when he hesitated, Perpetua grabbed the sword and slit her own throat in defiance.

The crowds had never seen anything like it. Stunned at Perpetua's martyrdom, the crowds went wild. She had chosen death above allegiance to Rome. Rome's century of doubt had begun.

For hundreds of years, the benefits of Roman rule had always been apparent. Her armies had created not only the greatest, but the most stable empire the world had ever known. Now, the community, prosperity and stability of Rome were beginning to falter.

Emperor Marcus Aurelius presided over the first signs of the decline of the Roman world. Born in 121 AD, he had been groomed from a very early age in preparation to one day become Emperor. Aurelius spent many years pondering the type of ruler he wanted to become, as well as the type of empire he wanted to rule. As a Roman, he believed that everything had a divine order and he planned as Emperor to maintain this order in the Roman world. He had been planning a peaceful rule over Rome for 23 years, and in 161 AD he became Emperor, but that peace was never to be. Later that year war broke out in the east when the Barbarian hoards crossed the frontier, attacking a roman province. A deadly plague ravaged the empire killing one quarter of Rome's population. Germanic invaders caught wind of the news and proceeded to exploit this disaster and attack from the north. Rome was now suddenly confronted by forces on two fronts. Marcus Aurelius would spend the next 8 years on the frontiers fighting for Rome's survival. Like many at this time, he feared that this was to be the beginning of the end of the Roman Empire.

Marcus Aurelius was suffering from cancer and would take various cocktails and tonics to alleviate his pain. It is known that many of these tonics contained cocaine as the primary ingredient. Until 1992, cocaine was thought to be a New World drug, as the Coca plant was only found in South America. Even though there have been ancient Roman coins found in remote parts of South America and Cocaine inside the bodies of ancient Egyptian Mummies.

The ancient Inca Empire had Roman artefacts before Columbus discovered the Americas. Even the Ancient Mayans, thousands of years before had very specific construction techniques mimicking that of Ancient Egypt. There is no secret that trade existed many hundreds of years before the New World was discovered by Columbus. Although this is generally accepted as fact, it may have been possible that Andean Coca seeds were transported on ocean currents, and in fact may have had archaic non-hybridised versions of the Coca plant in Africa, only to be wiped out, as many things inevitably were, in the struggle to supply demand for the Roman Empire. Ultimately, whatever drugs Marcus Aurelius took to ease his pain, had no affect on his cancer which he died of in 180 AD. Rome itself was slowly dying of a cancer too. The erosion of traditional Roman values was the cultural decay that had now set in, forcing many to turn to foreign cults for their salvation, and like Perpetua, questioned their long standing allegiance to Rome. Corrupted by power and wealth, Rome was now tainted by images of indulgence and imperial excess. Son of Marcus Aurelius, Emperor Commodus, epitomised this growing decay and was despised by his subjects. His arrogance caused many to question their allegiance to Rome.

Commodus succeeded his father in 180 AD after power sharing as co-Emperor for three years, before his father's passing. Traumatised by an earlier attempt upon his life, the new Emperor Commodus shunned all public appearances, leaving the fate of Rome to be administered by his closest advisors. Whilst his advisors were busy terrorising Rome, Commodus would lock himself away in his palace with a harem of hundreds of young girls and boys, abusing them at his will. It was a lifestyle funded by corruption and extortion, with resentment festering throughout the empire.

In 190 AD, riots broke out as the poor were protesting that Commodus had horded grain to artificially inflate its price, increasing his profits. After nine long years as a recluse, Commodus was forced to play a more public role with disastrous effects. He demanded to be made a living God, claiming the title Hercules. He started addressing state conferences dressed in a lion's skin and carrying a club on all

public occasions. After a terrible fire that decimated parts of Rome in 191 AD, Commodus would surpass himself by proposing that the rest of the city of Rome should be completely knocked down, and a whole new city rebuilt in his honour. On November 17th 192 AD, thousands would flock to the Colosseum. For the first time in Roman history, an Emperor of Rome would appear in public as a Gladiator. Deliberately weighing the odds in his favour, the hollow farce of victory would be short lived. Just 6 weeks later, on New Year's Eve, he was assassinated. On New Year's Day he was due be inaugurated as Consul, dressed up in full Gladiator regalia. This was just as absurd then, as if the President of The United States showed up to his inauguration in a full American Football kit today, it was a complete insult.

The most notorious element of Roman decadence was in fact a fiction. Paintings of imaginary orgies were commissioned by 19th century politicians to promote their own message of sexual intolerance. The most famous of these showed a group of disapproving philosophers, frowning at a debauched banquet. It was a serious proposal at the time to place these images in the classroom of every single school in America, as it was seen as an image of morality of what the Romans were really about. If this behaviour could collapse the Roman Empire, then this could happen too in America. The same thing continues to happen today in the USA, with politicians forcing "Intelligent Design" into the school curriculum. They maintain that because the theory of evolution remains a theory, the proposition of intelligent design is also a theory that can happily be taught in schools too. It seems that American institutions do not understand what the term "theory" means. Theory does not mean guess, educated or otherwise. The theory of evolution is the same as the theory of gravity. It has masses and masses of empirical data to support it and the laws of everything in the known universe depend upon this being true. Theories are supported by compelling evidence that would stand up in a court of law if any more proof of existence were needed. The Intelligent Design Movement shows how ignorant a state can be, to try and appease its

fundamental state religion with a half baked, halfway solution, for religion to keep its stronghold upon a nation.

Emperor Septimius Severus and his wife Julia Domna were both deeply superstitious. Her father, Julius Bassianus, descended from the royal house of Samsigeramus and Sohaemus, and served as a high priest to the local cult of the sun god Elagabal.

Domna's older sister was Julia Maesa, later grandmother to the future emperors Elagabalus and Alexander Severus. Septimius Severus was devoted to an Egyptian mystery cult and his wife worshipped a Syrian sun god. Romans accepted the couple's exotic beliefs, as the whole empire had a history of religious tolerance. They lived in a Pagan world that welcomed virtually anybody's gods.

Conquests of little towns and villages around the early years of the empire would use evocation to summon the local gods to be assimilated into Rome with them. This way, their gods became part of Rome, adding to the strength of the empire. All that was asked of foreign religions is that they respect the cult of Rome, by making annual sacrifices to the emperor. It was a way of keeping control over massive religious diversity. There were more cults in Rome than there were provinces in the empire. Rain gods from Germany, bull worshippers from Iran and fertility sects from Egypt; by the 3rd century AD, religious diversity in Rome was causing chaos. People became overwhelmed by the choices surrounding them. Severus' solution was sun worship. He hoped it would provide a unifying force in a very fragmented world, yet Rome's aristocrats decided to follow the sun in a different way. The rich travelled east to Greece, Egypt and India in search of themselves. Whilst Romans were confused about their identity, their rulers were ruling with even greater levels of autonomy.

In 211 AD, Severus was succeeded on the imperial throne by his eldest son Caracalla, who murdered his own brother, Geta. In 212 AD, Caracalla awarded every free man in the empire Roman citizenship. This was a public sign of Rome's commitment to its tolerance of religious diversity. Caracalla then set off on a grand tour of the empire. In 215 AD, he reached Egypt. In the city of Alexandria he was met with adulation at a reception of his proud new citizens. This

adulation was short lived when members of the crowd were overheard jeering insults of criticism about his brother's murder. The emperor invited 5000 citizens into the local theatre and had his soldiers murder every single last one of them in cold blood. In just one afternoon, Caracalla had destroyed the value of Roman citizenship.

In the 3rd century AD, Romans turned to one cult in particular. It was a cult with a message that was destined to change the empire and the world forever: Christianity.

Christianity's dramatic rise to power in the Roman world, based upon the suffering of one man, ultimately challenged the integrity of the whole empire. Christianity's message had spread west from Judea in the first century AD. It was carried out of Judea by a small band of Apostles, who spread the word of the story of Jesus of Nazareth, born in the Judean village of Bethlehem. In Rome, Christianity struggled for identity in the fog of hundreds of other obscure Roman cults, from distant lands on the fringes of the empire; but a single act of brutality would set it apart.

In 64 AD, the Emperor Nero, who was the last emperor of the Julio-Claudian dynasty, massacred hundreds of Gnostic Christians who were blamed for starting the "Great Fire of Rome". In fact, many Romans believed that Nero had these fires started himself, in order to clear land for his planned palatial complex. It was the first time that most Romans would have heard of Christianity, but this was the perfect opportunity for Nero to use this new cult as a scapegoat. Christianity's values were radically un-roman. Early Christians never demonstrated or picketed against roman rule. They were a quiet group of introvert Gnostics, who carried unwavering religious conviction: anti-roman in belief, but not a protest against Romanism. Christianity's most revolutionary ideal was spiritual equality, a direct threat to Rome's belief of hierarchy and social division, with women in particular attracted to the new cult, who by now, were practising and preaching in organised droves. For the first time in history, women had the same worth as men, so new female conscripts were making a statement of equality, granting them independence denied to them by Roman society.

The only public position of power and prestige open to a Roman woman was as a Vestal Virgin. Rome's 6 Vestal Virgins attended all of Rome's state events, with their primary duty of guarding the sacred fire of Vesta, the Roman Goddess of the hearth. This fire was the symbol of Rome's longevity and it was their job to ensure that the fire never went out. The Vestal Virgins were highly respected and lived well. The burden placed upon them when they were conscripted to the order at a young age was a vow of chastity. Vestals were free to own property, to make a will and to vote. Because Vestals were of incorruptible character, they were also entrusted with state documents, and public treaties. If any prisoners or slaves were touched by a Vestal Virgin, they would be released. Any prisoners condemned to death who observed a Vestal, would be pardoned and freed. If any Vestal broke her vow of chastity, punishment would be death. As it was forbidden to spill the blood of Vestals, they would be buried in the catacombs and slowly suffocated alive.

Ironically, early Christian woman chose to worship in these catacombs out of public site. Here, women could participate in the ritual of communion on equal terms with men. This would shock and outrage pagan Rome, which led to scandalous rumours of organised witchcraft. However, Rome persecuted Christians for another reason. They refused to respect other religion's Gods. Rome couldn't absorb Christianity, because it would not allow the sacrifice to other Gods. Most notably, Christianity included the rejection of the cult of the Emperor. As this was the only way that Rome could express its unity, the secrecy and defiance of Christianity caused major disruption to Roman tradition.

Emperor Trajan was intent on leniency toward those who proved they were not practising Christians. The composed restraint of Trajan was pragmatic in nature, as previous attempts in Roman history at social repression did not end well. In 19BC, Emperor Augustus had imposed brutal moral reforms. The duplicity and similarity of the propaganda of Nazi Germany some nearly two millennia later, is astounding. Augustus, fearing that Roman aristocracy, decimated by recent civil wars was dying out. His solution was to enforce Roman

families to produce pure Roman offspring. Adultery was made a capital crime, punishable by exile or death. Romans openly mocked his moral crusade. Ovid, the most popular poet of the day had provoked the wrath of the Emperor by publishing a book called "The Art of Love". It celebrated sex, the power of seduction with detailed techniques for men and women, how to keep a lover and how to keep secret liaisons and sexually satisfy multiple partners, keeping lovers interest and intrigue. It had more social impact then, than the book "50 Shades of Grey" had in much more recent history.

With Ovid being the superstar of the time, Augustus panicked and banished him to a bleak outpost named Tomis on the Black Sea. Ovid died there 10 years later having never returned to Rome.

Fathering more informers than children, the reforms of the Emperor were not only extremely unpopular, but futile. By the 2nd century AD, most Romans had forgotten these dire lessons of the past.

Christian ideals were attracting upper-class women to the faith, with their refusal to perform public sacrifices to the Emperor, it threatened the male elite. It was written and documented in the scribes of later Christians that they became an endless supply of lion food, yet apart from the Emperor Nero, who quite happily burned Christians in his garden as a source of light; other stories of organised persecution at this time are unfounded. This image was created by later Christian sources, as were the prolific stories of martyrdom, to present themselves as an active movement of protest against Rome.

The real acts of public persecution, however, did endure. The accounts of such rituals of oppression inevitably backfired. Persecution provided victims, victims leading to become martyrs. With these public displays of defiance in the face of death, those who died with dignity only fuelled more converters to the faith. By setting an example, the great persecution gave the people only two choices, Christianity, or Rome. Now, Christianity posed a direct threat to the roman way of life. The martyrdom displayed in public became a great recruiting ground.

By the middle of the 3rd century AD, Rome was consumed by doubt. As chaos and confusion wreaked havoc on the empire, many began to question the benefits of roman rule.

Between 235-270 AD, more than thirty roman generals had claimed themselves Emperor. As roman legion fought roman legion, innocent citizens were being caught up in the crossfire of civil war. Barbarians seized the opportunity and stormed across the frontiers. Parthians in the east and Germans in the west spilled out across many provinces. Inflation soared, and the livelihoods of merchants, dealers and artisans were destroyed. The promise of salvation in the next life was becoming more appealing. The history of Christianity's charity only fuelled the fire of what became Rome's century of doubt.

The vast catacombs under Rome's foundations became the meeting grounds of secret rendezvous and communion. The walls were inscribed with countless writings, depictions and images of Gnostic astrotheological anthropomorphology, which was written not in Latin, the language of Rome, but in archaic Hebrew and Judeo-Aramaic.

By 270 AD, there were thought to be more than 5 million Christians in the empire. By this time, Christianity had a formal hierarchy of clergy and bishops spread throughout the empire.

In 284 AD, Diocletian was crowned Emperor. He had risen through the ranks of the Army to cease power in Rome. Befitting of a military man his plans for the future of Rome were bold and brutal.
Diocletian felt that unity lay in division. He split Rome in half and agreed with three other generals to share power in a coordinated effort to bring peace to the land. He ruled for over 20 years, yet spent a total of just two months in Rome. He was forced to spend most of his time in cities such as Trier, in Germany, to be closer to the wars on the frontiers. Rome, a beacon of strength for over 1000 years was now increasingly vulnerable. In a desperate bid for respect, Diocletian proclaimed himself the son of Jupiter, insisting that everyone kneel before him and kiss the hem of his robe. To many, it was an empty and embarrassing spectacle.

Romans now looked elsewhere for reassurance. Now even members of the Imperial Court were converting to Christianity. On February 24th 303 AD, Diocletian initiated the most sweeping and terrifying persecution of Christians the world has ever seen. Churches were burned and scriptures were destroyed. Christians were sent to

work in state mines, or were imprisoned for their beliefs. If they refused to sacrifice to Rome's Gods, they were publically tortured.

Rome, once a proud culture of tolerance had now become an oppressive cult in its own right. In 305 AD, Diocletian retired, becoming the first ever Emperor in Rome's history to abdicate. Confident that Rome had regained its supremacy, he had a new palace built along the shores of the Adriatic in his homeland of Dalmatia, in a beautiful spot where today stands the city of Split, an enclave which grew around the palace, in what is Croatia today.

Diocletian couldn't have been more wrong. Where centuries before, Rome had basked in its achievements to the awe of its people, a small cult from Judea had confronted the might of Rome's arrogance, challenged her inequality and exposed her brutality, and won.

CHAPTER 3

The Gods of the Earth

With Christianity's start date beginning at year 1 AD, the Roman Catholic Church sets the date of the birth of Jesus Christ at the start of the age of Pisces, which was worked out and set in stone by Pope Gregory XIII, in what we know today as the year 1582. Gregorian reform was implemented as the Julian calendar assumes that the time between vernal equinoxes is 365.25 days, when in fact it is almost 11 minutes shorter. This discrepancy results in a drift of about three days every 400 years. At the time of Gregory's reform there had already been a drift of 10 days since Roman times, resulting in the Spring Equinox falling on the 11th of March, instead of the ecclesiastically fixed date of the 21st of March. As Christian events such as Lent, Good Friday, Palm Sunday, Christmas, Pentecost and many others, are tied so heavily upon annual astrological events, such as the solstices and equinoxes, the liturgical year and its associated colours of the seasonal moods of Orthodoxy, the Roman Catholic Church considered this steady movement in the date of the equinox undesirable.

Why start the religion at the beginning of the age of Pisces? Well, have you ever wondered why the Christian bible has both an Old and New Testament? Our political institutions, our bishops, clergy, scholars and theologians have known and kept hidden the true beginnings of the faith since its inception. These early beginnings if told to its loyal parishioners would tear the church apart, so two millennia of secrets enabled the stability of the faith.

There is one single answer to the reason why the vast majority of religions are the way they are, including the various creeds, the sermons, the parables, the teachings, the promises, the dates and the people, all derive from the adoration of one celestial object: The Sun.

Whether you are religious or not, if you did not already know this fact, this will most probably come as a bit of a shock.

Our Sun, the star at the centre of our solar system has been adored since the dawn of humanity as far back as 10,000 years ago.
The adoration attributed to the Sun was so because of the vision, warmth and security it created. The earliest cultures of civilisation understood that their crops would not grow and life on earth would not survive without it. Even up until the time of Columbus in the late 15th century, people still thought the Earth was flat. The Sun was always praised for its life giving warmth and light. It waxed and waned; people followed its passage with great intent, as they did with the seasons it created over the course of the year. Different civilisations would give offerings and sacrifices to the myriad of sun gods over many millennia, with such offerings usually being for longer, warmer days, rains or whichever growing conditions they needed at the time. The Sun is the number one adored object in humanity ever. Second, would go to the Moon. Again, its light giving properties and its affects upon tides would have been an object of many sacrificial offerings. Finally, the stars in the sky: Many religions are based upon, or have stories of the anthropomorphology of the various constellations of the ether.

The tracking of the stars across the night sky meant that ancient civilisations could prepare and anticipate coming events over long periods of time, such as the full moons and eclipses. The earliest of these civilisations catalogued celestial groups of stars in what we know today as constellations. The depiction of the central cross of the Zodiac is one of the oldest know conceptual images in human history. With the Sun being at its epicentre, as it figuratively moves about the 12 major constellations of the Zodiac over the course of a year, also depicts by its central quadrants formed by the crux, the 4 solstices; with the bisections of the crux itself depicting the equinoxes.

The term 'equinox' refers to the fact that constellations were anthropomorphised, or personified as figures or animals. In other words, the early civilisations did not just follow the sun and the stars, they actually personified them, involving elaborate myths to coincide with their movements and relationships to the other celestial bodies in the night sky. The Sun itself, with its radiant heat and life-giving qualities, was personified as the representative of the unseen, yet all-powerful creator or God. The light of the world, the saviour of mankind, God's Sun. Likewise, the 12 constellations represent the places of travel for 'God's Sun', and were represented by major events that happen during this period of time, for example Aquarius, the water bearer who brings the spring rains.

Many civilisations had sun gods such as the Sumerians, Mesopotamians, Egyptians, Babylonian, Toltecs, Aztecs, Incas, Mayans, Romans, Greeks, Africans, Chinese, Japanese, Polynesians and Aborigines. From these early civilisations there are ubiquitous dualities that exist in every single religion: Day and night, the light and the dark, the good versus evil. The darkness was the cold, unknown, mystical death that was evil. The light is the divine, the giver of life; our saviour. The most astonishing thing, that for the most part mankind is blissfully unaware of, is the replete nature in which all religions have their roots as astrotheological allegories.

Horus is the sun god of Egypt, from around 3000 years BC. He is the personification of the Sun, anthropomorphised as an allegorical myth of the sun's movement in the sky. Horus was the Falcon Son of Osiris, who was personified as the God of the Afterlife, with Horus being attributed the personification of the Sun's rising. Ra was the God of the Midday Sun, and by the 5th Dynasty of around 2500BC, Horus and Ra merged as Re-Horakhty, meaning "Ra, who is Horus of the two horizons"; and by the 11th Dynasty, became merged again under the God, Amun, as the Sun God, Amun-Ra.

From ancient hieroglyphs we understand many of the details of this solar messiah. For instance, Horus, being the light, had an enemy known as 'Set', with Set being the personification of the darkness, or

night. Metaphorically speaking, every morning, Horus would win the battle against Set, whilst in the evening; Set would overpower Horus, sending him into the underworld.

These ubiquitous dualities are replete throughout every single religion in the world today, whether good versus evil, or Ying and Yang; the balance of life addressed in this way forms the very backbone of religious institutions and archaic Man's thinking of the era.

Horus was born around 3000 BC to the virgin, Isis Meri. Isis meaning 'throne' and Meri, not in fact a name, but an adjective meaning 'beloved'; however, the way in which the root system works in early Egyptian hieroglyphs, the name Isis-Meri together, literally translates as "All loving mother". With Horus' conception being of divine love, Isis was known by her many adorers as just Meri. This correlation in both sobriquet and persona of the Virgin Mary, has for many years, led the Christian church in going to great lengths to debunk this fact, so damaging it is to their faith. In fact, as of writing there are over 760,000 pro-Christian websites, with pages dedicated to the debunking of this very topic. The Pashcal Chronicle, a Christian source, compiled in the 3rd century AD states, *'The Chronicle of Alexandria has preserved the traditions of the practice of exhibiting the sun on the supposed day of his birth as a new-born infant being held sacred in the mysteries of Egypt'*, quoting the Paschal Chronicle; *'Up to the present time Egypt has held sacred the delivery of a virgin and the birth of her son, who is exposed in a cradle to the adoration of the people. King Ptolemy having asked the reason for this practice, the Egyptians told him that it was a mystery taught to their ancestors by a venerable prophet'*. The original Greek is also provided from another later rendition; the word translated as virgin, is 'parthenos', thus verifying the rendition. The mention of Ptolemy is also of importance as it indicates that such a custom dates back to at least the time of the Ptolemies, which is centuries prior to the supposed birth of Jesus Christ. This custom being indicated as a 'mystery' also highlights that it wasn't necessarily stressed to the masses; hence a less abundant record demonstrates such things.

Many debunkers have since written that it was Osiris who was sent to the underworld, not Horus. It seems that many deniers, who have much face to lose, warranting risking their own respectability by bandying about such inaccuracies, do not understand the differences of the transliteration of 'underworld' and 'afterlife'. These many degrees of separation are akin to the prevalence of the Catholic flavour of Christianity, in its depictions of Purgatory and Limbo.

I have named these phenomena of religious self-reinforced delusionism as ‘The Stupification Paradox’. This is the documented syndrome of attributing to God all things not understood or quantifiable by the beholder. Thus, "I cannot compute this information in my brain", or, "This goes against my belief, therefore God is the answer". As a belief system it is implicitly inconceivable that anyone can comprehend the divine intervention of the mysterious ways of God, that all attempts to quantify his existence are futile. To science and logic, this is the very essence of self reinforced delusion. Therefore, as a warning for all of those suffering from The Stupification Paradox, or those who say that they simply wouldn't want to live in a world where God doesn't exist, showing deliberate acts of wantonism; I suggest you put this book down now.

Behold!

Horus, whose birth was accompanied by a star in the east, who upon his birth was adored by 3 kings, and at the age of 12 he was a prodigal child teacher. At the age of 30 he was baptised by a figure known as Anup and thus, began his ministry. Horus travelled about with 12 disciples, performing miracles such as walking on water and healing the sick. Horus was known by many gestural names such as 'The Truth', 'The Light', 'God's Anointed Son', 'The Good Shepherd', 'The Lamb of God' and many others. After being betrayed by Typhon, Horus was crucified, was buried for 3 days and thus, resurrected.

These familiar attributes of Horus, whether original or not, seem to permeate throughout many cultures of the world, as many of these

gods which are spread apart, over many thousands of years have been found to share the same general mythological structure.

According to Zoroastrian Avesta scriptures, Mithra of Persia was born on 25th December around 1200BC of a virgin birth. He had 12 disciples and performed miracles. Upon his death he was buried for 3 days and thus, resurrected. He was also named 'The Truth', 'The Light', 'The Life', 'The Word', 'The Good Shepherd', and many others. The sacred day of worship was named, Sunday.

Attis of Phrygia, also from around 1200BC, was born of Immaculate Conception to a virgin named Nana, on December 25th. He was crucified, placed in a tomb, and after 3 days was resurrected.

Krishna of India from around 900BC was born without sexual union of a parthenogenetic creatrix goddess named Divaki, under the guidance of a star in the east which signalled his coming. He performed miracles with the 12 disciples that he chose to aid him in propagating his doctrines. Upon his death, he was resurrected.

Dionysus of Greece, born of a virgin around 1500BC on December 25th. He was a teacher who performed miracles such as turning water into wine. He was referred to as the 'King of Kings', 'God's only begotten son', 'The Alpha and Omega', and many, many more. Upon his death, he too was resurrected.

This same mythological structure with the virginal birth on the 25th December, death for 3 days and inevitable resurrection sequence are in fact replete throughout countless ancient civilisations predating Christianity, such as Indra of Tibet, Zhule of Egypt, Beddru of Japan, Cadmus of Greece, Thor, son of Odin of the Gauls, Adonis, son of Io of Greece, Prometheus of Caucasus, Jao of Nepal, Buddha Sakia of India, Crite of Chaldea, Chrishna of Hindostan, Bali of Afghanistan, Alcides of Thebes, Universal Monarch of the Sibyls, Devine Teacher of Plato, Baal & Taut of Phoenicia, Salivahana of Bermuda, Zalmoxis of Thrace, Adad of Assyria, Zoar of the Bonzes, Hesus and Bremrillah of Siam, Mikado of the Sintoos, Hil & Feta of the Mandaites, Holy One of Xaca, Fohi & Tien of China, Ixion & Quirinius of Rome, Ischy of the Island of Formosa, Wittoba of the Bilingonese, Odin of Scandinavia, Deva Tat

& Sammonocadam of Siam, Gentaut & Quexalcote of Mexico, and finally Thammuz of Syria.

Why? Why are there so many of the same traits appearing in various religions, time after time, after time, over many thousands of years? Before we discover why, let's take a quick look at the most recent of the solar messiahs. Jesus Christ was born of the Virgin Mary on December 25th in Bethlehem. His birth was announced by a star in the east, followed by 3 Kings, or 'Magi', namely Balthazar, Caspar, & Melchior, who located and adored the child saviour with gifts of Gold, Frankincense and Myrrh. Jesus of Nazareth was a child teacher at age 12 and at the age of 30 he was baptised by John the Baptist, thus beginning his ministry. Jesus had 12 disciples which he travelled about with, performing miracles such as turning water into wine, healing the sick, walking on water and raising the dead. He is also known as The King of Kings, The Son of God, The Light of the World, The Alpha & Omega, The Lamb of God and many others. After being betrayed by his disciple Judas for 30 pieces of silver, he was crucified, placed in a tomb, and after 3 days was resurrected and ascended into heaven.

The many stories of countless religions throughout the ages are so very similar, sharing the same structure, which to some will be a shocking revelation. Firstly, the reason for the repleteness of the birth sequence is completely astrological.

The star in the east is 'Sirius', the brightest star in the night sky, which on December 24th, aligns with the 3 brightest stars of Orion's belt. The 3 stars of Orion's belt are called the same today as they were in ancient times; The 3 Kings, which, with the brightest star Sirius, points to the place of the sunrise on the morning of December 25th, the birth of God's Sun at the time of the winter solstice. That is why the 3 Kings follow the brightest star in the east, to find the birth of the Sun.

The Virgin Mary is the constellation of Virgo. Virgo in Latin literally means Virgin. Virgo is known as 'The House of Bread', and the representation of Virgo is a virgin holding a sheaf of wheat. This house of bread and its depiction and symbolisation of wheat represents August and September, the time of Harvest. In turn, Bethlehem literally translates to 'House of Bread'. Bethlehem is not a reference to a place

on Earth, but in the sky. The city of Bethlehem today with over 22,000 people, in biblical times was a small village of less than 1000 people.

The biblical depiction and narrative of King Herod the Great of Judea in the Massacre of the Innocents, the story of the infanticide and gendercide and the historicity of accounts do not corroborate. There are no documented accounts of anything of this sort of depiction of Herod at this time. In fact, King Herod died in 4BC. Titus Flavius Josephus, a Romano-Jewish historian and hagiographer, documented Herod's time upon the throne in exquisite detail, sparing no shame and pulling no punches when meticulously describing the diaries of Herod during his rein. He was indeed a brutal man, who killed his own wife and two of his own sons. However, in all likelihood, the number of male firstborn infants residing anywhere near the vicinity of the village of Bethlehem, would in all probability have totalled no more than 5 or 6 infant firstborn boys, if there was any element of truth in this fable.

Before the naming of this small village in the modern day central West Bank state of Palestine, Bethlehem existed for more than 1000 years prior to this small settlement, as the personification of the constellation of Virgo in the night sky.

The Magi, as mentioned in the Gospel of Matthew, translates from 'Magician', in the sense of Illusionist or fortune-teller. Magi were also predicted to find the King of the Jews, a statement that allegedly enraged Herod to initiate the Massacre of the Innocents. These Magi were Gnostics, the earliest mystics of Christianity, centuries before the Roman state saw fit to hand pick and rewrite scriptures to support their own idealist goals of power and corruption, and for a tighter grip upon a nation in rebellion to the polytheistic state religions and cults of the emperors. This story unfortunately belongs to the Apocrypha, spurious esoteric texts of Christian non-canonical origin, neatly slotted between the Old & New Testaments. These are intertestimental accounts written by early Christian Gnostics and Jewish Christians, whereby the canon was not formally accepted by the formation of the state church of the Nicene Creed of Christianity, the very first derivative of liturgy used to form the official canon of the first ecumenical council, during its

formation in the early part of the 4th century, and the formative template for over 41,000 flavours of Christian worship today.

Another celestial fact which has been very important in virtually all civilisations since the dawn of humanity was the documentation, celebration and sacrifice of the times of the solstices. From the summer solstice to the winter solstice, the days become shorter and colder. From the perspective of the northern hemisphere, the Sun appears to move south, becoming scarcer as the Sun tracks shallower against the horizon. The shortening of the days and the withering of the crops when approaching the winter solstice, to the ancients, symbolised the process of death. To those people who spent their days in the fields tending and nurturing their crops, it was of extreme importance. It was seen as the death of the Sun. Every year by the 22nd December, the Sun's demise is fully realised. The Sun having continually moved south to its lowest point in the sky, perceivably stops moving south on the 22nd December for a period of 3 days. During these 3 days, the Sun resides in the region of the Southern Cross, or "Crux Constellation", where on 25th December the Sun moves 1° north, foreshadowing longer days, warmth and spring.

So, it was said, the Sun died on the cross, was dead for 3 days, only to be resurrected, or born again. This is the reason why Jesus and many other religion's sun gods, share this crucifixion, 3 day death, resurrection concept. It is the perception of the salvation of Spring that follows the winter solstice. However, Christians do not celebrate the resurrection of the Sun until the Spring Equinox, or 'Easter'. This is because the Sun officially overpowers the evil darkness, where the Sun, is longer in the sky than the duration of night, marking the emergence of spring.

Both New and Old Testaments are full of astrological references and personifications, none more so than the number 12. The number 12 is replete throughout The Bible, with perhaps the best example coming from the 12 disciples. These 12 disciples are the representation of the 12 constellations that Jesus, the Sun, travels about with. Many other references to the magical dozen, including the 12 Kings of Israel, the

12 Princes of Israel, the 12 Judges of Israel, the 12 Tribes of Israel, the 12 Sons of Jacob, the 12 Great Patriarchs, the 12 Prophets of The Old Testament, and many, many more, including various references of the number 12 which also exist in the Apocrypha.

The iconoclasm in the earliest depictions of the cross of The Crucifixion, were always depictions of the shorthand symbol of the Cross of the Zodiac. This symbol is seen atop of 1 in 5 churches in the UK and 1 in 3 churches in the US, which can be described today as a Roman Catholic Cross, Muiredach's Cross, Monasterboice Cross, Catholic Cross, Celtic Cross, or Irish Cross. This cross is set apart by The Ring of the Zodiac at its centre, which shows the 4 solstices in its quadrants, intersected by the cross itself which form the equinoxes.

The iconoclastic act of having an icon of crucifixion was frowned upon by pre-Constantine Christians and the Gnostic and Jewish Christians of the early faith. Acheiropoitos, from the Greek αχειροποίητα, which means 'without hand' are images depicting the crucifixion of Jesus, functioning as powerful relics as well as icons, with their images being naturally seen as especially authoritative as to the true appearance of the subject. These icons were believed to have been painted from the live subject; they therefore acted as important references for other images in the tradition. They were therefore copied on an enormous scale and used as the templates in murals, stained glass windows, and other biblical references to the appearance of Jesus of Nazareth. These acheiropoieta were apparently produced on an industrious scale in the circle of the Patriarch of Constantinople, which purports to be the record of a fictitious Church council of 836 AD, a list of acheiropoieta and icons which were to be miraculously protected, is given as evidence for the divine approval of icons. These early depictions always show the head of Jesus set against the cross of the Zodiac. This is a Pagan spiritual symbol, the shorthand of which is now famously attributed as an Irish Monasterboice Cross, which is not a symbol of Christianity, but is a Pagan adaptation of the cross of the Zodiac. In nearly all early cult artwork, Jesus, The Sun of God is always depicted with his head in the centre of the cross, for Jesus is the Sun., the Sun of God. *"When I am in the world, I am the light of the*

world." (John 9:5). *"Let light shine out of darkness, may his light shine in our hearts..."* (2 Cor 4:6) *"...The hour has already come for you to wake up from your slumber, because our salvation is nearer now than when we first believed. The night is nearly over; the day is almost here. So let us put aside the deeds of darkness and put on the armour of light."* (Rom 13:11-12)

There are many overlooked and mistranslated texts in the Bible in testaments old and new. With the exception of the books of Ezra and Daniel which were written in an Eastern Semitic language called Aramaic, the remainder of the Old Testament was almost completely written in Hebrew. Aramaic became very popular in the ancient world and actually displaced many other languages. Aramaic even became the common language spoken in Israel in Jesus' time and it was likely the language He spoke day by day. There is also evidence of some Aramaic words were even used by the Gospel writers of the New Testament.

The New Testament, however, was written in Greek. This might seem strange, as one may think it would be either Hebrew or Aramaic. However, Greek was the language of scholarship during the years of the composition of the earliest books which eventually appeared in the New Testament from 50 to 100 AD. The fact is that many Jews couldn't even read Hebrew anymore, and this disturbed many Jewish leaders. In around 300 BC a translation of the Old Testament from Hebrew into Greek was undertaken, and it was completed around 200 BC. Gradually this Greek translation of the Old Testament, called the Septuagint, was widely accepted and was even used in many synagogues. The Septuagint also became a wonderful missionary tool for the early Christians, for now the Greeks could read God's Word in their own tongue. The scribes used for many of the early scriptures of the New Testament didn't use really high-class or classical Greek, but a very common and everyday type of Greek known as Koine Greek. For many years some scholars ridiculed the Greek of the New Testament because many of its words were strange to those who read the writings of the great Greek classical authors such as Plato, or Aristotle. Since this time, there have been many transliterations of both Old and New Testaments, in recursive attempts at redefining the scriptures by bringing them up-

to-date semantically, syntactically and philosophically, by using a familiar and comforting prose of the time, much like I am redefining the relatively new and very modern prose of Creative Rhetorical Non-Fiction Journalism.

In the transliterations, there are many interpretations that have lost its intended meaning, especially from Hebrew, which not only lacks vowels but has a small root of words that all other words in the language derive from. Over the centuries, the additions to the accepted books has metamorphosed into something completely different to the Gospels of the Jewish and Gnostic believers of the cult, which predate the later editions of Matthew, Mark, Luke and John, as were many of the Epistles, Acts and book of Revelation.

To put this in perspective, the book of Daniel written in Galilean Aramaic is rooted upon an Eastern Semitic language base, a direct descendant of the Akkadian family of languages which is written in a late Cuneiform script; unlike its Hebrew counterpart which is of a North-Western Semitic language which has a long history of Assyrian lineage. This version of Aramaic had only about 600 words and syllable signs in total. It had 20 consonants, 8 vowels (both long and short versions of A, I, E and U), nouns had 3 cases (singular, dual and plural), masculine and feminine, and 2 tenses (past and present-future). Comparably, Biblical Hebrew had around 5000 root words, which could be extended by prefixes and suffixes to create as many as 8700 words. Sadly, Biblical Hebrew is so loose weave and far away from today's languages of the world, the depictions of this ancient literature, means that only around 2050 of the Biblical Hebrew words exist with any distinct meaning today. Much of this is attributed to the fact that more than 99.99975% of the population was completely illiterate, so hired profession scribes who would write on their behalf. That is less than one person in every 40,000 people could read and write. Only the very rich and powerful could afford to command the pen of a scribe, so the fact that laymen of the day could pontificate in written word is highly improbable. The root system problem is compounded today with the Semitic derivative of modern Arabic, which seems upon face value to be a very rich language. However, due to the nature of the root

system used in Arabic, there are huge amounts of colloquialisms. In today's Arabic there are over 100 words to say 'lion', more than 200 words for 'dog', and over 1000 ways to say 'camel'. This does sound like one of those awful racial slurs, however the rich history and love of poetry over millennia has thrown up these vast Arabic variations, of which the vast majority are not used in day to day grammar.

Numerically, French is a very poor language by modern standards, which interestingly only contains around 40,000 words. The big difference being that the French language uses a large proportion of this in everyday usage. English, being the richest of all the languages has a vast base of over half a million words in its arsenal.

This book you are reading now is written in a very modern prose and it will be regarded as also being quite heavy going for many people as it draws across many subjects, from religious history, lexicography, theology, geology, astrology, genetics, computer science, anthropomorphology, and particle physics. Even so, this book serves you exactly 100,000 words (engineered that way) of which there are 13,524 unique words contained within these pages. This prolixity of unique words is very high, even by today's standards. The Protestant Old Testament contains a staggering collection of 39 books, containing 929 chapters, 23,145 versus, totalling 609,245 words. Of this vast amount of verbiage there are 10,867 unique words, some five times more words than scholars, theologians and syntagmatic lexicographers can decipher or accurately attribute to any kind of epistemological paradigm. Most scholars agree that as much as 91% of the text in the King James edition of the Old Testament retains little or no resemblance to the pre-Greek transliterations of the early Hebrew texts. Strangely, there is only a 2% syntactical variance of all post-King James editions of the Old Testament in comparison to its Greek counterpart which was finalised in the second century BC. It seems that the Roman scribes performed heretic amounts of artistic licence when converting the ancient texts of ancient Israel. In addition, the Catholic Old Testament contains another 7 books, totalling 46. The Eastern Orthodox Old Testament contains even more with 51 books. Fortunately, for The New Testament it seems that God has created a

kind of annex in heaven. Luckily for the rest of us, the kingdom of heaven is no longer reserved just for the chosen people of Israel. Phew!

Okay, so the party wall is down, and now everyone is invited. Great news! There is the small matter of choosing which flavour to choose from, as the choice for the type of worship and books that should be included is seemingly endless. To even think about starting to draw upon these differences will ensure that this book would attain a size of the Encyclopaedia Britannica, so I shall refrain from doing so. What I can draw upon however, are the erroneous texts which have been mistranslated from the earliest manuscripts that we do have.

The Hebrew word for "day" is the word "Yom." Young Earth Creationists will always argue that the word used for the days of creation can only mean a 24 hour day. Yom, can mean a wide variety of time periods. Now that we understand that the Hebrew language is not nearly as diverse as the English language, or the Koine Greek which it was first translated into, scholars understand that any of the Biblical Hebrew words could be considered duplicates with only slight differences as the infliction of words which contain multiple meanings are common. Such is the case with the word Yom.

According to Strong's Exhaustive Concordance of the Bible, Yom means: *"...from an unused root meaning to be hot; a day (as the warm hours), whether literal (from sunrise to sunset, or from one sunset to the next), or figuratively (a space of time defined by an associated term), [often used adv.]:--age, + always, + chronicles, continually (-ance), daily, ([birth-], each, to) day, (now a, two) days (agone), + elder, end, evening, (for)ever(lasting), ever(more), full, life, as long as (...live), even now, old, outlived, perpetually, presently, remaineth, required, season, since, space, then, (process of) time, as at other times, in trouble, weather (as) when, (a, the, within a) while (that), whole (age), (full) year (-ly), younger."*

Evidently, Hebrew dictionaries attest to the fact that the word Yom is used for anywhere from 12 hours, up to a year, and even a vague "time period" of unspecified length. As an example there are listed various examples that eloquently highlights this phenomena.

Time: By far the most common translation of Yom is attested to 67 verses in the Old Testament; the word Yom is translated into English as "time." For example: (Gen 4:3), it says "*And in process of time it came to pass, that Cain brought of the fruit of the ground an offering unto the Lord*." This can be attested to a growing season, probably several months. (Deut 10:10), refers to a "time" equal to forty days. Another example would be (I Kings 11:42), stating "*And the time that Solomon reigned in Jerusalem over all Israel was forty years.*" In this case, Yom translated as the word "time" is equivalent to a 40 year period. (Isaiah 30:8), says "*Now go, write it before them in a table, and note it in a book, that it may be for the time to come for ever and ever*." In this case, Yom is equal to "forever."

Year: Four times in the Old Testament Yom is translated "year" (Kings 1:1). "*David was old and stricken in years...*". (Chron 21:19) "*after the end of two years*" and in the very next verse "*Thirty and two years old*." (Amos 4:4) "*...and your tithes after three years.*" In each case, Yom represents years, not days.

Age: Eight times in the Old Testament, Yom is translated "age." These ranges from sentences like "*stricken in age,*" meaning old age (Genesis 18:11 and 24:1; Joshua 23:1 and 23:2), and other times it says "*old age*" (Gen 21:2 and 21:7). (Gen 47:28) refers to "*the whole age of Jacob*," therefore Yom here refers to an entire lifetime. (Zech 8:4), says old men and women will sit in the streets of Jerusalem, "*each with cane in hand because of his age.*"

Ago: Yom is translated once as, "ago." (1 Sam 9:20) says "*As for the donkeys you lost three days ago, ...*"

Always: Four times Yom, is translated as "always," in (Deut 5:29, 6:24, 14:23, and 2 Chron 18:7). Always here can be interpreted as a lifetime; for instance, *"we are to keep the commandments of the Lord always."* (Deut. 5:29).

Season: Three times Yom, is translated "season." In (Gen40:4), "*...and they continued a season in ward.*" Again, in (Josh 24:7), "*dwelt in the wilderness a long season,*" and in (2 Chron 15:3), "*...a*

long season Israel hath been..." In each case Yom represents a multi-month period.

Chronicles: When used in conjunction with the word dâbâr, Yom is translated "chronicles" (27 times).

Continually: When used in conjunction with kôwl, Yom is translated as "continually" (11 times). Once, in (Psalm 139:16), it is translated continuance (without the kôwl).

Ever: Ever, is used to represent a long period of time, such as in (Deut 19:9), "*to walk ever in his ways*." Nineteen times Yom is translated "ever." The Old Testament uses "for ever", instead of the word forever: In sixteen cases of use of the word ever, for is placed before it, indicating a infinite period of time. I will not list them all (consult Strong's Concordance for a full listing) but here is an example. In (Psalm 23:6), it says "*Surely goodness and mercy shall follow me all the days of my life; and I will dwell in the house of the Lord for ever.*" Here Yom is translated as the final word of this verse, *ever*. Thus, Yom in this verse, and 16 others, represents eternity.

Evermore: In one instance, when yom is used in conjunction with kôwl, Yom is translated "evermore." (Deut 28:29), "*...and thou shalt be only oppressed and spoiled evermore;*" thus representing either a lifetime or eternity.

The word Yom can be attested to many variations of meanings and is used in a wide variety of situations related to the concept of time. Yom is not just a day or days; it is for time in general. How it is translated depends upon the context of its use with various prefixes and suffixes that gives inference of meaning.

The intellectual retardation of more than 2,000,000,000 children is so, by the insistence of instilling fear, by fables depicting the end times and the end of the world from the book of Revelation and the ensuing events of the apocalypse of Armageddon. The main source of this derives from the book of Matthew, when talking about the *"...the end of the world."* This is how it appears in the King James version of Bible, or to give it its full name: *"THE HOLY BIBLE, Containing the Old Testament, AND THE NEW: Newly Translated out of the Original tongues: & with the former Translations diligently compared and*

revised, by his Majesties special Commandment". The title page carries the words *'Appointed to be read in Churches'*, which was probably authorized by an order of council; however, no record of the authorization survives as the Privy Council registers from 1600 to 1613 were destroyed by fire in January 1619.

In (Matt 28:20), for Jesus says, *"I will be with you even until the end of the world."* This is yet another mistranslation among many mistranslations, which commonly appear in every single book of the New Testament. The actual word being used in Greek is '*Aeon*', which means '*Age*'. The correct translation should be: *"I will be with you even until the end of the age."* which allegorically, is completely correct, as Jesus' Piscean solar personification will end, when The Sun enters the Age of Aquarius. This whole concept of end times and the end of the world is a misinterpreted astrological allegory; one designed to instil fear and obedience to an unruly Roman crowd.

There are many occasions where 'Aeon' has been attributed the correct transliteration of 'age'. Of the many astrological and astronomical metaphors in The Bible, the 'Ages' were among the most important references. In many of the scriptures there are numerous references to the age: *"...I am with you always, to the very end of the age."* (Matt 28:20) *"...either in this age or in the age to come."* (Matt 12:32) *"... end of the age..."* (Matt 13:39) *"As Jesus was sitting on the Mount of Olives, the disciples came to him privately. "Tell us," they said, "when will this happen, and what will be the sign of your coming and of the end of the age?"* (Matt 24:3) *"...in this age, and in the age to come..."* (Luke 18:20) *"...wise by the standards of this age..."* (1 Cor 3:18) *"... the culmination of the ages has come..."* (1 Cor 10:11) *"...not only in the present age but also in the one to come."* (Eph 1:21) *"...and the powers of the coming age."* (Heb 6:5) *"...he has appeared once for all at the culmination of the ages..."* (Heb 9:26) *"...king of the ages."* (Rev 15:3) *"...the former age..."* (Job 8:8).

In order to understand this, we need to understand the notion of the phenomenon named 'The Precession of the Equinoxes'. The late Sumerians and the Ancient Egyptians along with various other Mesopotamian civilisations understood that approximately every 2150

years, the sunrise on the morning of the Spring Equinox would occur in a different sign of the Zodiac. This is because of the very slow angular wobble that Earth maintains as it spins upon its axis. It is called a precession as the constellations go backwards, instead of the usual forward yearly cycle. Each 2150 year cycle is known as an 'age'. From 4300 BC, to 2150 BC it was the age of 'Taurus', The Bull. From 2150 BC to 1 AD it was the age of 'Aries', The Ram. From 1 AD to 2150 AD, the age we are in now, is the age of 'Pisces', The 2 Fish. From 2150 AD to 4300 AD will be the age of 'Aquarius', The Water Bearer.

The Bible seems to have many references to the symbolic movement of three Ages, past and present, with a set of predictions for a forth, the next age in the sequence. In the Old Testament, when Moses descends Mt Sinai with the 10 Commandments, he is enraged with the people who were worshipping a false idol. This false idol was a Golden Bull Calf. After smashing the stone tablet, Moses instructed his people to kill one another in order to purify themselves. The Golden Bull was Taurus the Bull. The people were still worshipping the age of Taurus, whereas Moses represented the new age of 'Aries', The Ram. This is why Jews, even today still blow a Ram's horn named a 'Shofar', which was used to announce celestial holidays such as Passover, Pentecost, Yom Kippur and Selichot. Upon every new age, everyone must shed the icons of the old age. Other deities mark these events in the same way, such as Mithra, a pre-Christian god who kills the bull. Jesus is the age that follows Aries, the age of Pisces, the Fish. This symbolism of fish is featured throughout the scriptures, such as the feeding of the 5000, where Jesus, (The Sun) of Virgo (The Virgin), from Bethlehem ("House of Bread") rules under the Kingdom of Pisces (The 2 Fish). The following story is a quick précis of the miracle of Jesus feeding the 5000.

People were gathering to see Jesus after he had retreated to Bethsaida upon learning of John the Baptist's death. When Jesus landed, he had compassion on them and was compelled to heal the sick. As evening approached, his disciples turned to him and ushered him to return home, as it was getting late. When Jesus said for the people to stay, his disciples mentioned that they only had 5 loaves of bread and

two fish. Jesus directed the people to sit on the grass as he broke the bread and passed it to his disciples to pass around to the crowds. The number of those who ate was five thousand men, besides women and children. All of these are astrological metaphors, including The Son of God, The Sun, Virgo the Virgin, Bethlehem, The House of Bread and Pisces, The 2 Fish. When the disciples picked up the remainder of the bread, they still had enough left over to fill 12 bread baskets. The 12 baskets of bread are the 12 disciples, the 12 signs of the Zodiac that travel about with God's Sun. Why the disciples were each carrying an empty bread basket, however, is not known!

The Gospels of Mark and Matthew speak of another similar story, known as the feeding of the 4000. This time it is with 7 loaves and 2 fish that Jesus feeds the people with and in the same manner, the crowds were satisfied. This time there are 7 baskets of broken bread left over. This could be attributed to breaking bread on the 7th day, the Sabbath day: Sunday; the day of our Sun.

After this, Jesus returned home to Magadan. Magadan is now called Magdala in English. The small village of Magdala on the shallow western flank of the Sea of Galilee is so named, as it was the home of Mary Magdalene. Although of course it cannot be proven, it seems that Jesus could have been returning home to Mary Magdalene. In fact, Gnostic Gospels predating the Gospels of Matthew, Mark, Luke and John, the only Gospels deemed fit for the state of Rome, state that Mary Magdalene was Jesus' companion and loved her more that the other disciples.

A recently uncovered fragment of ancient papyrus makes the explosive suggestion that Jesus and Mary Magdalene were husband and wife. The 8cm by 4cm fragment of ancient papyri, also predating the canonical Gospels, supports an undercurrent in Christian thought that undermines centuries of religious dogma by suggesting the Christian Messiah was not celibate.

The centre of the fragment contains the bombshell phrase where Jesus, speaking to his disciples, says 'my wife', which researchers believe refers to Mary Magdalene. In the text, Jesus appears to be defending her against some criticism, saying 'she will be my disciple'.

Two lines later he then tells the disciples: 'I dwell with her.' This document which has proven its authenticity as very early Gnostic Christian, deriving from the very beginning of the faith, casts doubt on a centuries old official representation of Magdalene as a repentant prostitute, overturns the Christian ideal of sexual abstinence.

The papyrus elaborates an ancient and quite persistent undercurrent in Christian thought, that Jesus and Mary Magdalene were in fact a couple. The incomplete manuscript, written in an ancient Egyptian Coptic language, has been studied by the Hollis Chair of Divinity at Harvard University, the oldest endowed academic seat in the US. The paper presented on the discovery at the international conference on Coptic studies in Rome, after conducting extensive tests and exhaustive research to establish the document's authenticity. It said that the fragment casts doubt "*on the whole Catholic claim of a celibate priesthood based on Jesus' celibacy*." It was added, *"What this shows is that there were early Christians for whom; sexual union in marriage could be an imitation of God's creativity and generativity and it could be spiritually proper and appropriate."* The Harvard theological review speculates that the 'Gospel of Jesus' Wife', may have been tossed on the garbage *"because the ideas it contained flowed so strongly against the ascetic currents of the tides in which Christian practices and understandings of marriage and sexual intercourse were surging."*

The significance lies in the possibility that an early Christian sect drew spiritual succour from portraying their prophet as having a wife. All representations of Jesus as a man with earthly passions and needs have not survived in the doctrines of the established churches, which emphasise celibacy and asceticism as a spiritual ideal. In fact, every Gnostic manuscript of the early Christian church has been replaced with much later Roman text of the Greek language, none of them being original in print or having a single, complete document presented prior to the 4th century AD.

To authenticate the papyrus, it was sent to an authority on Coptic papyri and sacred scriptures at Princeton University. This was also shared with a renowned Papyrologist at the Institute for the Study of the Ancient World at New York University, known for conservative

assessments of the authenticity and date of ancient papyri, it was nevertheless confirmed the belief that the document was indeed genuine. The scribe's dialect and style of handwriting, and the colour and texture of the papyrus, helped them to date it to the second half of the fourth century AD and place its probable origin in Upper Egypt.

The details of the fragment support another view of the life of Jesus that has begun to gain traction since the discovery of a cache of ancient manuscripts in Nag Hammadi, Upper Egypt, in 1945.

These manuscripts, including the gospel of Thomas, the gospel of Philip and the Secret Revelation of John, outline the Gnostic version of Christianity which differs sharply from the official Church line. Persecuted and often segregated from each other, ancient Christian communities had very different opinions on fundamental doctrines regarding Jesus' birth, life and death. It was only with the establishment of Christianity as the state religion of the Roman Empire, that Emperor Constantine summoned practising clergy to issue a definitive statement of Christian doctrine, based upon Constantine's rules for a stable set of ideals that would control the unruly and polytheist state of Rome where its own people were perceived to be destroying the Empire.

This Nicene Creed affirmed a model of Christian belief that is to this day taken as Orthodoxy. The ancient Coptic writings of this original document contain phrases within the text which echo passages in Luke, Matthew and the Gnostic gospels about the role of the family. These parallels have convinced historians that this account of the life of Jesus was originally composed in the 2nd century AD and most probably in Greek, when such questions were a subject of intense theological debate. Those who disagreed with the official line as established by the Council of Nicaea were in time branded by the Roman Church as heretics and their teachings suppressed.

With over 50 known gospels of the early Christian faith, it is thought that there could have been as many as 300 original gospels, most of which were destroyed by the church as they were so detrimental to the stability of the state faith; yet beloved for hundreds of years as the brotherhood of the travelling Gnostic monks were indeed the earliest and truest champions of the life of Jesus of Nazareth,

who's only quest, was to share these beautiful stories of peace, love, compassion and forgiveness, that are purported to be the original quotations and teachings of Jesus Christ. History, has dealt a cruel blow to these forgotten children of Christ, who continued to spread their original message of salvation, until brutally silenced by the Roman State.

CHAPTER 4

The Lost Gospels

In the winter of 1886, archaeologists were searching for ancient artefacts in a newly discovered area of an old Christian cemetery which was underway in the upper regions of Egypt. At this newly uncovered site, an amazing discovery was unearthed during a French sanctioned archaeological dig. What was discovered there would forever shake the history of Christianity to its very core. What they uncover, is a long forgotten grave of a monk, buried there in the 8th century. This; a great historical find in itself, yet the real find of historical importance is what the monk is taking with him to the next world. Carefully, under the crossed armed embrace of eternal slumber, lay a book that had carefully been placed inside the monk's casket in order that the monk could take his treasured book with him into the afterlife. Amazingly, this early Christian book of texts contained not the Gospels of Matthew, Mark, Luke and John, but the Gospel of Peter!

This book is apparently an actual gospel and a first-hand account of the life of Jesus, yet the text claims to have been written by the apostle Peter. For nearly 2000 years, everything Christians knew about the purported life and teachings of Jesus of Nazareth came from the gospels of the Christian bible. Could this in fact be an actual lost account of the life of Jesus, written by Simon Peter, the hand-picked leader of the apostles?

This discovery set off shockwaves to the world of biblical scholarship, rippling instant contempt from the thousands of branches of churches and Christian sects that covet the canonical books of the state faith of Orthodoxy. This shock and horror of Christian faiths continue to this day, as hundreds of ancient texts have been uncovered from various archaeological digs from around historical Roman sites, dating back to the very beginnings of Christianity. These stories include lost gospels with titles such as The Gospel of Thomas, The Gospel of Mary Magdalene, and even The Gospel of Judas!

Their discovery reveals startling and extremely controversial accounts of Jesus and his message; stories which were suppressed by the early church. The Gospel of Peter claims to reveal the facts and detailed sequence behind the resurrection of Jesus. The Gospel of Mary suggests that Mary Magdalene may have been the real leader of the Christian church, and the Gospel of Judas vividly states that Jesus actually asked to be crucified. Were these forgotten and banned eyewitness accounts of the life and death of Jesus, and if they were, why did they disappear?

Today, by applying cutting-edge technology, Carbon-14 dating, Palaeography and the very latest breakthrough's in archaeology, experts from around the world have now thoroughly examined and tested these ancient papyri to determine their age, their source, and whether they contain contrasting truths of the world's largest faith.

Notwithstanding, the discovery of these lost gospels also reveal a secret battle, now forgotten, but once a vital battle for the core tenants of Christianity. On the one side, is a devout group who call for a direct spiritual relationship with God, and with their own set of gospels. On the other side, is the growing hierarchy of Orthodox Christianity, placed firmly in power as the state religion, which accepts only 4 gospels. The results of this fraught battle would determine the very nature of Christianity.

In the early days of the faith, there were literally no gospels and no Christian bible. The followings and preaching's of the earliest Christians begin around the year 30 AD, by a small group of Jews who follow the teachings of Jesus of Nazareth. In the same way that at least

300 other religions were being promoted and taught in the same region, and at the same time, were spread by the telling of stories, which was certainly the case with the early Jesus faith. Any followers of Jesus would almost certainly have not been able to read or write, so relied on elaborate myths of storytelling, passed on from one generation to the next. Very similar stories akin to other solar messiahs arose in this region for thousands of years prior to the advent of Christianity.

The stories of Jesus were not written down for many decades after his apparent death. Scholars believe the earliest Gospel, The Gospel of Mark, was written about 70 AD, some 40 years after the purported death of Jesus. However, the earliest complete papyrus in existence is a Greek transliteration some 220 years later, with only small fragments of the earliest texts existing.

This was not the only gospel. By the end of the third century it is thought there were as many 300 gospels, with around 50 gospels that we know of today. There are countless portions of ancient texts from around the time of the composition of the 4 canonical gospels of the Orthodox bible, bearing such titles as The Gospel of the Hebrews, The Revelation of Peter, and The Gospel of Phillip. Many of these books have been mentioned by ancient writers, but until very recently they existed only as legends. Why did all of these gospels disappear? What happened to them, and why are there only 4 gospels today?

The answer comes down less to faith, and more to politics. The Bible didn't fall out of the sky; it was carefully crafted and assembled from a plethora of texts totalling at least 800 books that would have been available at the time, from the far reaches of Christendom, spread by early Christian clergy, Bishops and Gnostics alike.

The First Ecumenical Council of Nicaea in 325 AD was 20 years in the planning by Emperor Constantine, as he invited all 1800 of the empire's Bishops; 1000 from the east and 800 from the west, from all over The Empire (except Britain), of which around 300 attended, and nearly all bringing with them 2 Priests and 3 Deacons, which would have added to almost 1800 attendees.

Constantine was given absolute power to wield a state faith, carefully selecting Christian thinkers who represented a particular point

of view. Constantine, along with Hosius of Corduba; a confidante who had planned to support the emperor in defining the state religion, along with Bishop Alexander of Alexandria, who was the driving force in incorporating many texts from ancient Egyptian scripts that had been translated into Greek for the Roman Empire, sealing the basic tenants of Christian ideology. Constantine became solely responsible for the content of the newly formed Nicene Canon of Christianity, with this new Christian bible, its contents were to be used to further political agendas that had little to do with religion.

Constantine started to ponder the state religion of Rome prior to his ascension, having 7 years to plan his public abdication of paganism before promoting Christianity. In 312 AD Constantine claimed to have had a vision of a cross before a battle, stating publically he had become a convert to the faith. This public display was a clever political coup to enforce millions of people to pay homage to the unofficial faith of the state, that all of Rome's subjects were commanded to obey. The next 12 years were spent in the strategic positioning of Christian thinkers to become heads of a rapidly growing hierarchy in key areas of the empire, to establish churches and expand Christendom in the same manner that Rome had been spread outwards from its farthest frontiers throughout its empire.

Now Christianity was the semi-official religion of the empire, the next phase was crafted like a stealthy chess grand master. Offers were passed around the church to battle within itself for the chance to head a powerful new ally, to govern the newly created Papal States of Rome. The state religion would take over occupying the minds of the people, replacing the amphitheatres of death to control the populous in a less frenzied manner. This subterfuge exists today for the 'dumbing down' of the people. For the people of the faith, there is the church, for those who choose not to, there is now a whole array of mindnumbing entertainment to appease the minds of its people from thinking too seriously, or pondering too deeply the questions of life.

Movies, computer games, rom-coms, soap operas, recreational sports, tabloid newspapers, fashion, international finance, cookery shows, gardening programs, fly-on-the-wall documentaries, talk shows,

the music industry, the monarchy, our media, our banks and our governments are controlled today in exactly the same way. They are controlled by people in financial and political power, who are the real cogs of the system, turning the processes of our country: Any country; every country. There are zero exceptions to this rule and the whole world is a pawn, dancing to the tune of our puppeteers.

The recent industrial and information eras have obsolescence built in to its perpetual cycle. The true nature of consumerism is endemic to the core values of society. As an ITIL, TOGAF and Zachman qualified Enterprise Architect, I have a deep understanding of the processes of industrious enterprise that requires and drives our corporations to be built upon carefully crafted frameworks, which begets systemically designed degradation of the very foundations of obsolescence, forcing us to buy, invest and consume new versions of old shit we don't really need. The microchip is a perfect example of this. The processors in our computers available on the market today have been technologically viable in production for nearly 20 years. Moore's law isn't a scientific precept of the observation of the quantity of transistors and integrated circuits which doubles approximately every two years, it is the realisation of the industry deliberately throttling down scientific progress, due to the control of the market, the price per unit, the availability and stock levels, thus controlling its price, value, release and relative obsolescence. Our cars or phones, our computers, our television equipment, our audio equipment, RAM memory, hard drive capacity, processing speeds, network speeds, software and the media that promotes them, are all part of this deliberate enterprise cycle of obsolescence we call consumerism, our nation's tool of control.

Religion is humanity's longest serving tool of control, forcing the quiet obedience for fear of the everlasting judgement and damnation of dissidence or anarchy within a populous. The only thing feared by those in power is the thought of losing it, which is why the processes that are the systemic design of modernity, are the way they are; to uphold and bolster the rich and powerful, consuming all of the planet's resources with no abatement.

In contrast, Constantine, wishing to harness the power of the new religion, in order to use it on an empire that was falling apart, was the goal set in place prior to his enthroning. Before 312 AD, Christianity was a loosely organised religion. It remained just a small collection of churches with diverse beliefs and diverse scriptures. The Emperor intended to change all of that. Constantine understood that the Christian religion wasn't very well organised. He also understood however, that one thing Romans knew how to do very well, is to meticulously plan and organise things.

In 325 AD, Emperor Constantine convened the First Council of Nicaea, to decide the basic tenants of Christianity. He brought forth the most powerful leaders of the Christian movement, summoning them from the four corners of Rome, which he had perpetuated and planted over the course of 12 years, to finally decide upon legalising a formal Christian religion. His primary interest at this point is unity. He wants the Christian religion to provide the ideological basis for the continued control of the Empire. The goal of this council was to unify the faith, both religiously and politically. After many weeks of debating, more than 95% of the Christian literature was dismissed as not fit for the state. Some roughly 760 Christian books, many of which were first hand gospels of the life of Jesus, did not make it into the first Nicene Creed, which is the foundation of every Christian church to this day, all decided by one man, Emperor Constantine, absolute ruler of the world's greatest empire and the world's largest faith.

Once the Bishops and priests had fallen into line over the state principals of the Nicene Council, this would be the first set of state unifications that placed the religion firmly under the control of the Emperor. He then used this power to change this new sect of Christianity as he saw fit. We have a complete redefinition of how God is to be understood. God is now the protector of the state. This is a powerful control format used by many superpowers today.

Orthodoxy would then be used to unify everything as Rome, as Constantine understood that you couldn't have dissent, and run a state. The Emperor saw fit to unify the Christian Gospels, limiting the Gospels to just the 4 gospels that partially corroborated upon a non-

Gnostic set of belief principals, having the least amount of mysticism in order for the stories to hold water, bolstering the principles of state.

If you ever get to witness the conclave in procession when selecting a new Pope, or the rituals of daily movements around the Vatican, you will notice that the attire is that of the Roman Empire. The Empire of Rome never died or went away; it simply reinvented itself as the Roman Catholic Church, passing power over to its Bishops to continue the vision of Rome. The Pope was handed the Secret Key of Knowledge, the tenants of the Emperors wishes for the state of Rome, to perpetuate Christendom to the far reaches of the planet. The visual representations of Christianity about the secret knowledge of those in power were emulated in the same way as other solar messiahs. The visual documentation and mapping of these secrets of the religions are replete in the solar monotheistic religions such as the Pyramids of Giza, or Mayan Temples of Chichen Itza, which used mathematics and astrology to draw signs to their Gods. Vatican City is no exception.

Very few people realise that the Vatican City was built in the very centre of Rome to represent the height of Rome's superpower, with signs to its astrological significance in nearly every building, with the whole city built into the shape of the Secret Key of Knowledge, known by early Bishops as the Staurogram. The Staurogram is simply an anthropomorphology of 'tau-rho' which is represented in very early depictions of the Sun's rising of the Equinox of the Winter Solstice that predates Christianity by at least 3000 years in literally hundreds of other Sun Gods. Tau-Rho is also called the Secret Key of Knowledge, and the Vatican City is built as the shape of the Tau-Rho. The colours of Tau-Rho was the Gnostic symbolisation of Chi-Rho, which was named the Vexillum, which replaced the Imperial Eagle of Rome and set in place by Constantine himself.

The Pope is simply the keeper of the Secret Key of Knowledge and the protectorate of the Roman Empire and its great wealth. Let it be known that if all of the tax-free money given to the church each year was passed back to each country as GDP, each and every person on the planet would only pay around 3% income tax. Now that is something to ponder. Rome is still the richest superpower in the world, commanding

1.2 Billion people, which makes Constantine by far the most successful Emperor in the 2800 year history of Rome.

Although the Nicene Council did not officially decide upon the content of the Christian Bible, Constantine made it very clear which Gospels he considered acceptable. He commissioned the creation of 50 copies of the first Christian Bible, which contained only the Gospels of Matthew, Mark, Luke and John.

So, what happened to the other Gospels?

Of the seven councils recognised in whole or in part by both the Roman Catholic and the Eastern Orthodox Church as ecumenical, all were called by the Roman Emperor, who gave them legal status across the entire Roman Empire. All of the councils were held in the eastern part of the Roman Empire, and in 382 AD a church council banned all other Gospels from being read anywhere. All other books, many of which were cherished by true Christians for generations, these scriptures had to be relinquished for fear of persecution and imminent death. All Christian texts not included in the state religion were now considered heresy. All of the other texts which real, believing Christians loved and for a long time, were widely read, were demanded to be destroyed by the Bishops who deemed what should and should not be read under Roman rule.

What was so threatening in these Gospels that the Emperor had all other texts banished? Nobody knew the answer to this question for nearly 2000 years. In 1886, The Gospel of Peter emerged from the sands of the Egyptian desert, with other astounding discoveries being found in every decade of the 20th century. The Gospel of Thomas, The Gospel of Mary Magdalene, and The Gospel of Judas.

These lost Gospels reveal a very different view of Jesus, a very different approach to spirituality, and a lost version of Christianity that threatened the very stability of the religion itself. For nearly 2000 years Christians believed that there were only 4 gospels that told the story of Jesus of Nazareth. In 1886, The Gospel of Peter was the first lost gospel discovered in centuries, suggesting the existence of a secret history of forbidden scriptures.

In December 1945, a remarkable discovery unearthed a large collection of lost gospels and changed forever the history of Christianity. In Egypt, in a town called Nag Hammadi, a farmer and his companion found a sealed clay urn, containing an 1800 year old payload. The urn contained 52 separate texts with titles such as The Acts of Peter, The Apocalypse of James, and The Gospel of Thomas. These were literal lost gospels, mentioned by ancient writers, but buried after the Roman consolidation of power in 325 AD. These scripture until now had only existed as legends. It is believed by scholars that the works were buried after a letter was sent by Bishop Athanasius of Alexandria, who for the first time declared the strict state canon of the Nicene Creed. By absorbing elements from Egyptian Sun Gods under his realm as Head Bishop of Egypt, Athanasius became the primary instigator and defender of Trinitarianism against the state Arianism at the 4th Lateran Council. It is important to note at this point, that Arianism is not to be confused with Aryanism, which is a racial theory. According to this doctrine, there is only one God in three persons. Each person is God, whole and entire. They are distinct from one another in their relations of origin: as the 4th Lateran Council declared, *"It is the Father who generates, the Son who is begotten, and the Holy Spirit who proceeds"*. While distinct in their relations with one another, they are one and all. The whole work of creation and grace is a single entity of operation, common to all three divine persons, who at the same time operates according to their unique properties, so that all things are from the Father, through the Son and in the Holy Spirit.

The Holy Trinity is one of very few of the latter doctrines of Rome, to be absorbed by most of the Christian Churches today. Athanasius was a big fan of the works of Tertullian, who was a 2nd century Christian author and philosopher who wrote prolifically, writing hundreds of Latin literatures about the advancement of the world's theologies to adopt Montanism, an early Christian movement as a world religion. It was Tertullian that was first to coin the word *trinitas*, formulating three persons, one substance, as it was written.

Athanasius took this work and adapted it for the Eastern Papal States, and absorbed it into Christian doctrines after the 4th Lateran Council.

The Gospel of Thomas is a fascinating document, translated from Greek to Coptic, is portrayed as the sayings of Jesus. Many things contained in The Gospel of Thomas are also found in the New Testament, the difference being that The Gospel of Thomas is a Gnostic Gospel.

The Gnostics were a sect of early Christianity that gave deep emphasis on mysticism, disagreeing with many of the precepts of the emerging Christian hierarchy of the state. Gnostics were saved by secret knowledge, and you were said to be a true follower of Jesus, if you understood this secret knowledge, with the word 'Gnostic', meaning "one who knows".

Gnostics were essentially mystics in many ways, and if they could find that piece of God within, why did they need to have Bishops, Priests or Churches, as Christianity could march to the beat of its own drum! This was not acceptable as a state religion, as it required a military sense of defined hierarchical order to pursue political agendas in the name of Rome. Any mention of the Gnostics was to be demonstrated publically as heretics, groups of witches and wizards who secretly summoned the Devils work. These are stories as told by the state church, and the word Gnostic was never to be mentioned in a house of God again. It seems that Gnostics joined the lost gospels in the rape and decimation of early Christian faith, banished by the state.

In The Gospel of Thomas, Jesus seems to convey a strange message, a secret teaching that is very different from the traditional gospels. The Gospels of Matthew, Mark, Luke and John teach that Jesus is the only Son of God. The Gospel of Thomas suggests that we can all become Sons of God. It says, *"When you know yourselves, they will be known, and you will know that you are children of the living father."* In other words, if Jesus can be taken as a Son of God, so are all of us Sons and Daughters of God. He doesn't have anything we can't have. We can have the same kind of relationship with the divine and that same kind of oneness with God.

The Gospel of Thomas asks for a personal connection to God, without the need for organised churches, priests and bishops. There were lots of priests and bishops who took offence at these Gnostics who undermined their state creed and organised hierarchical order of power. Gnostics had their own way. They had a direct line. They could create their very own red telephone to the divine. This did not sit well at all with the authority figures of the established church, being the reason why The Gospel of Thomas and many, many other Gospels were not fit for the Christian state of the Roman Empire.

The independence of Gnostic beliefs undermined the stability of the church's hierarchy, with the Gnostics believing their gospels were just as valid, if not more valid than the books of Matthew, Mark, Luke and John. In the case of The Gospel of Thomas, they may well have been right. When these gospels were found in 1945, a disturbing issue arose as it transpired that The Gospel of Thomas could conceivably be older that the canonical books of the New Testament. There is debate amongst scholars on how to date The Gospel of Thomas, however, what we do know for sure is that there is some very ancient papyri within this gospel that date back to the very earliest days of the church.

Most scholars believe that the 4 Gospels were written within a generation of the death of Jesus, some 40-60 years after the events were purported to have taken place. Material from The Gospel of Thomas, may in fact be older based upon its simpler content, as it is composed of only 114 sayings of Jesus. There are no stories about Jesus and there are no miracles or anecdotes about Jesus' travels or any people he interacts with along the way, suggesting that other gospels are later editions that have had time to elaborate from the origin stories of the early faith.

If The Gospel of Thomas is in fact older that the canonical gospels, does this mean that it is closer to the message of Jesus, and if so, does this mean that The Bible is literally incomplete?

The answer to these questions lies in the very ink and paper itself, which has been extensively examined recently by a team of specialists and scientists at the behest of the Smithsonian Museum Conservations Institute (MCI) who were deployed to extract the secrets

that lay hidden in the fibres of the papyri and the ink used. But first, one clue was found in the writing itself.

At the time The Gospel of Thomas was written, we know that the vast majority of the population was illiterate, so would have almost definitely been written by a professional scribe. It is accepted by Coptologists that the vast majority of texts, by way of inference by earlier scholars that mention the contents of the books themselves, prior to the ages of the earliest papyri we have, including the canonical texts of Matthew, Mark, Luke and John were copied by various scribes over many generations after the 4th century AD. The scribe's methods and tools, provide signature fingerprints as to who, when and where these were produced, corroborated by Carbon-14 dating and 3 dimensional microscopy, providing very precise dating for the codices age and authenticity. At this point, we will not divulge into authorship as it compounds these issues further. In fact, at a literacy rate 0.00025% of the time of Jesus, on the assumption that "only" Matthew, Mark, Luke and John, a clear one third of the 12 disciples to be attributed to writing the 4 canonical gospels, when only 1 in 40,000 could read and write, had odds of two quintillion, five hundred and sixty quadrillion, two hundred and fifty six trillion, nine billion, six hundred million, one hundred and sixty thousand and three hundred, to one.

Or, if you prefer, 2,560,256,009,600,160,300 : 1.

Now, I would definitely describe myself as one of life's optimists; however, I have never met a single person yet, that would in all good conscience, deliberately set their binding religious principles, knowing that the total scriptures of teachings and message of the religion's sole, coveted deity, has a one in two and a half trillion-trillion chance of being attributed to the words of the authors they are being pertained to as the words of God. By any stretch of the imagination, this is a very difficult pill to swallow for any empiricist. However, most of the Christians I have spoken to about this shrug it off as divine intervention, rendering mathematical odds and permutations as having no basis in the realm of the divine. The Stupification Paradox strikes again!

Having examined the fibres and ink composition to verify that that the texts of The Gospel of Thomas are indeed authentic, the tell-tale signs of its make-up quickly indicated it certainly is not a modern forgery. Carbon-14 tests place the writing of this papyrus to between 288-294 AD. However, scholars agree that as this book is referred to much earlier than this period, with this copy of text being a later replica. It is universally agreed that this gospel which has been referenced in various Christian texts prior to 150 AD, the age of the origin of The Gospel of Thomas is thought to be 80-90 years older than the canonical gospels of Matthew, Mark, Luke and John.

Does this mean that a gospel written nearer to the purported life and times of Jesus, is in fact closer to the message of Jesus than the other gospels? No matter the age, The Gospel of Thomas reveals a battle within Christianity between at least two camps. On one side, the state declaring a canon of just 4 gospels, the other side, a group of Gnostics from the very earliest beginnings of Christianity, claims to have the support from Mary Magdalene herself.

For centuries, Christians believed that there were only 4 gospels that revealed the life and the times of Jesus and his message, but that belief changed in the late 1800's with the discovery of one of the very first lost gospels. One of the most compelling of these lost scriptures was found in Egypt in 1896. This gospel had a very surprising author, written in the name of woman; not just any woman, but Mary Magdalene.

Mary Magdalene was a beloved disciple of Jesus' inner-circle. Even though only a handful of fragments survive, the text puts into sharp focus the nature of Mary's true significance. If The Gospel of Mary is authentic, it strongly signifies the fact that women were once powerful leaders in the early Christian church. It also means that Mary was not a reformed prostitute, but the leader of the apostles, and in a religion dominated for 2000 years by men, it means that the most important gospel was written in the name of a woman.

The Gospel of Mary details the secret instructions that Jesus tells only to Mary: Secrets about life, death and heaven.

In this gospel, Jesus reveals certain things about the afterlife to Mary in very Gnostic kinds of terms. The afterlife in the four traditional gospels is described as a blissful paradise. In The Gospel of Mary however, the afterlife involves a strange journey of the soul after death in which the dead person encounters both angelic and demonic beings as the soul negotiates its tumultuous way toward heaven.

It is only through Mary that Jesus reveals his secret journey of the soul. The Gospel reports that Peter, the leader of the apostles reacts explosively to this revelation. Peter says, *"Did he really speak to a woman without our knowledge? Are we to turn about and listen to her? Does he prefer her to us?"* In this gospel, the apostles override Peter's denunciation in support of Mary, saying *"if the saviour made her worthy, who are you indeed to resist her?"*

What is significant is that there was a very special spiritual kind of bond, so Mary was spoken of as someone who commanded great insight, a leader, somebody who had an ability to motivate and propel others, which became her real gift. She understood the mind of Jesus and was able to communicate that to large crowds of people who generally showed disdain for women.

This is a gospel that gives a very different kind of view of what the message of Jesus is, as Mary Magdalene as the one chosen to convey this point of view in a way that the other disciples did not. But, is this a real gospel? Is this text actually an eyewitness account of Mary Magdalene? If so, it would drastically change Christian history and forever revolutionise the role of women in the Christian church.

The key lies in the gospel's age. Is it older than the four traditional gospels? Could it have been written by Mary Magdalene herself? The gospel itself was first discovered in 1891, in Akhmim, Egypt. Carbon dating reveals that this text was hand copied in the 5th century. But over the years since this amazing discovery, fragments of the gospel of Mary have emerged from elsewhere in Egypt, with these fragments being much, much older.

New breakthroughs in technology help refine the exact date of these fragments of ancient texts. Using a 3D microscope allows scientists to focus on the details that force the text to give up the clues

to its age. At this level of detail, a more recent example of papyrus bears no resemblance to an ancient text. Under the microscope the suede-like napping effect of ancient papyrus is very evident, giving a very precise date for The Gospel of Mary. They were written approximately between 194-206 AD.

The language and vocabulary support this fact of being written in the 2nd century and not during the time of Jesus. Thus, it is highly unlikely that Mary Magdalene herself would have written the gospel that bears her name. Most scholars believe it was created by a Gnostic Christian who wanted to invoke the authority of the female apostles.

The truth is, we don't really know who the author was, but many would imagine that there really is a woman's voice and a woman's perspective to be seen and heard here. It may be the case that finally, there is a voice that is heard that has been stifled in the other gospels.

Maybe more importantly, The Gospel of Mary reveals a power struggle in the early church about the role of women. The whole idea about the leadership of women is an exciting thing to look at in early Christian history and The Gospel of Mary is testimony to that.

The fact that Mary is a leader and a woman is a revolutionary concept in the early church. The fact there is a gospel of Mary indicates there is something to support the fact that the Gnostics were much more open to the inclusion of women as full members of the community. In fact, many members of the emerging Orthodox Church complained about this. To them, it was disgusting to have public shows of women administering sacraments or women being ordained. Amongst the Gnostic community, they saw no shame in that, so to be a gospel of Mary is perfectly in-line with a Gnostic point of view.

Nowadays, these books belong to an ever growing list of historical Christian texts named Pseudepigrapha. Technically, a pseudepigraphon is a book written in a biblical style and ascribed to an author who did not write it. In common usage, however, the term pseudepigrapha is often used by way of distinction to refer to apocryphal writings that do not appear in printed editions of the Bible, as opposed to famous examples which include:

- Letter of Aristeas
- Martyrdom and Ascension of Isaiah
- Joseph and Aseneth
- Life of Adam and Eve
- Lives of the Prophets
- Ladder of Jacob
- Jannes and Jambres
- History of the Captivity in Babylon
- History of the Rechabites
- Eldad and Modad
- History of Joseph
- Odes of Solomon
- Prayer of Joseph
- Prayer of Jacob

Often included among the pseudepigrapha are 3 and 4 Maccabees because they are not traditionally found in western Bibles, although they are in the Septuagint. Similarly, the Book of Enoch, Book of Jubilees and 4 Baruch are often listed with the pseudepigrapha although they are commonly included in Ethiopian Bibles. The Psalms of Solomon are found in some editions of the Septuagint.

The Apocrypha of the King James Bible constitutes the books of the Vulgate that are present neither in the Hebrew Old Testament nor the Greek New Testament. Since these are derived from the Septuagint, from which the old Latin version was translated, it follows that the difference between the KJV and the Roman Catholic Old Testaments is traceable to the difference between the Palestinian and the Alexandrian canons of the Old Testament. This is only true with certain reservations, as the Latin Vulgate was revised by Jerome according to the Hebrew, and, where Hebrew originals were not found, according to the Septuagint. Furthermore, the Vulgate omits 3 and 4 Maccabees, which generally appear in the Septuagint, while the Septuagint and Luther's Bible omit 2 Esdras, which is found in the Apocrypha of the Vulgate and the King James Bible.

Luther's Bible, moreover, also omits 1 Esdras. It should further be observed that the Clementine Vulgate places the Prayer of Manasses

and 3 Esdras and 4 Esdras in an appendix after the New Testament as apocryphal. It is hardly possible to form any classification not open to some objection. Scholars are still divided as to the original language, date, and place of composition of some of the books that come under this provisional attempt at order. Thus, some of the additions to Daniel and the Prayer of Manasseh are most probably derived from a Semitic original written in Palestine, yet in compliance with the prevailing opinion they are classed under Hellenistic Jewish literature. Again, the Slavonic Enoch goes back undoubtedly in parts to a Semitic original, though most of it may have been written by a Greek Jew in Egypt.

A distinction can be made between the Palestinian and the Hellenistic literature of the Old Testament, though even this is open to serious objections. The former literature was written in Hebrew or Aramaic, and seldom in Greek; the latter in Greek.

Within these literatures there are three or four classes of subject material: Historical, Legendary (Haggadic), Apocalyptic and Didactic or Sapiential.

The Apocrypha proper then would be classified as follows:

- Palestinian Jewish Literature
  - Historical
    - 1 Esdras (Greek Ezra).
    - 1 Maccabees.
  - Legendary
    - Book of Baruch
    - Book of Judith
  - Apocalyptic
    - 2 Esdras
  - Didactic
    - Sirach (also known as Ecclesiasticus)
    - Tobit
- Hellenistic Jewish Literature:
  - Historical and Legendary
    - Additions to Daniel
    - Additions to Esther
    - Epistle of Jeremy

- 2 Maccabees
- Prayer of Manasseh

- Didactic
  - Book of Wisdom

It is these pseudepigraphic books that have, and continue to challenge the various flavours of the Christianity for hundreds of years. The scriptures contained within the Vulgate and the Pseudepigrapha, far outnumber the canonical books contained within the New Testament; many of which predate most of the books which were written many hundreds of years after the canon was formed, having its list of canonical books grown in various subsequent church councils at the behest of the Roman leaders that followed Constantine, to ensure the State faith was perfectly in-line with the morality that Rome wished to instil upon its subjects. Depending upon whether one subscribes to Eastern or Western Orthodoxy, Protestant, Catholic, Anglican, Church of England, Spiritualist, Gospel, Baptist, Pentecostal, Presbyterian, Latter-Day-Saints, Jehovah's Witnesses, 7th Day Adventist and many of the thousands that sit in-between; various amounts of the vulgate books are allowed to form the centre mandate of various sects.

It is very clear that Christianity was heavily influenced from scriptures that originate from literature from both Egypt, Hellenistic and Palestinian Jews; emanating from the four corners of Mesopotamia, which is the birthplace of all of the Abrahamic religions today. These all carry the same religious precepts of the Anatolia solar deities from the last 5500 years.

In 1886, French archaeologists working in Egypt uncovered an ancient Christian tomb with an extraordinary treasure. Clutched in the hand of an 8th century Monk, lay a book called The Gospel of Peter. It was one of the first lost gospels ever discovered. Could this have been the actual lost account of Simon Peter, the hand-picked leader of the apostles? If so, it would change the history of Christianity, as The Gospel of Peter tells a very different story of the life of Jesus.

What we have discovered at this location is very precious and very exciting. It's an early story, yet an alternative story. In The Gospel of Peter, the Romans are apparently sympathetic stating that Jesus

suffered no pain upon the cross. The most shocking difference however is that The Gospel of Peter claims to reveal an account of the resurrection itself. It is the only gospel we have that attempts to tell the story of what actually happened during the resurrection. All of the state approved gospels talk about the results of the resurrection, with the tomb being empty, yet they omit the moment of resurrection.

The description begins on the 3rd morning after the death of Jesus. As Roman soldiers guard the tomb, The Gospel of Peter says, *"The tomb was opened, and though the soldiers saw it, for they were keeping guard, and as they were explaining what they had seen, they saw three men emerge from the tomb".* As the three men emerge, a booming voice says, *"Have you then preached to those who are sleeping?"*

The resurrection ends with Jesus and the other figures rising into the sky, leaving the eyewitnesses to stare in amazement. The gospel ends with a line claiming that it is the eyewitness account of Peter the Apostle himself.

Could this book really be the work of the lead apostle and the first Pope? Was it written at the same time as the four traditional gospels, or was this a later account, or a forgery passing itself off as an eyewitness testimony of Peter? The archaeological evidence is unclear. The gospel found in 1886 was dated from around 700 AD, 7 centuries after the death of Peter. Fragments of the gospel have turned up in other sites, from approximately 500 AD, still too late to have come directly from the apostle. However, once again, this gospel was mentioned in very early Christian writing as early as 190 AD. We can trace the gospel back prior the end of the 2nd century, but no further. Scientists concur that it is probably no earlier than an early 2nd century text, as it features the same prose and scribe fingerprint as those of Matthew, Mark, Luke and John.

The story of Simon Peter is so similar to the other gospels that it seems highly likely they were all simply copies of earlier text. Whoever wrote the copies in the early 2nd century claimed it was the work of Peter the Apostle, to give it added authority. This was a common technique at this time across the ancient world. When someone wanted

to communicate something they felt was true of important for many religions to hear, they wouldn't say it in their own voice; they would say it in the voice of someone they understood to show authority.

In that sense, The Gospel of Peter is not a real account, but a forgery. This however, brings us to a point that is both very important and very disturbing. If the Gospel of Peter is a forgery, then the Gospels of Matthew, Mark, Luke and John are also forgeries. We don't know who those authors were, but they were written in the name of Matthew, Mark, Luke and John because they were attributed to be the great folk names of the past. The fact of the matter is, they almost certainly were not written by Matthew, Mark Luke and John. Most scholars agree that the four traditional gospels were not written by the apostles for who they are named, but by followers of those apostles many generations later.

If the gospels of Matthew, Mark, Luke and John are not in fact written by the apostles they are attributed to, does that mean that The Gospel of Peter or The Gospel of Mary should be considered just as authentic?

The answer is still unclear to historians, but there are elements in The Gospel of Peter that suggest it is not the eyewitness account of anyone, much less Peter. The tale it tells contains subjective and highly suspect material. In the resurrection scene, Jesus and the two angelic beings are said to stretch up beyond the clouds. When Jesus emerges from the tomb, the actual cross also emerges from behind him and speaks! The actual gospel says they heard a booming voice from the sky, *"Have you preached to those who are asleep?"*, and the reply comes from the cross, *"Yes"*.

The Gospel of Peter was just too fantastical, with the big levitating guys who float about stretching up to the sky with their heads above the heavens, and a booming voice from the sky, and talking crosses, is just way too much for anyone to believe. If the State of Rome was to choose a down-to-earth, sober message for the early church, there was no way that The Gospel of Peter could be included into Emperor Constantine's accepted gospels, when the Council of Nicaea was convened. Yet there were still pockets of devout Christians

who considered this book sacred. Sacred enough to be buried with a Monk around 700 AD, who loved and adored the book so much in this life, he wished to carry it into the next.

The Gospel of Peter was one of the first gospels ever found. One of the most recent lost gospels was uncovered in 2006. A scripture which gained immediate controversy as it was said to be written by the betrayer of Jesus. The lost Gospel of Judas!

The discovery of the lost gospels in the 20th century changed our understanding of Christian history, but a recently discovered lost gospel questions the basic foundations of traditional Christian beliefs. In 2000, a papyrus document is retrieved from an antique dealer from Egypt. It is believed to have been discovered near the town of Nag Hammadi, an Egyptian town close to where the first Gnostic gospels were discovered. It is identified as the gospel of Judas Iscariot.

In the traditional version of the crucifixion story, Judas betrays Jesus to the Romans and is scorned as a traitor and a villain. However, in The Gospel of Judas, the story of betrayal is twisted into a story of personal sacrifice. In this gospel, Jesus recognises Judas as the wisest of the apostles. Essentially, the whole gospel is very much about the special relationship that Jesus and Judas shared. Judas is thought to be a very special disciple. He is also the only one who receives true enlightenment and the one who proves to be the most insightful as to who Jesus is. Jesus says that He himself will deliver only his physical body to the Romans as He himself will escape the crucifixion and return to the spiritual realm. This is a very clear sign that these scriptures have Gnostic roots.

These guys didn't believe that Jesus was really human. He just appeared to them as human; he was a spirit. The whole idea of Gnosticism is to shed this cloak, get rid of these clothes and all of the humanistic elements in favour of returning to the pure form of spirit. It's a remarkable inversion of the traditional gospels and highly controversial from the moment it was published in 2006.

If it is an authentic gospel, written by Judas, it would rewrite Christian history and theology, forcing many scholars to believe initially that The Gospel of Judas could only be a fake. The idea of

imagining that a gospel of Judas Iscariot could even exist is so very provocative, that indeed many people dismissed this scripture as an elaborate forgery. Theoretically, a person with a fiendish sense of humour or desire to deceive the world could have taken some very old papyrus and create a text, having lots of fun with the world.

The Gospel of Judas was subjected to many months of scientific investigation. Despite its unusual source, the experts in Coptology and Palaeography have confirmed with absolute certainty that this text is not a modern forgery, but probably not as old as the traditional gospels. Scholars believe that the Gospel of Judas was written somewhere between 280-330 AD; almost 300 years after the death of Judas.

It is clearly not an eyewitness account as it was written just after the creation of the four traditional gospels in the 2nd century. The very existence however that someone would create a gospel of Judas highlights the growing conflict between Gnostic Christians and the new State Church of the Roman Empire around 300 AD.

Someone may have written The Gospel of Judas as a tool to make people think differently about the perception of the known characters, shedding them in a different light. The Gospel of Judas heavily criticises the formation of gospels of the state church, containing a message of Christianity without a hierarchical church of Priests and Bishops. It was in a sense an affirmation of the Christian thinking church, predating the implementation of the Nicene Council of Rome. They really believed that there was something within, that they had a kind of direct access to the divine. They didn't really need Priests and Bishops or any other kind of authority.

This is the Gnostic emphasis of mysticism and personal revelation that perhaps led to their undoing. Instead of building community and instilling confidence and communion, the Gnostic community was a select circle which quickly started diminishing in political plight, once Rome had its claws firmly grasped around the concordance of a Christian canon for political power.

Meanwhile, an emerging Christian hierarchy was getting the attention of Roman politicians, and with the Nicene Council in 325 AD, Emperor Constantine solidified the power of the newly created

Orthodox Bishops and their new hierarchy to command the morality of Roman subjects. The Gospels of Matthew, Mark, Luke and John were in; the Gnostic gospels were out. Just four late gospels out of as many as fifty, that would have still existed at the time of the Nicene Council.

It is important to keep in mind that gospels that were not in the adjustment, were in fact widely read by the people for more than 700 years, and appreciated, loved and adored by many for a very long time. But what does this say about the legitimacy of the lost gospels? The study of the lost gospels for me have been very fascinating, as it helps people to understand whether religious or not, the things that are quite obviously missing from our school's curriculum, in the order of unbiased balance of factual evidence, not bound by religious dogma. Sadly, religion and politics are still hand in hand with the original idea of brainwashing an entire population to yet another generation of children to conform to a belief system of an institution, put there for the sole reason of governmental, political control, obedience and docility.

It remains a rather fascinating concept to imagine what would have happened at Nicaea if the Gnostic perspective had carried the day. I would imagine more of a mystical inner sense of what it means to be motivated as a follower of Jesus. It certainly would have been a very different church with very unusual characteristics, featuring a much more mystical sense of oneness, much like today's practise of Buddhism. Yet, the Gnostics did not carry the day at Nicaea, and somewhere in an Egyptian monastery in the desert, a group of Gnostic Monks must have wondered what would be the fate of their precious books. They would have loved and cherished this kind of literature, until that fateful day when Archbishop Athanasius of Alexandria announced to all monks that is was time to throw away those heretical books. Perhaps with a heavy heart they took the books, which are now contained in the Nag Hammadi library in Egypt. They couldn't destroy them! They hid them in a jar so that they could last forever, or until we could one day tell the story of the earliest Christian church before Rome canonised the cult into the official religion of the State of Rome.

For two millennia, the four gospels have been regarded as the only true stories of Jesus. Some believe this represents the road not

taken for Christianity, others believe the road was not taken for a reason. History is only ever written by the winners, and only now do the losers get to have their say, for the balance and documentation of factual accounts, which is the true nature of science.

To the blinkered eyes of billions of people, the religious institutions of the world are still firmly set in place as they always have been by the unseen rule makers who run our economies, own our banking systems and create the governance of the lands in which we all live, masked by politicians, pushed by international financiers, promoted by the orchestrated media and guarded by the clergy.

If you want to find out the truth, which is the only goal of science, the trails left before you when you decide to open your eyes and see it for yourself are astounding. The truth is out there if you only care to look close enough, and that truth will set you free.

CHAPTER 5

Inevitability of Life

The decay of the Universe is best defined by what is now ubiquitously regarded by all today's physicists as the rate of qualitative degradation of the finite amounts of energy that exists in the Universe.

The degradation of energy happens all around us all of the time. Going back to your school science lessons, we understand that energy is never created or destroyed, it is only ever converted from one form to another. Energy is never lost, only its state of order is transferred to various different forms. Electrical energy is carried to your light bulbs, creating light and heat. Heat being a lower quality form of energy, is less organised than electrons which are regarded as much higher quality and far more organised in nature.

The light from our Sun can beat down on a car all day, its energy being absorbed by the paint and stored temporarily as heat will make the bodywork hot to the touch. That heat can be trapped inside long after the sun sets and will continue to radiate all of its stored heat energy outwards.

The keyword here is "all", this heat is radiated until all of the energy it retained is spent, that being equal to the amount of energy it received. This energy is not output in the same form as it was received,

in doing so would make the car blinding to look at, requiring the wearing of sun cream to prevent the ensuing affects of sunburn. The incredibly well ordered, high quality energy of photons degrades to the disarray of radiated heat energy, conforming, as does everything else in the Universe, to the second law of thermodynamics.

The second law of thermodynamics states that *"the entropy of an isolated system never decreases, because isolated systems spontaneously evolve towards thermodynamic equilibrium - the state of maximum entropy. Equivalently, perpetual motion machines of the second kind are impossible."*

This can be better understood and proven by the use of Quantum Statistical Mechanics. It is an expression of the fact that over time, the differences in temperature, pressure, and chemical potential decrease in an isolated physical system, leading eventually to a state of thermodynamic equilibrium.

If any object was not decreasing energy to thermodynamic equilibrium after bathing in sunlight, heat energy would then be stored and over time, it would attain more and more heat until the object in question exceeds its melting point. With this in mind, Mediterranean and Caribbean beach destinations would certainly prove less popular. This event is perpetual and is happening constantly in the Universe.

During the Big Bang, some 13.82 billion years ago, all of the matter in the Universe was energy of the highest order of quality. Its degradation into lower quality energy gave us our periodic table of elements where electrons, neutrons and protons are torn apart creating the wealth of molecules in such abundance that exists by this process to create pools of noble gasses and particles of dust that interact and attract forming ever snowballing masses of matter.

The laws of physics govern this in the same way they govern the stars in the sky, the orbiting planets of our solar system, the very molecules in your body and the atomic particles that make up those molecules.

For a human being to try and comprehend how large the scale of the Universe is big and how small and how fleeting matter is on a sub atomic level, for many minds is nigh on impossible. Understanding

this when we live in and observe our own little macrocosms at our equivalent visible scale, physics at this level of understanding for many people is just as fantastical and dismissible as any religion, either through a lack of understanding of how the laws of the Universe work, or just through pure ignorance.

Humans, as living organisms, have a beginning and an end. We are finite creatures, we are born and therefore, we inevitably die.

The human brain can easily cope with enough data in today's great information age to process the fact that although the Earth may seem flat from our tiny insignificant perspectives, it is in fact a spherical ball of rock encrusted, liquid mantled, iron cored planet, that spins at a speed of 1000 miles per hour upon its axis, orbits a global fireball of nuclear fusion 109 times the size of our globular planet at 67,000 mph.

Now try and take it to the next level, try and explain to someone who perceives to live and breathe inside a three dimensional plane, who wants to truly understand the meaning and reason for life, yet struggles to comprehend this as a notion of fact due to the unequivocal laws of nature, and then try to explain to them complex string theory, the power of attraction, the laws of time, the 10 dimensions of space and the movement of energy through its planes and a description of the standard model of particle physics would blow the poor person's mind from here to Timbuktu.

The fact is, humanity is starting to truly comprehend these truths and humanity cannot evolve from a warring race of superstitious primates, to a symbiotic level of higher consciousness without dropping the archaic sentimental notions of our decadent and self satisfying pre-history.

Chemical potential is the reason for life. Understanding this fact means that scientists are now able to create life, out of nothing but a small set of chemicals. Very few people know that in 2010, scientists created for the first time, artificial DNA and artificial single cells, joining them together creating a man made, completely artificial life form, yet it's true. Its artificial DNA was created in a computerised

gene sequencer which created 485 genes, each strand made up of one million base pairs. For comparison, a human genome is made up of 20,000 genes and three billion base pairs.

This fully artificial life was the natural progression from the earlier successful creation of the first synthetic bacterial genome, which was created by 17 researchers at the J. Craig Venter Institute (JVCI) in Rockville, MD, where earlier in 2007 there where previous breakthroughs by transplanting genomes from one organism to another, thus re-engineering one living species of microbe into another species, bringing to light the notion that DNA is the software of life and that DNA dictates the cell phenotype.

The fully synthetic cell was successfully "rebooted" after the DNA 'software' was inserted into the cell 'hardware', just like a modern computer program.

It may sound like a strange analogy to compare it with a computer program, but today scientists can encode complete data sets into DNA sequences. Using the four molecular letters or 'bases' of genetic material; known as G, T, C and A to store information, students from the European Bioinformatics Institute in Hinxon, near Cambridge, as a 'fun exercise', successfully spelled out the entire collection of Shakespeare's 154 sonnets in DNA code.

Written in DNA, one of those sonnets weighed just 0.3 millionths of a millionth of a gram! With this in mind our geneticists can produce enough DNA code as 'data storage' in just one gram of DNA, than can physically fit onto a million CD's.

Both forms of artificial life were also coded with a genetic watermark, to enable the genetic tracing of the synthetic DNA during reproduction. In fact, the replication of data using DNA has less erroring per Petabyte of data, than any of the conventional methods of digital reproduction.

Now that the first steps of creating synthetic life forms has been produced, based upon relatively simple microbes such as *Mycoplasma mycoides*, scientists are now in the throes of creating novel forms of life, distinctly different to anything found in nature. Now, three different version of a fully computer designed artificial genome are

being constructed to see if any of these new designs function as a living cell. These designs are all attempts to find the minimum amount of genome required to create free-living organisms.

The smallest known microbial genome in nature belongs to *Mycoplasma genitalium*, with 525 genes encoded with 580,000 chemical nodes of DNA. The question of how much of this genome is essential for life remains one of the primary goals of this study.

Geneticists believe that as life evolved in the somewhat messy fashion of natural selection of random changes over 3 billion years, much of the genome is seen as unnecessary clutter, left over from undirected Darwinian evolution.

The genomes being created can be genetically engineered for a broad spectrum of metabolisms, so various organisms can be created for specific functions, with a potential prospect of creating liquid hydrocarbons, similar to today's transport fuels; or to be able to redesign a whole new type of algae genome, designed for maximum yields of fuel production.

Today, geneticists can now engineer living organisms, whose cell structures and metabolism can be designed to live on carbon dioxide turning it into methane, for a twenty-first century climate-fuel solution, or more specifically an ability to metabolise long chain sugars, such as cellulose and lignin found in timber, for a much more economical fuel by-product of pure carbon; or cells that live and feed upon sulphur, for various commercially viable agendas, but all for turning large quantities of microbial food into large quantities of fuel.

We live in a world today that can digitise a genome and transmit this information over the internet to a digital-biological converter which can turn back synthetic, computer generated DNA into a real living cell.

The world's greatest minds in genetics are now forging ahead to create the fundamental principles for the design of life, in order to redesign it. The aim: to produce a genome that an intelligent designer would have done in the first place, had there been one.

In the early days of our planet, within a billion years there was already microbial life on Earth. The cause for this was the same

chemical potential that scientists use today to spark life into an organism. The chemical potential in a car battery works in the same way that chemical potential allows life to persist on Earth.

Primordial vents in undersea volcanic plumes which still exist in parts of the ocean floor today, around the great ring of fire which denoted the scarred line of slowly drifting continental tectonic plates are the hot, insidious chemical plumes. Stacks of alkaline vents that create rich proton gradients to enable life to thrive in its mineral rich waters and with a thermal capacity to present a hive of potential for chemical primordial life to persist.

Life thrived in the early years of our planet, as it exploited the natural proton gradients of these early plumes of life. Not just energy, but rich in all of the raw materials life needs, including hydrogen, carbon dioxide, and minerals of iron, nickel and sulphur.

Imagine if you are holding a ball in your hand and then drop it to floor. That ball inherits the gravitational potential energy, exactly equal to the energy it took to raise it to that height. Energy to be dissipated as it falls, releasing all of that energy into lower quality levels of kinetic, thermal and sound energy. This potential energy is the chemical equivalent of proton gradients by channelling energy through a process known as the waterfall gradient of life.

Life persists in every form on our planet, requiring just one thing; proton gradients.

In every single living cell today, contains the historical records of these early years, and they perform exactly the same functions today as they did 4 billion years ago.

All living things contain mitochondria, microscopic batteries that power the processes of life, utilising proton gradients to produce energy to live. To any layperson looking through an electron microscope, the mitochondria of a human, an ant, a fish, a mushroom, a plant or bacteria are very difficult to tell apart.

Living organisms create complex, disordered energy from ordered energy, keeping the balance of inevitable decay in check. The inevitable decay is the second law of thermodynamics and one law of the universe's universal truths that can never be broken.

Life persists because of the huge amount of disordered energy it can create to support the communal symbiosis that our cells depend on.

Life expires when the quota of energy is less than what is required for life to continually perpetuate and the process of symbiotic dependency can no longer be maintained.

As the universe ages, the energy contained within it changes over time from one form, to another. Galaxies, stars and planets were born, and whilst all of the energy in the universe remains constant, with every transformation, this energy becomes less useful and more disordered.

Every human generates 6,000 times more heat per kilogram of mass than the Sun. The conversion of pure energy into more disordered energy such as thermal, kinetic and chemical is the whole reason for our being. To perpetuate our species through genetic code means we continue the cycle of life. All of the energy that is absorbed by our symbiotic cells existed before we were born and persist for eternity after we inevitably die. The life force of all living things, the disordered energy that exists in us all shall remain in the universe forever, as it is never created, and can never be destroyed.

Just by being alive, we are part of this perpetual energy transformation that drives the evolution of the universe. By converting so much energy from one form to another, life is able to hang on to just a small amount of order for itself, a very fine balance of just enough order to resist the inevitable decay of the universe.

Living things borrow order from the wider universe and turns it into disorder. As physical structures, life still obeys all of the laws of physics. There is no magical mysticism of life that the fundamental religions of the world would have you believe. The tongue of a chameleon, the jump of a grasshopper or the hover of a hummingbird all conform to very simple laws of physics. These are the same laws of physics that describe the shining of the stars, the orbits of the planets and falling of rain.

All living things share the same fate. You will die as a direct result of being born into life. However; life itself, will endure.

What separates life from every other process in the universe is the way life can continue to persist by passing on the collective symbiotic memory of its form and function, with the power to recreate itself by replicating its chemical order of construction by a molecule found in every living thing on earth. DNA.

DNA, the abbreviation of deoxyribonucleic acid was first discovered in 1869, but its role in genetic inheritance was not demonstrated until 1943, has just 4 chemical compounds.

In 1953 James Watson and Francis Crick determined that the structure of DNA is a double-helix polymer, a spiral consisting of two DNA strands wound around each other. Each strand is composed of a long chain of monomer nucleotides. The nucleotide of DNA consists of a deoxyribose sugar molecule, which is attached a single phosphate group and one of four nitrogenous bases: two Purines named Adenine and Guanine and two Pyrimidines named Cytosine and Thymine.

Guanine, Thymine, Cytosine and Adenine give us the 4 letters G,T, C and A we use in genetics do describe the DNA structure.

These nucleotides are joined together by covalent bonds between the phosphate of one nucleotide and the sugar of the next, forming a phosphate-sugar backbone from which the nitrogenous bases protrude. Each one of the strands is held to another by hydrogen bonds between the bases.

Sequencing of these bonds are very specific as adenine only bonds with thymine, and cytosine only with guanine. DNA molecules are highly stable, allowing them to act as templates for the replication of new DNA molecules, as well as for the production and subsequent transcription of the related ribonucleic acid molecule, RNA.

Any single segment of DNA that codes for the cell's synthesis of a specific protein is called a gene. DNA simply replicates itself by separating into two single strands, each one serving as a template for a new strand. Each new strand is then copied by the same principle of hydrogen-bond pairing between bases that exists in the double helix. Two new double-stranded molecules of DNA are produced, each containing one of the original strands and one new strand.

Inside each cell, DNA is arranged into dense protein complexes called chromosomes. This genetic code which is represented as an RNA table we call a 'codon' due to the biochemical nature of the protein translation process. Codons are the genetic instructions to build a very specific life form at a molecular level, whether bacteria, fungus, plant, fish, reptile or mammal.

The genetic material of viruses may be single or double stranded DNA or RNA. Many viruses carry their genetic material as single stranded RNA and can produce the enzyme reverse transcriptase, which can generate DNA from an RNA strand.

Recently, four stranded DNA complexes known as G-quadruplexes have been observed in guanine-rich areas of the human genome. Each codon encodes for one of the 20 amino acids which are the basic building blocks of proteins, in turn, the building blocks of all life on earth.

Just like a computer program, DNA is an age old, beautiful and somewhat archaic form of chemo-biological recording device, similar in many ways to modern computer software that inscribes all of the history of hereditary parentage before it. Instead of binary ones and zeros it uses 4 bits G, T, C and A for encoding and decoding.

An interpreted molecular machine language, an equivalent, much like 'Assembly Languages' used by today's common language runtime frameworks (a bit like Microsoft's virtual machine component of the .NET framework) to 'compile at runtime' or recreate on-the-fly.
Using the same analogy, our brains are more like computer databases that receive electrical signals akin to today's SQL scripts and our memories are the programming equivalent of relational database subroutines called 'stored procedures'.

These geeky similes continue, in a fashion that would make Jeremy Clarkson himself proud of his own self satisfying smugness, for having come up with the undeniable comparability of the fact that our neurons and hormones are the computational equivalents of modern object oriented programming languages like C#, C++, VB.NET or Java, or modern procedural programming languages like Visual Basic, Perl or PHP.

Even the storage of genetic code, the codons in DNA are stored in a concatenated string, which is also used in computer programming, and the string is placed in a file system using codons as metadata, much like Microsoft's NTFS file system, remaining much like a Linux method of monolithic system storage for memory allocation, which is not susceptible to contiguous degradation.

My apologies, as a computer scientist I couldn't help myself. Here endeth today's theoretical computer science lesson.

The simple fact is, life needn't be a mystical and magical force of the hidden Gods of the countless lottery of religion. To understand science in all of its glory is just as fantastic and amazing as any proverbs, revelations or fables of ancient human civilisation.

Religion is of man, not of God, and no man can disprove this. To have faith in any religion is seemingly akin to the universal laws of physics as self reinforced delusions flying in the face of empirical fact and hard evidence. Historically, religions have been set in place by the political will of empires and governments around the world for thousands of generations, to instil fear and order upon the *vox populi*.

Why do we invent the cheap myths and monsters that make the world seem less normal and more bazaar and interesting if you tread a pre-determined path? Especially when the wonders of this beautifully amazing, awe inspiring, wondrous, natural world is here, right now under our feet for everyone to discover this amazing planet we call our home.

CHAPTER 6

Evolution of Man

I was quite disturbed whilst speaking to a friend who was visiting the other day. I was discussing the planned contents for this book, which he found very interesting. He was quizzing me on the subject matter which I had roughly outlined the sequence of already, when he came across the title for this chapter. “Do you really believe we came from monkeys?” he said. “What do you mean?” I replied. At this point, I wasn’t sure I comprehended what he was saying. “You know, all that rubbish about us coming from monkeys. I don’t believe it; I mean, how did a monkey turn into us?” “Oh!” I thought to myself. I had heard him correctly. “Mike, are you being serious!?” I exclaimed. As it turns out; he was. I was taken aback that anyone could be this naive about our own origins. Surely, this is one of the things that everyone would want to fully understand? There is no mystery to this subject at all, but as it turns out, it was me who was being naive.

Subsequently, I have spoken to various friends and family, and the consensus I have now arrived at, is that actually, most people have a very poor understanding about the origins of our species. I am not including Young Earth Creationists in this description, as their ideologies as a belief system is one of complete ignorance about

anything that happens in the natural world, or those who decide to form their own interpretations of the book of Genesis, based upon reinterpreting what it could have meant as a rhetorical parable in today's society, to appease and conform to both conflicting parties of thought. Those who understand that we as a species evolved from another species, broadly know that humans evolved from a tree of hominids, prior to our genus being formed.

Let me make this clear right from the start. Humans did not evolve from any monkey! Nor, for that matter do humans derive from any gorilla, orangutan, gibbon, baboon, marmoset, macaque or any other modern primate that exists today. One must understand the hierarchical categorisation of the animal kingdom to comprehend these facts fully. At the top of the category tree, we have the Kingdom. All animals belong to the Kingdom, Animalia. Then we have the Phylum. All animals that have vertebrae belong to the Phylum, Chordata. Then we have the Class, to which we as warm blooded live bearers belong to the Class, Mammalia. Next in the classification is the Order. The Order that we share with monkeys, bonobos, gorillas and other apes, is the great Order of Primates. Primates are either simian anthropoids (the aforementioned higher primates) or prosimians, which include lemurs, lorises, bushbabies and tarsiers.

This is where all correlations with other primates have no further meaning, as our species is a separate, divergent species. Under Primates, there are many families, subfamilies, tribes and genii. Humans belong to a tribe called Hominini. The Hominini tribe belongs to subfamily Homininae, a branch of the family Hominidae. The Hominini tribe which includes our Genus, Homo, and other members of the human clade after the split from the tribe, Panini (Chimpanzee and Bonobo), which through DNA comparison, scientists believe the Pan/Homo divergence occurred between 5.4 and 6.3 million years ago, after an unusual process of speciation that ranged over 4 million years.

Humans (Homo sapiens) are primates of the family Hominidae, and the only extant species of the genus Homo. Humans are distinguished from other animals by a relatively larger brain with an exceptionally well developed neocortex, prefrontal cortex and temporal

lobes; enabling high levels of abstract reasoning, language, introspection, problem solving, culture through social learning, and other important mental capabilities which, combined with bipedal locomotion that frees the hands for manipulating objects, has allowed far greater use of tools than any other species. Humans are the only extant species known to build fires and cook their food, as well as the only known species to clothe themselves and create and use numerous other technologies and arts. The scientific study of humans is the discipline of anthropology.

Humans are uniquely adept at utilising systems of symbolic communication such as language and art for self-expression, the exchange of ideas, and organisation. Humans create complex social structures composed of many cooperating and competing groups, from families and kinship networks to states. Social interactions between humans have established an extremely wide variety of values, social norms, and rituals, which together form the basis of human society. Humans are noted for their desire to understand and influence their environment, seeking to explain and manipulate phenomena through science, philosophy, mythology, and religion.

Homo sapiens originated in Africa, where it reached anatomical modernity about 340,000 years ago and began to exhibit full behavioural modernity around 50,000 years ago. The human lineage diverged from the last common ancestor with its closest living relative, the chimpanzee, some five million years ago, evolving into the Australopithecines and eventually the genus Homo. The first Homo species to move out of Africa was Homo erectus, the African variety of which, together with Homo heidelbergensis, is considered to be the immediate ancestor of modern humans. Homo sapiens proceeded to colonise the continents, arriving in Eurasia in 3 great waves between 125,000–60,000 years ago, Australia around 40,000 years ago, the Americas around 15,000 years ago.

Scientific study of human evolution studies the development of the genus Homo, reconstructing the evolutionary divergence of the human lineage from other hominins (members of the human clade after the split from the chimpanzee lineage), hominids (great apes) and

primates. Modern humans are defined as belonging to the species Homo sapiens, specifically to the single extant subspecies Homo sapiens *sapiens*.

The closest living relatives of humans are chimpanzees (genus Pan) and gorillas (genus Gorilla). With the sequencing of both the human and chimpanzee genome, the similarity between a human and chimpanzee DNA sequence is about 98.7%. By using the technique called a molecular clock which estimates the time required for the number of divergent mutations to accumulate between two lineages, the approximate date for the split between lineages can be calculated. The gibbons (Hylobatidae) and orangutans (genus Pongo) were the first groups to split from the line leading to the humans, then gorillas (genus Gorilla) followed by the chimpanzees and bonobos (genus Pan). The splitting date between human and chimpanzee lineages produced various mutations in ranges of divergence over a period of 4 million years; between 4–8 million years ago during the late Miocene epoch.

There is little fossil evidence for the divergence of the gorilla, chimpanzee and hominin lineages. The earliest fossils that have been proposed as members of the hominin lineage are Sahelanthropus tchadensis dating from 7 million years ago, and Orrorin tugenensis dating from 5.7 million years ago and Ardipithecus kadabba dating to 5.6 million years ago. Each of these has been argued to be a bipedal ancestor of later hominins, but in both cases the claims have been contested. It is also possible that either of these species are ancestors of another branch of African apes, or that they represent a shared ancestor between hominins and other apes. The question of the relation between these early fossil species and the hominin lineage is still to be resolved. From these early species the Australopithecines arose around 4 million years ago diverged into robust (also called Paranthropus) and gracile branches, one of which (possibly A. garhi) went on to become ancestors of the genus Homo.

The earliest members of the genus Homo are Homo habilis which evolved around 2.3 million years ago. Homo habilis is the first species for which we have positive evidence of use of stone tools. The brains of these early hominins were about the same size as that of a

chimpanzee, and their main adaptation was bipedalism as an adaptation to terrestrial living. During the next million years a process of encephalization began, and with the arrival of Homo erectus in the fossil record, cranial capacity had doubled. Homo erectus were the first of the hominina to leave Africa, and these species spread through Africa, Asia, and Europe between 1.3 to 1.8 million years ago. One population of H. erectus, also sometimes classified as a separate species Homo ergaster, stayed in Africa and evolved into Homo sapiens. It is believed that these species were the first to use fire and complex tools. The earliest transitional fossils between H. ergaster/erectus and archaic humans are from Africa such as Homo rhodesiensis, but seemingly transitional forms are also found at Dmanisi, Georgia. These descendants of African H. erectus spread through Eurasia from ca. 500,000 years ago evolving into H. antecessor, H. heidelbergensis and H. neanderthalensis. The earliest fossils of anatomically modern humans are from the Middle Paleolithic, about 200,000 years ago such as the Omo remains of Ethiopia and the fossils of Herto sometimes classified as Homo sapiens idaltu. Later fossils of archaic Homo sapiens from Skhul in Israel and Southern Europe begin around 90,000 years ago.

Human evolution is characterised by a number of morphological, developmental, physiological, and behavioural changes that have taken place since the split between the last common ancestor of humans and chimpanzees. The most significant of these adaptations are bipedalism, increased brain size, lengthened ontogeny (gestation and infancy) and decreased sexual dimorphism. The relationship between all these changes is the subject of ongoing debate. Other significant morphological changes included the evolution of a power and precision grip, a change first occurring in H. Erectus.

Bipedalism is the basic adaption of the Hominin line, and it is considered the main cause behind a suite of skeletal changes shared by all bipedal hominins. The earliest bipedal Hominin is considered to be either Sahelanthropus or Orrorin, with Ardipithecus, a full bipedal, coming somewhat later. The knuckle walkers, the gorilla and chimpanzee, diverged around the same time, and either Sahelanthropus

or Orrorin may be humans' last shared ancestor with those animals. The early bipedals eventually evolved into the Australopithecines and later the genus Homo. There are several theories of the adaptational value of bipedalism. It is possible that bipedalism was favoured because it freed up the hands for reaching and carrying food, because it saved energy during locomotion, because it enabled long distance running and hunting, or as a strategy for avoiding hyperthermia by reducing the surface exposed to direct sun. Climate change and the subsequent retreat of forest in favour of tall savannah grasses may have much impact upon bipedalism during the Hominin morphology revolution.

The human species developed a much larger brain than that of other primates; typically 1,330 cc in modern humans, over twice the size of that of a chimpanzee or gorilla. The pattern of encephalisation started with Homo habilis which at approximately 600 cc had a brain slightly larger than chimpanzees, and continued with Homo erectus (800–1100 cc), and reached a maximum in Neanderthals with an average size of 1200-1900cc, larger even than Homo sapiens. The pattern of human postnatal brain growth differs from that of other apes (heterochrony), and allows for extended periods of social learning and language acquisition in juvenile humans. However, the differences between the structure of human brains and those of other apes may be even more significant than differences in size. The increase in volume over time has affected different areas within the brain unequally; the temporal lobes, which contain centres for language processing, have increased disproportionately, as has the prefrontal cortex which has been related to complex decision making and moderating social behaviour. Encephalisation has been tied to an increasing emphasis on meat in the diet, or with the development of cooking, and it has been proposed that intelligence increased as a response to an increased necessity for solving social problems as human society became more complex.

The reduced degree of sexual dimorphism is primarily visible in the reduction of the male canine tooth relative to other ape species (except gibbons). Another important physiological change related to sexuality in humans was the evolution of hidden estrus. Humans are the

only ape in which the female is fertile all year round, and in which no special signals of fertility are produced by the body (such as genital swelling during estrus). Nonetheless humans retain a degree of sexual dimorphism in the distribution of body hair and subcutaneous fat, and in the overall size, males being around 25% larger than females. These changes taken together have been interpreted as a result of an increased emphasis on pair bonding as a possible solution to the requirement for increased parental investment due to the prolonged infancy of offspring.

By the beginning of the Upper Palaeolithic period (50,000 BP), full behavioural modernity, including language, music and other cultural universals had developed. As modern humans spread out from Africa they encountered other hominids such as Homo neanderthalensis and the so-called Denisovans, who may have evolved from populations of Homo erectus that had left Africa already around 2 million years ago. The nature of interaction between early humans and these sister species has been a long standing source of controversy, the question being whether humans replaced these earlier species or whether they were in fact similar enough to interbreed, in which case these earlier populations may have contributed genetic material to modern humans. Recent studies of the Human and Neanderthal genomes suggest gene flow between archaic Homo sapiens and Neanderthals and Denisovans.

This migration out of Africa is estimated to have begun about 70,000 years BP. Modern humans subsequently spread globally, replacing earlier hominins (either through competition or hybridization). They inhabited Eurasia and Oceania by 40,000 years BP, and the Americas at least 14,500 years BP.

Until c. 10,000 years ago, humans lived as hunter-gatherers. They generally lived in small nomadic groups known as band societies. The advent of agriculture prompted the Neolithic Revolution, when access to food surplus led to the formation of permanent human settlements, the domestication of animals and the use of metal tools for the first time in history. Agriculture encouraged trade and cooperation, and led to complex society. Because of the significance of this date for human society, it is the epoch of the Holocene calendar or Human Era.

About 6,000 years ago, the first proto-states developed in Mesopotamia, Egypt's Nile Valley and the Indus Valley. Military forces were formed for protection, and government bureaucracies for administration. States cooperated and competed for resources, in some cases waging wars. Around 2,000–3,000 years ago, some states, such as Persia, India, China, Rome, and Greece, developed through conquest into the first expansive empires. Ancient Greece was the seminal civilization that laid the foundations of Western culture, being the birthplace of Western philosophy, democracy, major scientific and mathematical advances, the Olympic Games, Western literature and historiography, as well as Western drama, including both tragedy and comedy. Influential religions, such as Judaism, originating in West Asia, and Hinduism, originating in South Asia, also rose to prominence at this time.

The late Middle Ages saw the rise of revolutionary ideas and technologies. In China, an advanced and urbanised society promoted innovations and sciences, such as printing and seed drilling. In India, major advancements were made in mathematics, philosophy, religion and metallurgy. The Islamic Golden Age saw major scientific advancements in Muslim empires. In Europe, the rediscovery of classical learning and inventions such as the printing press led to the Renaissance in the 14th and 15th centuries. Over the next 500 years, exploration and colonialism brought great parts of the world under European control, leading to later struggles for independence. The Scientific Revolution in the 17th century and the Industrial Revolution in the 18th–19th centuries promoted major innovations in transport, such as the railway and automobile; energy development, such as coal and electricity; and government, such as representative democracy and Communism.

With the advent of the Information Age at the end of the 20th century, modern humans live in a world that has become increasingly globalised and interconnected. As of 2013, there are just over 2.7 billion humans who are able to communicate with each other via the Internet, representing 39% of the planet’s population and 6.8 billion by mobile phone subscriptions, some 96% globally, represented by 128%

in developed countries and 89% in developing countries. Globally there are 750 million households connected to the Internet at a coverage rate of 41%, some 78% in the developed world and 28% in the developing world.

Although interconnection between humans has encouraged the growth of science, art, discussion, and technology, it has also led to culture clashes and the development and use of weapons of mass destruction. Human civilization has led to environmental destruction and pollution significantly contributing to the ongoing mass extinction of other forms of life called the Holocene Extinction Event, which may be further accelerated by global warming in the future.

Early human settlements were dependent on proximity to water and, depending on the lifestyle, other natural resources used for subsistence, such as populations of animal prey for hunting and arable land for growing crops and grazing livestock. But humans have a great capacity for altering their habitats by means of technology, through irrigation, urban planning, construction, transport, manufacturing goods, deforestation and desertification. Deliberate habitat alteration is often done with the goals of increasing material wealth, increasing thermal comfort, improving the amount of food available, improving aesthetics, or improving ease of access to resources or other human settlements. With the advent of large-scale trade and transport infrastructure, proximity to these resources has become unnecessary, and in many places, these factors are no longer a driving force behind the growth and decline of a population. Nonetheless, the manner in which a habitat is altered is often a major determinant in population change.

Technology has allowed humans to colonise all of the continents and adapt to virtually all climates. Within the last century, humans have explored Antarctica, the ocean depths, and outer space, although large-scale colonisation of these environments is not yet feasible. With a population of over seven billion, humans are among the most numerous of the large mammals. Most humans (61%) live in Asia. The remainder live in the Americas (14%), Africa (14%), Europe (11%), and Oceania (0.5%).

Human habitation within closed ecological systems in hostile environments, such as Antarctica and outer space, is expensive, typically limited in duration, and restricted to scientific, military, or industrial expeditions. Life in space has been very sporadic, with no more than thirteen humans in space at any given time. Between 1969 and 1972, two humans at a time spent brief intervals on the Moon. As of May 2013, no other celestial body has been visited by humans, although there has been a continuous human presence in space since the launch of the initial crew to inhabit the International Space Station on October 31, 2000. However, other celestial bodies have been visited by human-made objects.

Since 1800, the human population has increased from one billion to over seven billion. In 2004, some 2.5 billion out of 6.3 billion people (39.7%) lived in urban areas, and this percentage is expected to continue to rise throughout the 21st century. In February 2008, the U.N. estimated that half the world's population would live in urban areas by the end of the year. Problems for humans living in cities include various forms of pollution and crime, especially in inner city and suburban slums.

Humans have had a dramatic effect on the environment. As humans are rarely preyed upon, except by other humans for a variety of reasons, they have been described as apex or superpredators. Currently, through land development, combustion of fossil fuels, and pollution, humans are thought to be the main contributor to global climate change. If this continues at its current rate it is predicted that climate change will wipe out half of all species over the next century.

Like all mammals, humans are a diploid eukaryotic species. Each somatic cell has two sets of 23 chromosomes, each set received from one parent, gametes have only one set of chromosomes which is a mixture of the two parental sets. Among the 23 chromosomes there are 22 pairs of autosomes and one pair of sex chromosomes. Like other mammals, humans have an XY sex-determination system; so that females have the sex chromosomes XX and males have XY.

One human genome was sequenced in full in 2003, and currently efforts are being made to achieve a sample of the genetic

diversity of the species known as the International HapMap Project, which as a computer scientist, I am playing my part in creating the definition of data formats to be used and the ways that we view, interpret, collect and store this information as genomic data. By present estimates, humans have approximately 22,000 genes. The variation in human DNA is minute compared to that of other species, possibly suggesting a population bottleneck during the Late Pleistocene (ca. 100,000 years ago), in which the human population was reduced to a small number of breeding pairs. Nucleotide diversity is based on single mutations called single nucleotide polymorphisms (SNPs). The nucleotide diversity between humans is about 0.1%, which is 1 difference per 1,000 base pairs. A difference of 1 in 1,000 nucleotides between two humans chosen at random amounts to approximately 3 million nucleotide differences since the human genome has about 3 billion nucleotides. Most of these SNPs are neutral but some (about 3 to 5%) are functional and influence phenotypic differences between humans through alleles.

By comparing the parts of the genome that are not under natural selection and which therefore accumulate mutations at a fairly steady rate, it is possible to reconstruct a genetic tree incorporating the entire human species since the last shared ancestor. Each time a certain mutation (Single nucleotide polymorphism) appears in an individual and is passed on to his or her descendants, a haplogroup is formed including all of the descendants of the individual who will also carry that mutation. By comparing mitochondrial DNA which is inherited only from the mother, geneticists have concluded that the last female common ancestor whose genetic marker is found in all modern humans, the so-called mitochondrial Eve, must have lived around 200,000 years ago.

The forces of natural selection have continued to operate on human populations, with evidence that certain regions of the genome display directional selection in the past 15,000 years. Most current genetic and archaeological evidence supports a recent single origin of modern humans in East Africa with first migrations placed at 60,000 years ago. Current genetic studies have demonstrated that humans on

the African continent are the most genetically diverse. However, compared to the other great apes, human gene sequences are remarkably homogeneous. It is generally agreed upon that certain genetic traits, including some common illnesses, correlate with genetic ancestry from specific regions, and genetic ancestry as determined by racial identification is becoming an increasingly common tool for risk assessment in medicine.

Nonetheless, there is important biological variation in the human species; with traits such as skin colour, eye colour, hair colour and texture, height and build, and cranial features varying clinally across the globe. One of the most disgustingly reprehensible traits in many parts of the world, still portrayed today, is the racial and cultural contempt that our fellow humans can pose to each other, in and from all walks of life. There are uncultured, microcosmic humanoids who judge ones derivative cultural lineage as a master race, or is somehow superior. The stigma of these terrible notions are perpetuated today by humanity's history of social and racial intolerance, such as antisemiticism and the mental muscle memory of historical conquests, religious ideologies, social, cultural and ethnic influxes and long histories of racial slavery and emancipation, territorial dominance, regressive minority and racial centricity.

Those aspects of genetic variation that give clues to human evolutionary history, or which are relevant for medical research have received particular attention. For example the genes that cause adult humans to be able to digest lactose are present in high frequencies in population that have long histories of cattle domestication, suggesting natural selection having favoured that gene in populations that depend on cow's milk. Some hereditary diseases such as Sickle cell anaemia are frequent in populations from areas in which Malaria has been endemic throughout history; it is believed that the same gene causes increased resistance to Malaria among those who are unaffected carriers. Genetically, North-western Europeans show much higher tolerance levels of alcohol than that of Asians, due to the long history of brewing stouts, ales, meads and beers to purify water over thousands of years. Similarly populations that have inhabited specific climates

such as arctic or tropical regions or high altitudes, tend to have developed specific phenotypes that are beneficial for conserving energy in those environments; short stature and stocky build in cold regions, tall and lanky in hot regions, and with high lung capacities in high altitudes. Similarly variation in skin colour varies clinally with darker colours around the equator where the added protection from the sun is thought to give an evolutionary advantage and lighter skin tones closer to the poles where there is less sunlight and the lighter coloured skin improves Vitamin D synthesis.

Today it is possible to determine, by genetic analysis, the geographic ancestry of a person and the degree of ancestry from each region. Such analyses can pinpoint the migrational history of a person's ancestors with a high degree of accuracy. Often, due to practices of group endogamy, allele frequencies cluster locally around kin groups and lineages, or by national, cultural or linguistic boundaries, giving a detailed degree of correlation between genetic clusters and population groups when considering many alleles simultaneously.

There is considerable biological variation in between human populations across the globe, resulting in fairly variable phenotypes. Traditionally human phenotypical variation has been described as breaking down into large continental races, characterised by easily definable traits. Humans were then classified into one of four or five phenotypical groups often based on skin colour, hair texture, and facial anatomy, and which were matched to a continent with which each group were associated. Often racial classification of humans was described in terms of essential characteristics, and came to serve as a way of naturalising social and cultural stereotypes about racial groups, in turn justifying or motivating different forms of racism. As the study of human biological variation advanced it became clear that most variation is clinally distributed and blends gradually from one area to the next, with no clear boundaries between continents, additionally different traits have different clinal distributions. This realisation made many anthropologists and biologists abandon the idea of major human races, instead describing biological variation in terms of populations and clinally distributed traits.

Today there is no scientific consensus on the biological relevance of race. While biological characteristics of an individual can give many clues about the geographical origin of their ancestors, anthropologists generally reject the notion of human "race" as a biological classification scheme. Instead they see it as a set of social constructions that map onto, but partly obscure biological variation. Most anthropologists also maintain that the term "race" tacitly assumes that races are clearly bounded groups with essential characteristics, often ordered hierarchically and used to justify social inequality. An opposing view has it that it is possible to talk about "races" without making essentialist or hierarchical assumptions, and some biologists and many forensic scientists use the word race to describe biological variation associated with continental ancestry.

In our world today, there are words and names used in recent history to describe old world racial classifications that are no longer deemed politically correct in our modern society; however, some of these names have so much history of oppression, that the words themselves are so preloaded with negative connotations that to even utter it aloud is incomprehensibly taboo. Any cultural knee-jerk reactions or attempts to culturally reclaim these sobriquets only perpetuate the tensions, thus, becoming cyclical in nature.

Even today, science fails to appease the rift, with the recent revelation that the royal line of the dynastic Pharaohs of Egypt derived from Northwest Europe in both Mitochondrial and Paternal Y-DNA. In fact Tutankhamen’s paternal SNP markers reveal that his ancestral Kingdom derive from the R1a Haplogroup; specifically the Haplotree R1a1b2a1a, which ties to a lineage not only in Western Europe but an Orcadian polymorphism that occurred around the ancient submerged Doggerlands, a real life Atlantis situated between Britain and Denmark, which was swallowed up by rising seas following the last Ice Age. Autosomal DNA testing also concludes that neither ancient dynastic pharaonic lineages in Egypt have any direct African heritage; reigniting the cultural connotations of the past. As shocking as this new revelation is, this once again causes tensions between the historical perceptions of

accounts, perceived birthrights to cultural ties in history and the empirical data which holds the truth.

The use of the term "race" to mean something like "subspecies" among humans is obsolete; Homo sapiens has no existing subspecies (with the exception of Homo sapiens sapiens, the subspecies which includes all existing humans). In its modern scientific connotation, the term is not applicable to a species as genetically homogeneous as the human one, as stated in the declaration on race (UNESCO 1950, re-ratified 1978 Genetic studies have substantiated the absence of clear biological borders; thus the term "race" is rarely used in scientific terminology, either in biological anthropology and in human genetics. What in the past had been defined as "races"; whites, blacks, or Asians are now defined as "ethnic groups" or "populations", in correlation with the field (sociology, anthropology, genetics) in which they are considered.

Humans often form ethnic groups, such groups tend to be larger than kinship networks and be organised around a common identity defined variously in terms of shared ancestry and history, shared cultural norms and language, or shared biological phenotype. Such ideologies of shared characteristics are often perpetuated in the form of powerful, compelling narratives that give legitimacy and continuity to the set of shared values. Ethnic groupings often correspond to some level of political organisation such as the band, tribe, city state or nation. Although ethnic groups appear and disappear through history, members of ethnic groups often conceptualise their groups as having histories going back into the deep past. Such ideologies give ethnicity a powerful role in defining social identity and in constructing solidarity between members of an ethno-political unit. This unifying property of ethnicity has been closely tied to the rise of the nation state as the predominant form of political organisation in the 19th and 20th century.

Religion is generally defined as a belief system concerning the supernatural, sacred or divine, and practices, values, institutions and rituals associated with such belief. Some religions also have a moral code. The evolution and the history of the first religions have recently become areas of active scientific investigation. However, in the course

of its development, religion has taken on many forms that vary by culture and individual perspective. Some of the chief questions and issues religions are concerned with include life after death (commonly involving belief in an afterlife), the origin of life, the nature of the universe (religious cosmology) and its ultimate fate (eschatology), and what is moral or immoral. A common source for answers to these questions are beliefs in transcendent divine beings such as deities or a singular God, although not all religions are theistic. Spirituality, belief or involvement in matters of the soul or spirit, is one of the many different approaches humans take in trying to answer fundamental questions about humankind's place in the universe, the meaning of life, and the ideal way to live one's life. Though these topics have also been addressed by philosophy, and to some extent, until now, by science, spirituality is unique in that it focuses on mystical or supernatural concepts such as karma and God.

Although the exact level of religiosity can be hard to measure, a majority of humans professes some variety of religious or spiritual belief, although many (in some countries a majority) are irreligious. This includes humans who have no religious beliefs or are atheists, scientific sceptics, agnostics or simply non-religious. Humanism is a philosophy which seeks to include all of humanity and all issues common to humans; it is usually non-religious. Most religions and spiritual beliefs are clearly distinct from science on both a philosophical and methodological level; the two are not generally considered mutually exclusive and a majority of humans hold a mix of both scientific and religious views. The distinction between philosophy and religion, on the other hand, is at times less clear, and the two are linked in such fields as the philosophy of religion and theology.

Philosophy is a discipline or field of study involving the investigation, analysis, and development of ideas at a general, abstract, or fundamental level. It is the discipline searching for a general understanding of reality, reasoning and values. Major fields of philosophy include logic, metaphysics, epistemology, philosophy of mind, and axiology (which includes ethics and aesthetics). Philosophy covers a very wide range of approaches, and is used to refer to a

worldview, to a perspective on an issue, or to the positions argued for by a particular philosopher or school of philosophy.

Another unique aspect of human culture and thought is the development of complex methods for acquiring knowledge through observation and quantification. The scientific method has been developed to acquire knowledge of the physical world and the rules, processes and principles of which it consists, and combined with mathematics it enables the prediction of complex patterns of causality and consequence. Some other animals are able to recognise differences in small quantities, but humans are able to understand and recognise much larger, even abstract, quantities, and to recognise and understand algorithmic patterns which enable infinite counting routines and algebra, something that is not found in any other species. In the context of geological time, humans have been around for just a blink of an eye, yet we dominate the land, sea and sky with unabated, destructive ease. Our story in time continues, but for how long remains to be seen.

CHAPTER 7

The World of Me

I first took the Mensa test at age 12 at the request of my grandfather who was a fully paid up member. I have no paperwork or scorecards from this time, but I do remember receiving an adult score of 140 something, which my late Grandfather, Thomas Arthur Brian Whitaker Esq. (MBE), who had an IQ of 166, was very proud of.

I myself, have been an elite member of Mensa for nearly 20 years and currently hold a 2010 Stanford-Binet IQ score of 171 at a 99.999544562949 percentile; equating to a rarity of 1 in 219,569 people. I retook my test again earlier on this month, after being awake for 19 hours. Most people who know me, also know that I usually exist on just 4-5 hours sleep being my usual maximum. I am also known for producing my best work not only in the middle of the night (it's currently 04:17hrs) but mostly lubricated with the odd glass of wine during the twilight hours. In fact, upon reflection, absolutely all of my greatest work over the last 25 years has been created at stupid o'clock.

Anyway, as this was to be my not too scientific, median control score, this more recent test was taken at the end of a long day, but completely free from alcohol.

For this test, I received a Cattell IQ Score of 210 (Wechsler 168), which represents a Stanford-Binet IQ of 173. With an equivalent SAT score of 1646, my percentile has crept up again to 99.99974700880915, which firmly attributes me as a 'Genius', at a rarity rate of 1 in 395,271.

Genius, a word bandied about far too much these days, much like the word 'awesome'. My wife certainly wouldn't call me a genius, often attributing me as someone with varying levels of common sense, which my wife possesses in abundance. I am awful at remembering people's names and there are good odds of me forgetting half of the shopping list when being too absent minded to pick it up off the table in the first place. Intelligence is often confused with knowledge, wisdom, memory, or other attributes and in general has a variety of meanings depending on the context in which it is used. IQ or Intelligence Quotient is an attempt to measure intelligence. This means many things to many people but generally the attribute of intelligence refers to quickness of mental comprehension or mental agility. The term IQ usually refers to the attempt to measure a person's mental agility, of which I am attributed as a Genius.

I have always known that my mental acuity for complex mathematics, physics and visualised perception have been heightened, and my thought patterns would be described as extremely high functioning, yet my brain has the same capacity as most people on this planet. Surely brain size isn't an issue here, it seems to be how you use it. I forget names easily and simple things such as items on a shopping list, yet I trained myself many years ago as a teenage Croupier to catch professional card counters by not only dealing Blackjack at high speed to large tables, but by using inference to lead decision making whilst concurrently using various memory feats to count the cut of a six deck shoe, which is 312 cards. These feats include concurrent counting of picture cards, fives and the relative odds of busting the house. I had zero control of the outcome, but was way ahead of any profession card counter, and I was used as a tool by the casinos to close a table when card counting was suspected, which is actually quite rare. I had to learn various multiples of pictorial numeric matrices and up to my 36 times tables verbatim, working out payouts of stacks of chips in multiple denominations, both with flair, accuracy, control of speed and with witty banter and James Bond levels of suave people skills, to attract new customers. In addition to this, being able to instantly respond to large buy-ins and insane Chinese Roulette games who just love to stack

chips into large, two foot skyscrapers, with droves of 15-20 people, all shouting and loading the table at the same time.

To control the pace of games like this, with multiple call-bets in French and cash bets all enabled during the ball's spin on an American Roulette table, with 50 frenzied players trying to distract your every move, requires the very best mind and Chameleon-like peripherals to see everything on the table. I was known as 'The Destroyer', the secret weapon of the Casino to carefully control the pace of the game where others would fall apart.

I can remember and memorise huge amounts of information when I have to, whilst studying for example. I never did my mathematics homework at home, as I would always complete it before we left the classroom, never taking notes during lessons when I was asked, at the annoyance of my poor teacher who had my full attention by the visual absorption of his words and diagrams, which seemed to get lost when I tried to dictate notes to paper that seemed to help all other members of the class. This is my way of learning, which I thought at the time was unique to me. Generally, in any given day, my mind is perfectly at rest and void of thoughts. Not quite Zen-like, but absent of what I consider as random thought processes.

My poor wife on the other hand is a worrier. I'm sure there is not a waking moment when her mind isn't full of thoughts about how will this happen, what if I do this, I have an appointment next Thursday afternoon, how will this clash with this, that and the other. To me, this is background noise. Left to my own devices, I would never pay a bill on time, I would miss every meeting and if my wife didn't write it down, I'd go to the supermarket and come back with beef jerky, a bottle of wine and a car air-freshener for tomorrow's dinner. My wife is super-organised. Together we are a great team. We are opposites in many ways, yet we constantly compliment each other's characters.

My long suffering Grandmother is the same, having had to become the painter, decorator, gardener, builder as well as housewife and mother to 7 children. My Grandfather was the most intellectual, truly learned genius that I have ever met in my life. He knew literally everything about everything; a human encyclopaedia of knowledge. A

bonafide genius. However, give him an electrical plug to fix, or a car's engine to service, you may have well have asked a small child to recite the sonnets of Shakespeare backwards.

Two generations later, I attain from my nearest and dearest the sobriquet of a Geek. They tell me that 'Geek' is the new 'Rock Star', however, I don't know who 'they' are, and I don't get the benefit of groupies. Somehow, I'm not so sure my fate landed on the right side of the coin. Anyway, I digress; the new test last night, was to test my IQ performance under the moderate intoxication of alcohol.

Yesterday was Paddies Day, and on this day of St Patrick, I indulged in two pints of Guinness just before dinner time, followed after dinner by two large bottles of strong ale, followed by four cans of moderate strength lager, followed by nearly two bottles of 14% ABV red wine over the course of about four hours. I am, if nothing else, dedicated to my not too scientific experiment, but at this point I was too pissed to care; so though I should carry on in blissful ignorance.

I even stopped taking notes which was against my best wishes, but I was too inebriated to particularly function at any level at this point and almost completely forgot once I'd caught a glimpse of the Australian Formula One Grand Prix highlights on television. This 'fogginess' does seem thicker in retrospect of events the morning after, however the results of my silly little test was not as bad as I was expecting. Tired and quite drunk, I had scored a Stanford-Binet IQ of 147. It had dropped quite remarkably, yet still was enough to pass a Mensa entrance exam being in the top 2% of the populous, attaining a score higher than 1 in 600 of the population, yet I could hardly string a coherent sentence together. What does this mean, and why do I care?

My Grandfather always taught me that our minds are like muscles. We have to exercise them to get stronger. Now, this is not technically true, but we both knew this was a metaphor which would act as ferment to philosophise upon.

There are cells within the brain called 'Glial' cells, which provide support and nutrition in the brain. They form myelin, and participate in signal transmission, which are the other integral component of the brain, beside the neurons.

Albert Einstein's brain had more Glial cells relative to neurons in all areas studied, but only in the left inferior parietal area was the difference statistically significant. This area is part of the association cortex, regions of the brain responsible for incorporating and synthesizing information from multiple other brain regions. In fact, the overall size and asymmetrical shape of Einstein's brain was quite normal, yet the prefrontal, somatosensory, primary motor, parietal, temporal and occipital cortices were extraordinary. There is much uncertainty whether Glial cells get larger from regular exerted use, as Einstein's most certainly was, or if it's congenital, being simply born with larger and more numerous cells. My hunch would be both. Although this is not a scientific approach, it seems that gender, race, nutrition, hydration, genetics, nurture, environment, climate, altitude, temperature, oxidation, hormones and usage, including levels of short and long term stress, and not forgetting my experiment, drugs, all have varying impacts on mental acuity, perceived intelligence, knowledge retention, wisdom and memory.

Studying the history of mankind, it is becoming increasingly clear that we are irrevocably tied to the 3lbs of strange computational material found within our skulls. The brain is utterly alien to us, and yet our personalities, hopes, fears and aspirations all depend on the integrity of this biological tissue. So, how do we know this? Well, when the brain changes, we change. Our personality, decision-making, risk-aversion, the capacity to see colours or name objects; all these can change, in very specific ways, when the brain is altered by tumours, disease, strokes, drugs or trauma. As much as we like to think about the body and mind living separate existences, the mental projection of ourselves are not separable from our physical being. This strange paradox clarifies some aspects of our existence while deepening the mystery and the awe of the complexity of others.

If we take an example of the vast, unconscious, automated processes that run under the hood of conscious awareness, we discover that the large majority of the brain's activity takes place at this extremely low level. This conscious part, the "me" that flickers to life when you wake up in the morning, is only a very small part of much

more complex set of operations. We have a better understanding of the complex multiplicity that makes up the projection of a person's mind. A person is not a single entity of a single mind as humans are composed of several parts, all of which compete to steer a very complex state of hierarchical symbiosis. As a consequence, people's idioms and idiosyncrasies are nuanced, complicated and contradictory. We act in ways that are sometimes difficult to detect by simple introspection. To attain a deep knowledge of ourselves, increasingly requires careful studies of the neural substrate of which we are composed.

In 1996, I was at a hospital seminar after completing my Medical Technician exam, where I and a member of my colleagues took part in a batch test of hospital equipment, from 10 point ECG machines, to MRI and CT scanners. I quickly volunteered to guinea pig the Electroencephalography or EEG machine.

At just 20 years of age, with my army style, grade two haircut and the early onset of male pattern baldness, I was quickly, if not humorously the obvious choice. After many childish, and in hindsight inappropriate quips about my 33 year old colleague, who had actually just been told he was showing signs of having had a recent Myocardial Infarction, something not to go down well on his next medical and would eventually cost him his job as a Fire-fighter at our local Airport Fire Station; but the mood went from jesting to intrigue when they were monitoring my Alpha wave output. According to the readings, when performing mathematical calculations with my eyes closed, my Alpha Wave range from 8-12 Hz in the area of my Occipital Lobe, the part of the brain at the back of the head, were extremely high; which only dropped marginally when relaxing and open eyed.

A 20 minute tutorial turned into a 3 hour examination as the doctors could hardly believe their eyes when viewing my peaks and troughs; none more so than when recording my Gamma Wave readings, which were not only higher than those observed by Tibetan Buddhist Monks, but completely off the chart! The specialist who was called in to observe at the time was convinced for the first hour and a half that the machine was broken, with readings of Gamma Waves that exceed readings of pulses stronger at the 25-100 Hz frequency running at never

before seen levels, which I was producing extremely large peaks at the 40 Hz Gamma-Band oscillation range, which is said to be the visual perception frequency of the Thalamus, with extremely high readings with both subliminal and visual stimulus.

How this affects me in any way other than understanding that I have a heightened sense of visual perception, maybe the reason why I am particularly adept at physics and mathematical equations, or score so highly at Mensa tests or complete Sudoku puzzles very quickly; how and why I produce these, I have still yet to find an answer.

I understand that Alpha waves are supposed to start being produced at the ages between 3 and 7 which is the onset of cognition and an awareness of self. Very few people can recall childhood memories from before the age of 4 or 5 years, however, to the shock of my Mother just 6 months ago, I recalled in great detail elements of my life about describing things that happened and occurred when I was at around just 8 months old. We have no photographs of the Maisonette we lived in during this time, however, I drew the whole layout of the house both upstairs and down, with details about the window positions, which way doors opened, the colour of carpets, how the kitchen was laid out, where the sink was, where the cooker was, where ornaments were in the lounge, where the bathroom units were arranged, events that happened in the home in the first year of my birth, the description and names of all the people in the block of houses, toys, swings, the view out of each window, what shops, the orientation of the park, the number of swings and slides and much, much more.

I have very vivid memories from an extremely young age, and currently, yet again it is 03:36 in the morning, on a roll of writing as it just pops into my head, so again, sat here, typing away at stupid o'clock, wide awake with my ham and mustard sandwich and nursing my 3rd can of beer since midnight on this freezing cold March morning; once again I am fully awake and on a mission to complete this chapter before I go to bed for about 4 hours before my 20 hour day begins again.

Everyone I know thinks I'm crazy, but it's been part of my routine to work all hours, especially late at night when what I'm writing

seems to be flowing so freely. Is this part of my gift, or should it be regarded as a curse? Well, it seems that you have bought my book and have read this far, so I take it by this inference that I'm currently getting the thumbs up. Phew!

Everything about us, from the simplest sensation to the most elaborately constructed sense of self, requires a brain in some kind of working order. Removing your brain will remove your IQ. It does not follow that our brains alone are the sum of the story ourselves, nor that the best way to understand ourselves is to endlessly stare at the neural substrate of which we are composed.

The reason for this is that we are not stand-alone brains. We are part of community of minds, a human world, that is remote in many respects from what can be observed in brains. In a recent article I found on this very subject, one of the most succinct and eloquent descriptions comes from Dr. Raymond Tallis, former Professor of Geriatric Medicine at the University of Manchester as saying, *"Even if that community ultimately originated from brains, this was the work of trillions of brains over hundreds of thousands of years: individual, present-day brains are merely the entrance ticket to the drama of social life, not the drama itself. Trying to understand the community of minds in which we participate by imaging neural tissue is like trying to hear the whispering of woods by applying a stethoscope to an acorn."*

By analogy, an individual brain reflects its culture. Our opinions on normality, custom, dress codes and local superstitions are absorbed into our neural circuitry from the social forest around us. It is now possible to study, test and determine a culture by merely studying a brain. These tests can fairly accurately determine moral attitudes towards war, religion and sexual preference, which can all be read from the physiological responses of brains in different cultures.

Beyond one's culture, there are highly suggestive questions to be asked about individual experience. One's experience of being human; from thoughts to actions, and from pathologies to sensations, all of which can be studied in your individual brain with some benefit. With such study, we can come to understand how we see the world,

why we argue with ourselves, how we fall prey to cognitive illusions, and the unconscious data-streams of information that influence our opinions. We are not automatons, although or minds are limited in the understanding of our ideas, moral intuitions, biases and beliefs.

Sometimes these internal drives are genetically embedded, other times they are culturally instructed, yet in every case their indelible mark ends up written into the very fabric of our brains. There are now various neuroscientific studies indicating how one's choice of marital partner, place to live, and occupation are shaped by an implicit egoism built into the brain, something that has been known to Buddhism for hundreds of years, in the strive to eliminate this ego of self gratification in order to free the mind from ambivalent desire.

Buddhist teachings show that any desire of self is a cause of suffering, 'craving' being one of the four noble truths. Another would be suffering itself, or 'Dukkha'. There is the cessation of suffering called 'Nirvana', the last being 'The Noble Eightfold Path', or the 'Dharma Wheel', which are the principle teachings in nearly all variations of Buddhism around the world. Contained within, there are 3 divisions; wisdom, ethical conduct and concentration, split into 8 factors: view, intention, speech, action, livelihood, effort, mindfulness and concentration. There are various teachings in a myriad of canons that need to take place after many years of study, practice and meditation, with the help of Buddhist teachers, Lamas and Yogis in the search for true enlightenment.

My Father, who has attained a very high level of Buddhist practise for a 'westerner,' spends much of his time in India and Nepal, who tells the most fascinating stories of the 'great beings' he has had the honour of meeting upon his travels. He states that these beings, born human, are so enlightened they can no longer be considered as human, as their metamorphoses are so profound, that to call them human would be a nomenclature of disservice. Our conversations become very interesting as I attempt to absorb the fascinating details and stories, sharing experiences and philosophies, pondering the very depths of humanity. Allegedly, my Father's teachings even stipulate that Jesus Christ was a Yogi, the reason why he would be able to command the

adoration of crowds of people. My black and white boundary of empiricist knowledge is fascinated at Buddhism's apparent display of control over the mind, yet its mysticism and evocation techniques require me to place the religion itself back onto the shelf with all of the other Dharmic religions which all evolved from Sumerian regions, that also gave us the Abrahamic regions of the world today, including Christianity.

This chapter only exists, because upon telling my Father over the phone the nature of the contents of this book, which at this point, I am halfway through composing, I was challenged on proving where about in the brain the mind lives. The dictionary defines an idea as a thought or conception that potentially or actually exists in the mind as a product of mental activity. It is an opinion, conviction or principle; as well as a plan, scheme, or method. An idea is also a notion, a fancy.

On the other hand, mind refers to the human consciousness that originates in the brain and is manifested especially in thought, perception, emotion, will, memory, and imagination. Mind is the principle of intelligence, the spirit of consciousness regarded as an aspect of reality. It is the faculty of thinking, reasoning, and applying knowledge. It is also synonymous to opinion, or sentiment; desire or inclination.

The mind also refers to the intellect, intelligence, brain, wit and reason. These nouns denote the capacity of thinking, reasoning, and acquiring and applying knowledge. Mind refers broadly to the capacities for thought, perception, memory, and decision.

Meanwhile, the brain which can be described as the portion of the vertebrate central nervous system that is enclosed within the cranium, connected with the spinal cord, and composed of what is known as both grey and white matter. It is the primary centre for the regulation and control of bodily activities, receiving and interpreting sensory impulses, and transmitting information to the muscles and body organs. It is also the seat of consciousness, thought, memory and emotion.

From a philosophical point of view, it is said that the most important function of the brain is to serve as the physical structure

underlying the mind. From a biological point of view, though, the most important brain function is to generate behaviours that promote the welfare of a human being or an animal. It has been thought for over 50 years, that our brains control behaviour either by activating muscles, or by causing secretion of chemicals such as hormones, yet they are indeed, quite wrong. Our brains are just the machines that piece together the collaboration of signals that are produced by our bodies at a cellular level.

A layman's conclusion would be that ideas actually come from both the brain and the mind, the brain being the physical structure, similar to a machine or an apparatus, which enables ideas to be produced in the mind or consciousness through the faculty of thinking or mental activity. There is some conjecture here that anything that comes to mind or manifested in or by the mind, can be called or considered an idea or a thought. For as long as the person is awake, the thinking process continuously produces all sorts of conscious ideas, which simply means that thoughts are perceived through any of the five senses of seeing, hearing, touching, smelling and tasting, depending whichever sensory is actively engaged during the moment.

To my limited understanding of this subject, I can conclude that culture is very important, is that our cognitive illusions, where our ideas come from, how come we can move our arm with no sense of the musculature, how we effortlessly recognise a friend's face better than any of today's best computer programs, why we can argue with ourselves, why it is difficult to keep a secret.

Visual illusions reveal that perceptions generated by the brain do not necessarily correlate with reality, especially when attempting to bring the ethereal into the real world, such as religion. Hallucinations, dreams, and delusions also illustrate the same point.

Even in our so-called modern world, humanity in general doesn't have a strong grasp of what reality "out there" even is, because we detect such an unbearably small slice of it. That small slice is called the umwelt.

Each organism presumably assumes its umwelt to be the entirety of objective reality. Until a child learns that honeybees enjoy

ultraviolet signals and rattlesnakes see infrared, it is not obvious that plenty of information is riding on channels to which we have no natural access. Place the same snake into a child's play area, and without prior knowledge, a small child would only look on with fascination at it slithers about. Babies are not congenitally afraid of snakes, yet the vast majority of adults would not comfortably sit beside a hissing Cobra. This is true of people's fears of spiders and thunder and lightning, with most fears being inadvertently passed from parent to child, propagating into a mild intolerance to full blown fear, depending upon one's temperament in adulthood.

This concept of the umwelt neatly captures the idea of limited knowledge, the futility of striving the comprehension of unobtainable information, and of unimagined possibilities. This would be a great starting point for our intuitions about our own experiences.

Attaining knowledge transcends our immediate experience and corrects some of our intuitions about ourselves. This knowledge plays a large part in our conscious mental life. Without it, we could not perform mundane tasks or restrain ourselves from our primal desires.

It is not contradictory to suggest that we are indeed sealed off from most of reality, and yet we discover more and more of it every day by a process of careful experimentation. This is also the endeavour and primary precept of science. For example, you cannot see, hear or touch radio waves, but you can build machines to translate the waves into the biologically delimited language in which you can understand them. We can build machines such as these only because science reaches beyond what we know to discover new realms.

Our Neuroscientists are now uncovering a view of what is actually happening below the radar of our conscious awareness, yet to most people this makes little difference to those who operate in a helpless, ignorant, and zombie-like state of flux as to the real drives and perpetuations of their lives right now. The Stupification Paradox is one of the major drives to attach oneself to a particular religion, because it prevents one's mind from becoming morally responsible for one's actions when faced with the punches that life inevitably throws at us from time to time.

If you were to read a cardiology book to learn how your heart pumps, would you feel less alive and more despondently mechanical? To truly understand the details of our own biological processes does not diminish the awe, it enhances it. Like flowers, brains are more beautiful when you can glimpse the vast, intricate, exotic mechanisms behind them. To know more about the origin of creative ideas, research has showed that it derives from the right brain. Some significant research conducted by Roger Sperry, which later earned him the Nobel Prize for Medicine in 1981, clearly showed that the brain is divided into two major parts or hemispheres, the right brain and the left brain, each one with different style of thinking processes and functions.

The right brain functions in a non-verbal manner and excels in visual, spatial, perceptual, and intuitive information. It processes information differently than the left brain which is more associated with verbal, logical, and analytical thinking.

The left brain excels in naming and categorising things, symbolic abstraction, speech, reading, writing, arithmetic. This is contrasted to the quick, nonlinear and nonsequential processing that happens within the right brain. The right brain deals with complexity, ambiguity and paradox. Sometimes, right brain thinking finds it difficult to put into words because it is more complex and because of its ability to process information quickly and its non-verbal nature. For these reasons, the right brain is being linked with the realm of creativity.

From a more subtle and spiritual perspective, ideas are thoughts which can either come from the false self or self-centeredness we call 'ego', or from the spirit or voice of God within. Enlightened spiritual individuals are supposed to live in oneness with an invisible entity, much larger and deeper than themselves, which intuitively guides them to generate ideas and thoughts that are creative and will be beneficial not only for themselves, but to the community in general. The enjoyment and experience of inner peace, joy, and love that radiates externally amidst the ups and downs is indicative of the presence of such phenomenon in the lives of these awakened individuals. In short,

they allow the spirit to influence and rule their brain, their mind, and their lives, and not the other way around.

In stark contrast, individuals who operate purely from an ego-based state of mind has the general tendency to allow their mind to rule their decisions and behaviours. Their thought patterns and behaviour are frequently in conformity with the norms of the finite and visible, yet deceptive world. Often, one can find success and the fulfilment of their desires, yet, genuine peace and joy can remain elusive.

The generally accepted wisdom is that our brain creates our mind, making our mind a product of our brain. It says that the neural activity in our brain generates all our thoughts, emotions and everything we would see as mind. This way of seeing the relationship between the brain and the mind has held us back from examining alternative ways our brain and mind might be connected.

When we perceive things in the real world, we assume that what we perceive is really there. We see a book, a table, or a fire and automatically assume they are real. Other people look at the same objects and also see a book, a table and a fire, adding to our sense that they are real. The fire gives off light, heat and, if we listen carefully, sounds. Whatever is actually there in the real world reflects or emits waves of energy at different frequencies. Our ears can pick up the sound waves, our eyes the light waves and our skin can sense the warmth of the fire. What we perceive is the waves of energy coming from the object. We do not perceive the object itself. When the waves of energy from the object reach us, they are translated into electrical signals to be sent along the neural pathways to the brain. The impulses are then sent to various places in the brain to be processed. The messages from the eye, for example, are transferred to different parts of the brain with some parts focusing on recognising colour, others shape, others edges etc.

Our perceptions are then cross referenced with our memories, linked to our values and a myriad of other factors within the mind. Somehow, all this information is then combined to create coherent representations of whatever is actually out there in the real world. Therefore, we never perceive the outside world directly “as it is”.

Everything we perceive in our world, all of the objects, all of the people, and all of the places can only ever be representations we create within ourselves of the outside world.

We can say then that we cannot directly know anything about what is outside our body. We can only ever be aware of the signals our own body generates and sends to the brain in response to what happens in the outside world. If everything we perceive from outside our body is only a representation of a reality "out there", then our perceptions of our own body are also still only representations. If we feel pain, itchiness, a nervous stomach, or a sense of joy, we are not perceiving our body as it is, but rather through a representation our mind has created of our body based on the electrical signals generated within the body and interpreted in the brain.

We are so attached to perceiving our body and its sensations as being who we are, that we assume they are real, indeed more real than what is outside us. After all, what could be more me than my own heartbeat; yet even this is just a representation. That also means that our physical brain, as we are able to perceive, it is only a representation of itself. This would mean that there is no real difference between what is inside of us and what is outside of us. Everything we perceive, no matter whether it comes from inside us or outside is just electrical messages that we interpret. While we believe that we have a clear sense of ourselves in our body and what is outside, for the brain there is no difference between the messages received from the outside world and those received from inside the body. They are all just electrical signals.

Once we have perceived the world and created our representation of ourselves and the world outside, we must then interact with it. The representation we make of the outside world must be a very close match to the outside world. When we move our arm out to reach for an object, the representation of our arm must match our arm in the real world. The object we reach out to must be where our representation of it is. Then the representation of our arm can reach out to the representation of the object and touch it just at the point where the real arm meets the object in the real world. We therefore project our

representational world outward to overlap with the real world so we can interact effectively in it.

Another aspect to consider is the in influence of our interpretations on how we perceive our world. The brain uses a large amount of energy to fulfil its functions. At rest, around 15% of our blood is sent to the brain. That means anything we can do to reduce the amount of energy being used by the brain reduces the amount of food we must provided for ourselves, leaving more energy for other critical tasks. The brain therefore selectively chooses what to take notice of so it can economise on its energy use. It looks for patterns that allow it to take "short cuts". For example, objects that are nearer tend to appear larger and objects that are far away tend to be smaller. An object that grows bigger in the visual field is likely to be moving towards us and vice versa. It is a very useful "rule of thumb", which saves an enormous amount of processing and is correct almost all of the time. We have a whole raft of such rules of thumb, that we use as best guesses so we can react effectively to a rapidly changing world.

Our brain creates the world it expects from the data it chooses. It generally works very well, but sometimes the brain's assumptions are not warranted. Occasionally, those best guesses do not match the outside reality and we misperceive the world. This forms the basis of optical illusions. It is more important that the way we perceive is biased toward functional, rather than accuracy. For example, if a ball is thrown to us, when the ball has reached point A, it will take time for us to gather all the information and form the representation of the ball coming towards us. That means that by the time we have a perception of the ball at point A, it has moved to a closer point, say point B. That gap would make it virtually impossible to catch the ball, so the mind uses prior knowledge it stored as an infant. It calculates where it thinks the ball will be by the time it has been processed (point B) and the ball is placed there in the representation of the situation.

The way we perceive our world depends on the apparatus we have for perceiving the world. That includes our eyes, ears, tongue, nose and skin and the brain for bringing it all together. This apparatus has evolved over the millennia using processes of selection to evolve

the modes of sensing that work best. Other creatures have developed different ways of sensing our world that are just as valid, but create a very different perception of the world. Bees see ultra violet light we cannot see. Dogs hear high pitched whistles we cannot hear and bats and dolphins use radar. They live in the same world as us but they experience it very differently. Even amongst humans we have people who are colour blind or other reasons they perceive the world very differently from us. Our perceptual apparatus evolved as a result of environmental forces over endless millennia, but equally our perception of the world has evolved due to the nature of our apparatus, because the apparatus changes the way we perceive our world. Each affects the other in a strange dance. We are constructed by our environment while at the same time, we construct our environment.

We have thoughts and emotions about all our experiences that influences how we perceive and interpret our world. We make decisions on what is safe and what is dangerous, what is pleasant and what is not and make so many other distinctions that influence what information from the outside world we choose to pay attention to. We are drawn towards what is pleasant and repelled by what is unpleasant. These thoughts and emotions affect our perception of the world we live in. What we experience depends on what we choose to put into our awareness. We pay particular attention to the parts of our world that are more critical to us. For the Inuit people of the arctic, being able to distinguish the many different types of snow and ice is vital for survival and so they have many words to describe these types of snow and ice. Indigenous people living near the equator do not have the need for such distinctions and so only have words covering all types of snow and ice.

We tend to notice that which reinforces our existing perceptual and belief systems, so we see the world through the glasses of our belief systems. We notice what reinforces our existing world view and tend to deny, distort or ignore whatever contradicts with the world as we see it. It is not just a matter of perceiving what is there. We are very much making it up as we go. This is why we struggle with new situations we have not previously encountered.

If we are to communicate with the other people we share our environment with, the way we conceptualise and make sense of the world must be sufficiently aligned to the ways the others do or we will not make sense to each other. We must come to a set of shared understandings about the world and what it is like. Through our interactions we evolve language, customs, and rules. This is the beginnings of culture. This too creates circular evolution. As individuals interacting we create culture, but once it is formed the culture then creates us, especially as we bring up new generations within the culture. Culture also affects how we see our environment and how we interact with it, while the environment continues to affect culture. We start to see that we cannot see ourselves just as separate beings in an external world, but take cognisance of our interconnectedness in a seamless unitary flow of experience.

The brain is not separate from our body. We tend to see our brain as separate from the rest of our nervous system, but it is actually all one continuous system. The nerves in our toes are as much of our whole nervous system as the nerves in our brain. The brain controls the endocrine system releasing different hormones into the body that have an enormous impact on our behaviour.

All the systems of the body are so heavily interconnected that it is hard to see any of them as separate. We cannot really talk about the brain without talking about the circulatory system and the respiratory systems or the endocrine system or the integumentary system. We are a whole system of interconnected systems that appear separate on first glance, but a closer examination reveals that we are far more.

Humans use tools which extend us out into the world. A hammer extends the length of our arm and allows us to exert a greater force out in the world. When we hit something with the hammer we feel it through our hand. The hammer becomes a part of who we are blurring the boundary between us and the outside world. Now with a computer, we can easily send an email to the other side of the world extending our self conceptually right across the globe.

We hop into a car. It also becomes an extension of who we are. We control it the same as we control our hand. Other objects we “own”

similarly become extensions of our self. Our house, our music collection, our clothes, and even our town and our country are a part of us. If somebody does something to something we "own", we feel as though it has been done to us. This way we extend ourselves far beyond our skin and our minds extends our sense of self far into the outside world. We also extend that to other people with my wife, my family, my friends and my employees. This is particularly potent because the other people in our world respond to us and we respond to them.

We define our identity by comparing ourselves to the outside world. We notice that in comparison to others that we are perhaps tall, intelligent, athletic, and creative. This external information is the basis of our internal sense of self and who we think we are. We must also ascribe an identity onto all the creatures and objects in the same way.

The world defines us and we define our world, so when another person does something, the same neurons light up in our brain as would have if we have actually done that thing ourselves. It also happens if we imagine doing something. The same neurons fire as if we had actually done it, but not as strongly. Our brain cannot easily tell the difference between what is real and what is imaginary. The brain can create its own reality that it perceives as being just as real as the world outside.

When we imagine and event or replay an event in our lives, we truly do relive the event because the brain responds in the same way.
We have a sense of empathy because we can mirror the world of others. Culture links us so we can feel what others feel. If we see distress on someone's face, we feel distress. We link it to our feelings of distress. This is accurate enough for us to enter each other's world. What we present to the world creates a "dialogue" which may be verbal or non-verbal entwining our being into a bigger sense of being so we overlap in to each other.

As we interact with others, we respond to each other second by second. We do not know how the other person will react to our actions. The exact course of a conversation cannot be predicted and thus does not exist until it happens. Neither participant knows how it will run and must respond in the moment. All our human interactions exist as a type of dance, where we again overlap into each other and may form a

synergy where the parts interact to form a new emergent whole; a conversation that could not have been previously predicted. Life becomes a dance in which we do not have ultimate control, but do have influence and a vital part to play in the whole.

If the mind is not restricted to the brain and some form of intelligence permeates the universe in which we live, then many things that have been automatically assumed to be impossible may be a natural consequence of the existence of this decentralised mind. It would not be unreasonable for individual minds to be connected and therefore enable communication directly between minds without the need for verbal or other commonly used modes of communication.

Our human brain has evolved to the point where it can link into this great universal consciousness and experience it in time and space through our lives. We become this strange mix of being separate beings living our individual lives, while at the same time we are all one intensely interacting synergistic experience.

Over the millennia many wisdom traditions have described our world in a similar way. Both Hindus and Buddhists describe the world we live in as an illusion created by the mind and that our true nature is pure consciousness. In the Christian tradition we have statements like *"I am in the Father and the Father is in me"* (John 14:11) and the existence of a *"body of Christ"* that is Christ in the world that all people may become a part, which can be understood in a new light with this understanding of the nature of reality.

We now have a whole new vision of how the world fits together that fundamentally challenges the way we understood how the world is. This new vision is an exciting one that enables us to see ourselves, those about us and the world in a whole new vibrant, interconnected and synergistic whole that lends a whole new dignity to being alive and being human and behoves us to take responsibility for our place in creation.

We assume that the brain is doing something while we're asleep because we dream. But is dreaming all that is going on up there? Are dreams just random static coming out of our sleeping brains, or is our brain doing things behind our backs while we are asleep?

When we get tired, we sleep so we can shut down to rest and rebuild. It seems logical that the brain would follow a similar pattern. After all, don't we get tired of thinking and want to turn the process off after a while? Sleeping sounds like the perfect way for our whole system, including our brain, to check out and take a break.

Not so much! During sleep our brain is, in fact, extraordinarily active. As it turns out, much of that activity helps the brain to learn and remember. Sleeping is involved in the learning and memory process in several important ways. Sleeping actually helps people recover forgotten skills. A study conducted by The University of Chicago concluded that sleep helps the mind learn complicated tasks. It also helps people recover knowledge they thought they had forgotten over the course of a day. For example, in one study, after learning how to play a video game much of that skill was lost within 12 hours. Amazingly, after a night's sleep those lost abilities were restored. Why does this happen? It's a consolidation process that brain goes through while we are asleep.

Sleeping consolidates learning by restoring what was lost over the course of a day, and by protecting against further loss. These findings suggest that sleep has an important role in learning specialised skills, and in stabilising and protecting memory. This consolidation process may also help with language skills like reading and writing, as well as eye-hand skills such as tennis.

Sleeping selectively preserves your emotional memories. A recent study offers new insights into the specific components of emotional memories. It suggests that sleep plays a key role in determining what we remember, and what we forget. Findings show that sleep helps the brain to selectively preserve and enhance certain aspects of a memory. Those with the greatest emotional value are enhanced, and simultaneously, those of lesser value are downgraded.

Emotional memories usually contain highly charged elements; for example, a car that sideswiped us on the ride home. These memories include some elements that are only vaguely related to the emotion. For example, the name of the road we were travelling on, or what shop we had just passed. Evidently, the individual components of

an emotional memory become ‘unbound’ during sleep. This enables the sleeping brain to selectively preserve only that information which it deems worthy of remembering.

Sleep also helps us remember the sequence of events. We may have vivid memories of past events, but how do we remember the order of events? Until recently, it has never been clear how the brain keeps track of the chronological sequence in such memories. New research has confirmed that long-term memories are formed while we are asleep. This is accomplished by the brain replaying the memories of our daily experiences during the night. Sleep not only strengthens the content of a memory, but it also re-establishes the order in which those events took place. These findings show that it is the sleep associated consolidation of memories that helps establish our memory of events in chronological order. Something that we might not have been able to recall without this process.

There are several different types of memory. There is declarative memory which includes retrievable, fact-based information. There is episodic memory which focuses on events from your life. Finally, there is procedural memory which allows us to remember how to do something. Scientists have designed ways to test each of them.

In almost every case, no matter which type of memory was involved, one fact remained constant. After first learning the task, sleeping on it improves performance. It’s as if our brains squeeze in some extra practice time while we are asleep.

Why is all this important? Some sleep researchers believe that for every two hours we spend awake, the brain needs an hour of sleep. This sleep time is used to figure out what all these experiences mean. Clearly, sleeping plays a crucial role in helping us to grasp the meaning our own lives. What good is knowledge that can’t be remembered?

We live in the age of information overload. There is more information in one Sunday broadsheet newspaper than the average person took in during their entire life 200 years ago. On top of that, people are trying to get by on much less sleep. This is a dangerous combination that could lead to accelerated loss of memory as we get older.

Human identity, the idea that defines each and every one of us, could soon be facing an unprecedented crisis. It is a crisis that would threaten the long-held notions of who we are, what we do and how we behave. This crisis could reshape how we interact with each other, alter what makes us happy, and modify our capacity for reaching our full potential as individuals, all caused by one simple fact: the human brain which is under threat from the modern world.

Unless we wake up to the damage that the gadget-filled, pharmaceutically-enhanced 21st century is doing to our brains, we could find ourselves aimlessly sleepwalking towards a future in which neuro-chip technology blurs the line between living and non-living machines, and between our bodies and the outside world.

It would be a strange world where such devices could enhance our muscle power, or our senses, beyond the norm, and where we all take a daily cocktail of drugs to control our moods and performance, not too far flung from 70's science fiction dramas. Already, an electronic chip is being developed that could allow a paralysed patient to move a robotic limb just by thinking about it. As for drug manipulated moods, they're already with us, although for most of us so far, only to a medically prescribed extent.

The frenzied press stories of the fate of celebrities such as Michael Jackson, Whitney Houston and Amy Winehouse are becoming ever more predictable as the years roll on. I would even have a stab at listing my educated guesses here, if it were not frowned upon to do such things in print.

Increasing numbers of people already take Prozac for depression, Paxil as an antidote for shyness, and give Ritalin to children to improve their concentration. Is this really the world we live in today?

Imagine if you will though, there were still more pills to enhance a whole range of other specific mental functions. Just imagine the aspirations of the notion of creating an augmented identity, in order that someone would have to become the perfect mental projection of oneself. Now to me that's a scary thought!

At a microcellular level, the infinitely complex network of nerve cells that make up the constituent parts of the brain actually change in response to certain experiences and stimuli.

The brain, in other words, is malleable; not just in early childhood but right up to early adulthood, and, in certain instances, beyond. The surrounding environment has a huge impact both on the way our brains develop and how that brain is transformed into a unique human mind. Of course, there's nothing new about that; human brains have been changing, adapting and developing in response to outside stimuli for centuries. The information overload in today's technological age will continue to increase dramatically. This will affect our brains over the next century in ways we might never have imagined.

Just a few hundred years ago, our notions of human identity were vastly much simpler; we were defined by the family we were born into and our position within that family. Social advancement was nigh on impossible and the concept of "individuality" took a back seat. That only arrived with the Industrial Revolution, which for the first time offered rewards for initiative, ingenuity and ambition. Suddenly, people had their own life stories - ones which could be shaped by their own thoughts and actions. For the first time, individuals had a real sense of self.

Now, with our brains under such widespread attack from the modern world, there's a danger that a cherished sense of self could be diminished or even lost. This games-driven generation, interpret the world through screen-shaped eyes. It's almost as if something hasn't really happened until it's been posted on Facebook, Twitter, LinkedIn or YouTube.

Add that to the huge amount of personal information now stored on the internet; births, marriages, telephone numbers, credit ratings, holiday pictures; and it's sometimes difficult to know where the boundaries of our individuality actually lie. Only one thing is certain; those boundaries are weakening. Today's technology is already producing a marked shift in the way we think and behave, particularly amongst the younger generation. We could be raising a hedonistic generation who live only in the thrill of the computer-generated

moment, and are in distinct danger of detaching themselves from what the rest of us would consider the real world.

This is a trend, which for many people, including myself, is deeply worrisome. For as any alcoholic or drug addict will tell you, nobody can be trapped in the moment of pleasure forever. Sooner or later, you have to come down. I'm not insinuating that all video games are addictive, and being a techie, I am a big fan of the next generation of "brain-training" computer games aimed at keeping the little grey cells active for longer.

Alzheimer's research has shown that when it comes to higher brain function, it's clear that there is some truth in the adage "use it or lose it". However, playing certain games can mimic addiction, and that the heaviest users of these games might soon begin to do a pretty good impersonation of an addict. Throw in circumstantial evidence that links a sharp rise in diagnoses of Attention Deficit Hyperactivity Disorder and the associated three-fold increase in Ritalin prescriptions over the past 10 years with the boom in computer games and you have an immensely worrying scenario.

I know of at least 4 people, close people to me, who shall remain nameless, that I would ascribe as socially inept, due to nothing other than disturbing levels of immersion inside computer games.

How stress affects the brain has been the underlying question behind many of my studies on stress. We live in a society where chronic stress is the norm and people from all walks of life are dealing with the effects of stress. While the body experiences a wide variety of side effects from chronic stress, the brain is also affected by increased stress levels. Your body is a sophisticated and complex system of chemical responses. Stress is a result of several chemical responses that have evolved to help you survive. While this condition was very helpful to our ancestors who had physical threats on a daily basis, it serves us less beneficially in our overstressed society. Humans were simply not meant to be stressed out all of the time. Since the body can't tell the difference between a physical threat and a psychological threat, it responds the same way to a work deadline as it does to running away from a dangerous situation.

In stressful situations, your body moves all its resources, like blood and oxygen, to the vital parts of your body that are required to help you survive. Your digestive system, immune system and several other functions are dropped in favour of your muscle strength and dexterity. These changes take place because several chemicals are released in your brain when you feel stressed. Immediately after you start to feel threatened, either physically or psychologically, nerve signals fire down your spinal cord to your adrenal glands and pituitary gland. These glands then release a combination of chemicals into your bloodstream to achieve the goal of keeping you safe and alive.

These chemicals; adrenalin, dopamine, cortisol, noradrenalin, and endorphins, heighten your awareness, increase your blood pressure and make your muscles tighter. These effects are necessary during physical threats, but living in this state all of the time isn't good for your brain or your body.

Stress is meant to be a short term response but when it goes on for days, weeks, and months it can start to break down your brain and body. Think of it like a spare tyre in your car. Most spare tyres are meant to get you just a few miles down the road until you can get a new tyre and a proper tyre change. Living with chronic stress is like driving around on four spare tyres for years at a time.

Cortisol, which is released by your pituitary gland, is particularly harmful to the brain. The question "How Does Stress Affect the Brain?" can be answered simply with one word; cortisol. This hormone is responsible for damaging brain cells after prolonged exposure. Studies have shown that cortisol can break down cells in the hippocampus, which controls your episodic memory. It has also been linked to premature brain aging. Although cortisol is important in helping your body overcome real threats, it should not be in the bloodstream as much as it is when you are under chronic stress.

In addition, cortisol can increase your risk for depression. Cortisol in excess can overcome the feel good hormones in the brain and prevent you from being able to become happy naturally. Serotonin and other feel good hormones are reduced in the brain after long term stress. It's clear that in order to preserve your brain function, you need

to take steps to reduce stress. Stress can negatively impact your brain and have long term consequences for your memory, physiology, and mental health.

In closing, the mind is not a single entity that can be found in any part of your brain, it is the symbiotic collective of cognitive self awareness, the sense of self. The mind is the relational perspective that holds the memory and responsive interaction of conscience with that of the outside world in which we interact. Our brain attributes this collective as persona, an identity of origin in which the rest of the world from this perspective revolves. The world of you, in your own microcosmic universe is the selfish space of self preservation that wrestles and adjusts its data into viewpoints of persona in relation to the body that houses us.

To those who cannot comprehend this, some people will call this our soul. A non-entity, devoid of scientific data or conforming to any laws of physics which govern our universe, which is the apparition of the lack of understanding attributed to the myths about ourselves during the formative years of understanding, passed down from our parents, carers and teachers. To teach anything other than the facts of life, is weighing unfair bias, corrupting our children and their freedoms of choice in this world.

CHAPTER 8

Biology of Perception

As a Computer Scientist, my work very often spreads into the realm of creating bespoke programs using the language of physics to perform a set of functions. The mastering of many computer languages in order to have a solid grasp of creating reusable code is only half of the battle, as primarily the language must be deciphered and constructed, read, integrated and executed by multiple frameworks to assure the greatest uptake by external vendors. Having built many programs and middleware systems for various industries, such as the Automotive Industry, International Finance, Tourist Industry, Defence Contracts, Public Sector, Private Media, Manufacturing, Engineering, Telecoms, Scientific Research, R&D and Governmental, all require exact adherence to industry specific frameworks to architect a set of technical solutions in view of the greater business objectives and industry protocols.

One must become a skilled Polymath to be able to bridge the technical gap between computer scientists, programmers and software developers with that of company directors, heads of department and heads of operations. Tying the balance of technical capability and technological innovation within a company's budget, or upgrading an archaic system used by suppliers and its affects upon the business as a whole, must require someone with knowledge of best business practises. This usually includes grasping detailed function of operations with any given company, the business development projections, the key performance indicators of the business, the business model and

projections, as well as the branding and most of all, the clientele as well as their target audience.

This is my day to day job; I am a Computer Scientist operating in the business world as an Enterprise Architect. Under the guise of principal foundational guidelines such as TOGAF, ITIL and Zachman frameworks, I reconfigure and re-engineer a corporation's technological roadmap, based upon clear and concise industry specific frameworks, working primarily with C level directors, usually of very large corporations.

As a corporation's 'Head of Technology', my programming speciality when I'm not creating my own programming languages and frameworks are: closed loop control systems, multi-presentation layer logic systems and data structures, multi-valued and fuzzy logic business algorithms, control theory and real-time variable data control, with an objective of giving my clients bleeding-edge dynamic data structures in their applications, ensuring system information works smarter, for real business intelligence that's relevant to their business model. Often, my contract with one company for the duration will neatly lead to another contract that logically follows the previous role, which has taken me all over the world and led me to met some truly amazing people. When I am not under contract, I tend to focus on my pet projects which are usually Research and Development for areas in industry where I believe my work can have the most profound effect.

Some of my greatest works within the technology industry arise when I get the opportunity to get my hands dirty with pure research; when my specialities are without boundary and my logic for container technology for medical software can flourish. Using my expertise derived from the multiple data sets from external services, which must then be augmented into monolithic and controllable data streams, my philosophy is that data is of no use without the data being able to coherently speak to you about its content. To me, there is no use in having reams of data if it cannot be quantified towards the business objectives. My work is varied and with 3-6 months contracts here and there, I never stagnate and get bored. I would love to say that I could be a University Professor, but the thought of being stuck in one building

all day, re-telling the same dogmatic centralised topics year upon year is my idea of a personal hell.

I have been criticised throughout my career for not really finding my feet in one particular field, but to those who love to learn and would love the chance to see the world and not be pigeon-holed into a box of conformity, I take my hat off to you. I certainly am not an anarchist, but 9-5 is definitely not for me; or if I may be so bold, for any human being. My main field of study is engineering. I was an Aircraft Engineer in the Royal Army Air Corps and later studied my Bachelors in Computer Science. My Masters took me off at a tangent towards Automotive Engineering before coming back to study my Ph.D in Theoretical Computer Science.

I was not born with a silver spoon in my mouth either, I grew up on a very rough Council Estate in Bournemouth. At Uni, my evening jobs ranged from Head Barman of the Student Union Bar, Pizza Delivery Boy, Refuse Collector, Hod Carrier, Glazier, Croupier, Fire-fighter, Landscape Gardener, and the guy who would lift 35 tonnes of corn flour every day, tearing apart 15kg bags into a giant hopper to make lorry loads of steaming hot custard in a pasteurisation factory. I can tell you this, running an average of 16kms per day behind the refuse wagons across the hills of Carmarthenshire and lifting and throwing 12-15 tonnes of stinking garbage into the back of it every morning; or, lifting 15,000 clay tiles in 85kg batches on your shoulder up a ladder to the 5th floor of a block of flats at ten degrees below zero, is nothing compared to working in a pasteurisation factory. The super heated steam would ensure the factory floor was always above 45°C with 100% humidity. We had to wear an all in one lab suit with hood, and under that hood we had to wear plastic hats, earplugs and full face goggles. Then we would have to stand atop a 20m giant hopper, full of steaming hot milk, whilst a fork lift truck would lift up the first 4 tonnes of 15kg bags of corn flour. You would have to stand legs astride the hopper, twisting a full 180° to grab each sack, which resembled something between an old potato sack and a modern bag of cement, which was triple papered and double membraned. As I twisted, I would have to tear open the bags, ensuring all of the contents went in the

hopper. This, I did for 10 hours a day, 7 days a week, for 3 months. So, my journey to where I am now was not a particularly easy one.

My childhood and formative years were always short of money in our household, so if I wanted to study, I had to work hard for it. I have always worked very hard, but my friends will attest that I party even harder. So, life is now back in balance and everyone is now smiling. Well, not quite. I have had this bugging notion for about 16 years to write. Not a novel; I can't read fiction as it fails to hold my attention for more than 5 minutes. I need facts; facts that astound and make you think. I am writing the book that I want to read, nothing else. I don't particularly care if you like it or loathe it. It is the book that I want to write. It's not written for a niche market. It's not written to order or for anything in particular; it is purely the subject matter that would engage me, as I know there are thousands of people out there who are in need of some hard hitting truths and enjoy learning something new every day. If you learn anything or gain inspiration from my words, then my goal is accomplished. I refuse to conform to what is seen as normal or acceptable to print. I will not have anyone editing my words regardless of my lack of prose. This is the raw me, and writing these words pleases me no end. In fact, I've already got the bug to write more, as I have all of this knowledge that I have a genuine need and desire to impart. All I ask is for you to share the enjoyment I have in discovering things that the vast majority of the planet is blissfully unaware of.

Trying to write a book about humanity and the life that we, as mankind lead, started out as an exciting journey, which during production became arduous and much harder than I originally thought. The process of discovery for me remains the drive that allowed me to persevere this far, but my natural tangentialism kept taking me off in various unknown directions, where huge amounts of personal study were needed. This organic element has made the results much more unpredictable than I had originally planned during inception, but the whole has morphed into a beast of literally magic.

This chapter is one of those happy nuggets of gold that came to light at the right time when studying scientific papers on biology as

they rolled in. To be regarded in such light to have scholars forward you the latest in scientific understandings, to me, is an acceptance into the world of science that I have felt for so long to be have been at the very fringes of.

My story starts in my trying to understand the categories needed to export various amounts of biological data. This data was to be a container for the electronic transport of DNA data. A MIME type with the extension of .dna, which can be used across the industry and across various standards to effectively portray a set of DNA results for the industry. Just like a Word document or a PDF document, I was creating a DNA document for the multilingual containment of personal DNA data; enabling one's personal DNA data so that it can be transported, edited, updated and exported to various presentation formats within the Genealogy industry.

There is already a file format called a GEDCOM file, shorthand for **Ge**neaoglogy **D**ata **Com**munication, which is a container which carries genealogical family tree charts in data form, for export into different presentation software formats that now exist around the world.

My new container, framework and application planning interface (API) carries the actual binaries, codons and loci of Paternal Y-DNA, Maternal Mitochondrial DNA, and trees of Autosomal DNA and other such genealogical markers such as Deep Clade tests, The National Genographic Project's NATGEO 2.0 results and Single-nucleotide polymorphism (SNP) data for converting these result into a format that would span the various frameworks, for displaying this data into a unified format. This would enable Software Developers to have a framework to build awesome visual representations of human DNA using tomorrow's technology, that would aid the Genographic Project and other genealogy organisations; to merge data and visually represent these data-sets to the rest of the world in a way that everyone can understand, and comprehend their own unique place in the world including their pre-historical, genealogical journey.

To enable this, I needed to know and fully understand the nature of DNA in its different forms and truly understand not only where about sets of tabulated data and their corresponding results should be

cross-referenced, but truly understand the process of which parts of DNA do what, in order to figure out future applications for DNA testing and the potential areas within medicine this data could have a real-world medical use for.

Going back to the basics of biology, I started to ask the most basic of questions to ensure I had the correct overview of what was needed to accomplish this as a piece of software engineering.

In what is called an Iterative Agile Environment, I started building the frameworks to assemble the software that would enable tomorrow's representation of DNA results into many more medical niches, in a plan for its technical specification to be sent to ISOGG, The International Society of Genetic Genealogy.

The basic question that I asked myself first of all is, “what exactly controls biology?” I mean it’s a simple enough question, but no biologist I spoke to could give me an answer that satisfied my question. Everyone kept telling me it was in our DNA.

I wanted to know what makes cells dystrophic or pathological, what makes them normal and what controls the process? Sounds like a normal enough question doesn't it? Surely a text book would have the answer? During my research, I have found that my whole perception of what I thought I knew to be true about genes was just not so!

This research let me in on an insight that I wish to share with you, in which even those of you who may have a small understanding of genealogy and inheritance, the results of my research to many, may come as a bit of shock.

It turns out that our individual cells have perception, and in humans this perception we call our beliefs. Understanding these facts is completely life changing; so please bear with me whilst I attempt to articulate the best way I can, the cutting edge of today's biology.

It may sound strange, but a molecular belief can actually switch a gene on, or off. Let me say that again. A molecular belief can switch a gene on, or off. Now, I'm sure you've heard of the truth statement, "Knowledge is Power"? The more awareness you have, the more capable you are of surviving, flourishing and succeeding. This is true in

all aspects of life. There is another truth statement, however; "Lack of knowledge, results in a lack of power". Why is this relevant?

Turn on your computer and gaze across the Health News section about the connection between our health and our genes. I bet you any money you like, there is a story about this in the news in some journal, somewhere on the web appearing in our news, every single day.

Not only is it big business, it's an industry worth billions in investment into drug trials for our pharmaceutical companies, from all of those Cancer Research donations collected worldwide.

We are repeatedly told that genes control many aspects of our lives. We accept that we inherit genes from our parents. When we understand that our genes are bequeathed to us via our parents, then all of a sudden your genes control the destiny of your life. You become a victim of your heredity!

My Mother tells me about how back problems run in our family, so, I have to be careful. My Mother suffers in extreme pain from what practitioners are calling a congenital condition; where pieces of her lower spine have broken off, causing the allowance of excess movement of the spinal column away from the discs. In effect, this is the opposite of a slipped disc; it is a slipped lumbar bone, which traps nerves that gives immense pain, most of the time, including Sciatica and the occasional associated back spasms that can last for days on end.

Namely; Degenerative Lumbar Spondylolisthesis: Congenital? A birth defect; an amorphic susceptibility to spinal column breakage or environmental wear and tear? What exactly is the prognosis? My Mother was a great trampolinist in her youth; is this still congenital?

Yes, I get the odd back pain, but on the other side as a child from the age of 11 to 16, I would clamber up the second story roof of the school sports hall to retrieve a lost football, most days, and would launch myself straight off the roof on to a concrete floor. I've had countless hard landings from skydiving and have spent half of my adult life pounding thrice my bodyweight in lateral squats.

Yes, my poor Mother has a very painful condition. It may soon require major corrective surgery as the cortisone injections and

epidurals are, thus far, having little effect. It pains me to see my own Mother going through so much pain. My Wife had to learn to walk again after having her spine rebuilt at the tender age of 11, to correct her spine from the tortuous effects of Scoliosis. This utilised horrific amounts of titanium rods and bolts bigger than your finger, rendering half her spine completely fused. So, my odd ache and pain from sat typing at my computer for 18 hours a day cannot really be considered hereditary. Especially when you look as the fact that 90% of the population have back problems at some point in their life.

People are becoming more and more victims of their heredity. What if cancer runs in your family? Do you have the genes of a ticking time bomb, which at some point in your life is going to go off? So, does this mean it's not your responsibility, it's down to your parents?

With this belief system, it stands to reason that on any level, if you can't do anything about the genes that you inherit from your parents, then you are no longer really responsible for yourself. You're just one of life's lotteries. I can't do anything about it, so why should I even try?

This is where a lack of knowledge or an assumed truth manifests that the genes that exist in all of us are disempowering every single one of us; as it says quite clearly that "you are less powerful than your genes". If this statement, for any reason, is in sync with your belief of physics and biology, then you are sadly mistaken, as the reality is that this is most certainly not a true statement.

Almost everyone knows, or can at least picture a double helix strand of DNA. We are told that the genes in your body dictate the characteristics of your life. Not just your height, your eye colour and hair colour, but anxiety and obesity levels, sexual orientation and also aggression, shyness and happiness levels, have all historically been characteristics attributed to the genes. Poppycock!

If this is true, then the belief system is of course that when your genes were formed at the moment of your conception, your life was already mapped out. Your life is just the unfolding of the pre-programmed sequence you received from your parents. Balderdash!

As I can't think of any more socially acceptable expletives to portray my disdain for such erroneous, yet everyday accepted misnomers, I shall continue in my unravelling of the story of our genes.

So genes, the DNA molecules are virtually always found within a cell structure called the nucleus. In a recent issue of Science Magazine, a publication that is certainly one of the most revered international science publications, and by far the most prestigious scientific journal in the world; the very first sentence in a paper entitled 'Macromolecular Ballet' states that "The Nucleus, is the command centre of the cell", as it contains the genes and the genes control you. So, the nucleus represents the source of control for the cell. This is conventional belief, ergo current scientific consensus as far as the textbooks transcribe.

The control centre of the cell would be tantamount to the brain. We have around 50-75 trillion cells that make up our body. An interesting point is this: There are no new functions in your entire human physiological structure, which do not already exist inside every single cell in your body. Every cell has a digestive system, expiratory system, endocrine system, integumentary system, nervous system, reproductive system and immune system.

The cells in every human being are structural counterparts of each other. Whatever is in the cell is in the human. Whatever is in the human is in the cell.

So, reading what is still taught in schools today, the nucleus is the command centre of the cell. Now, this notion is an interesting concept for the following reason. If I was to take the brain out of any living organism on our planet, it dies. Okay, simple enough. So by definition, if I were to remove the nucleus of a cell, it too should die.

In truth, if I remove the nucleus of a cell, the cell is totally unaffected. A cell can live for up to 2 months with no genes in it at all! Not just sitting there either. It will continue to do exactly what it was doing before. Moving around, communicating with other cells, it's eating, it's growing, and it can eliminate waste by-products and build up its structure. It recognises toxins and moves away from them. It

recognises food and moves towards that. In removing the nucleus of the cell, I alter the behaviour of the cell in no way.

By definition, the nucleus cannot be the command centre of the cell, as the cell still has control with no nucleus. The bottom line is: Genes do not control biology. This is a mistake! This is an assumption that was made many decades ago, never proven scientifically, but it seemed for so long to be correct that everyone blindly bought the story.

Even until very recently, Geneticists were baffled by the outcome of the Human Genome Project. If the mechanisms worked according to the way it is written in the text books, that genes control biology, then there is a requirement that there should be more than 125,000 genes to make a human. When the results of the Human Genome Project were turned in, we know there to be less than 25,000 genes. There are 100,000 genes missing! It is not a fact that there are genes absent, our belief system was wrong.

In science, if our belief system is wrong, we change it based upon our new understanding of empirical facts. This also means that genes do not control biology like we have been taught, so, our understanding of how our biology works, also has to change.

So, the Human Genome Project really had its rug pulled out because they thought they would uncover the blueprint for how to make a human. Finding out that 80% of the genes are missing, means that we now have to understand a new way at looking at biology; and this new way at looking at biology has only started to emerge within the last 10 years. Everything I am describing to you now is new science from the within the last 10 years, and most of it being much more recent. Interestingly, it takes 10-15 years to take a scientific fact at its first inception, to the point of getting it out to the public, so people can start to understand it. So, what I am describing here is what will imminently be appearing in the next generation of biology text books in our schools and universities and what will be shown in future televised documentaries.

This new science is only just discovered about the human cell, so when I talk about our cells and how it all works, it’s quite amazing. Where you have organs in your body, the cells have organelles that

perform exactly the same functions. The real issue that we are still left to find out, is where about is the brain of the cell? Just a few minutes ago, one would have thought it to be inside the nucleus.

Cells are extremely interesting. They are like machines. Just like an exploded diagram of a car's engine, with hundreds of moving mechanical parts, the cell is the analogous version, yet instead of pistons, cogs and gears, the cell uses hundred of various protein parts.

In our bodies, there are approximately 70,000-90,000 protein parts. These building blocks are proteins arranged in numerous ways to form our physical and biological structure. The coagulation and sequence of these protein building blocks is the structure that individually forms each and every one of us, and its monolith is what we see in the mirror.

All of the human bodily functions can be performed in the test tube. One can take the enzymes and proteins for digestion and put it in a test tube, it'll do digestion! One can create muscle contraction. Take Myosin and Actin, the contractile proteins; put them in a test tube and you can create muscle contractions in front of your very eyes. You can create respiration in a test tube too. The cell is a machine that is made out of parts. These parts interact with each other to create the complex thing we call life. Powered by proton gradients, these cells are all communicating and working together, towards a common goal of symbiosis; the collective network of which we perceive as our lives.

Our bodies, the 70,000-90,000 protein parts that form us as humans, in their smallest structural forms are just beaded strings. The beads of the strings are amino acids, with each string of differing sequence or length constitutes the vast protein structures that exist in our bodies. If we were to make a human body out of just protein, then it would be a just static, lifeless, protein statue. There is no life!

So, where does the life come from? Well, I've already given you the answer earlier in this book. I have described life, using physics and chemistry via proton gradients. Biology is simply the organised chemistry and the charged electrical particles within proteins that gives life the spark it needs to perpetuate.

So, how does this work in biology? Let me tell you. Life is animation. Life is movement. It's actually quite simple, but you need to understand where life comes from. Imagine the two opposing ends of a protein string are negatively charged. Why is this important? Well, look at the basic principles of science. When two like charges come together, they repel each other, and two opposed charges attract each other. Like organic gates, changing the charge at any end of the amino string can cause the ends of the various protein structures to either repel or attract each other. Environmental signals can have a profound effect upon the protein structures by opening or closing strings to alter their behaviour. These environmental signals can be either molecules, compounds, enzymes, atoms or energy. Let's say for instance the cell is responsive to the female sex hormone Oestrogen. Let's also say that it's also very positively charged, so the Oestrogen will bind to the end of the protein. So, an outstretched protein string now has positive and negative charges at each end of the string, causing the protein string to become unstable, thus contracting the string to form a new closed loop structure. The shape and structure of the protein is critical to enable open and closed protein loops. Just by binding Oestrogen to a cell that is receptive to this signal by its electrical charge, alters its shape and structure, causing animation in response to its environment.

A protein can be static, but as soon as the signal is received the protein does something. Add the correct food enzyme to the cells that are responsive to certain food groups, the cell is activated to perform digestion and it systematically tears apart the correct food molecules in the process of targeted digestion. There are cells designed for every process your body performs, and your cells are the perfect machines to perform a single repetitive function in response to each environmental signal it receives.

Our physically animated lives are part of a machine whose structures are derived from the protein parts, which are linear chains of amino acids. The final structure is due to the arrangement of these amino acids and the balanced charge of stable proteins are changed when an environmental signal causes the protein charge to become opposed to its stable form, causing animation.

So, proteins change shape, and in our muscle fibres the signal is calcium, which changes the charge of the protein causing animation and bodily movement. Your behaviour is the result of a signal to a stable protein.

Your behaviour is the movement, the actions that you perform in life. The movement comes from the movement of protein. If you think a bit deeper about how this all works, your behaviour represents the action of a protein in response to the interaction and subsequent response of a signal. So, the signal activates the protein to move, thus generating behaviour.

The brain of the cell is the structure that controls the signals to tell the cell what to do, in response to the environment. This is why it is imperative to fully understand, at last, where exactly the brain of the cell really is.

The brain of the cell is the skin of the cell; the membrane. It's exactly the same as your skin. You might say to yourself, "Well, what do you mean? The skin and the brain; they look like very different things." The answer is this: In Embryology, there are just three germ layers that ultimately form the full sized organism. These germ layers are called the Ectoderm, Mesoderm and Endoderm, which are the layers of the cell. Each layer gives rise to different organs and tissues. Interestingly, the outer layer called the Ectoderm only produces two things within the human body: Skin, and the brain and its nervous system. The brain is derived from your skin!

Your skin is the interface between the environment and the cytoplasm, which can read what is going on, telling the proteins in the cells of your body what to do. Like I said, I could take the nucleus out of the cell and it wouldn't make any difference to its behaviour. The reason for this is that the nucleus is not the brain of the cell. The nucleus is the Gonad of the cell. It is there solely for reproduction!

If I need a part to make the cell work, the nucleus of the cell is the area which holds all of the patterns to make any part of your body. The nucleus doesn't know which one is needed or at which time, the nucleus has no intelligence. The nucleus is just the repository for all of the patterns. So, if I take the nucleus out of the cell, I didn't change

anything about the cell. The cell will die after a while. The protein parts making up the machinery of our bodies will eventually break down. They need to be replaced, or else they die. So, we need the nucleus of the cell, not for the intelligence, but for the blueprint.

So, there is no brain involved with genes, so how does the cell membrane work? It takes an environmental signal like sunshine, hot air, sound, chemicals, smells, and taste; anything from the environment that the cell membrane can pick up. This environmental signal is called the primary signal. The cell membrane converts this environmental signal into a secondary signal that controls the protein within the cell, with the behaviour being mediated by the membrane which responds to the environment. In turn, if you cut off the cell from its environment, the cell would show no behaviour. Zero: It has no life.

Life is the response to the environment. Your life is how you respond to your environment. As you see the environment, those signals in turn run your proteins into reacting in a certain way. Your behaviour is not due to your genes as we haven't even brought DNA in yet! Your behaviour is due to outside signals, which is called 'perception', converting those signals into selecting the correct protein for its intended function.

If you look at a group of cells in a Petri dish through a microscope, it seems all bubbly looking until you look even closer. At higher magnification the skin looks like a sandwich, with a lipid layer in the middle. It is this oil that makes both our skin and the membrane of the cell a barrier, so the water outside the cell can't penetrate the membrane and the water contained within can't leak out.

Just like their human counterparts, the cell's skin is protecting all of the mechanisms that make the cell work. When you look at the surface of a cell, instead of being smooth, they are actually full of structures that look like antennas sticking up all over the surface, with proteins built into the membrane. These proteins read the environment and convert that environmental signal into behaviour.

There are thousands and thousands of proteins in the cell membrane, yet there are only two groups. One group has antennas on it. Just like a TV aerial on your house, these antennas are the receivers

that have the function of picking up an environmental signal. A signal transmitted to your TV aerial, down the co-axial cable to your TV will be converted into something you can visually perceive. Receptors are tuned to environmental information, such as glucose for example; is there sugar out there? Or, histamine; signalling to the cell to prepare for an emergency response. Or, you could have Insulin, which tells the cell to change its metabolic pathway. For every different thing the cell can see, it has a specific antenna which detects the various signals, so the surface of the cell is covered in antennae for the range of signals the cell can deal with. The signals come in as they are picked up by the antenna and subsequently converted into behaviour by the second class of proteins called 'Effectors'.

Effectors have up to 3 channels, whereby they perform different functions in order to tell the cell how to behave. Under a powerful Electron Microscope, Effectors resemble pitted olives, with holes in the middle, where information can enter. For example: Enzymes, which are proteins that cause metabolism to occur; or, cytoskeletal proteins which can change the shape of the cell. Also, if toxic signals are picked up by the antennas, the Receptor and Effector proteins can work in unison, creating a new combination of internal responses. These are the 3 channels.

We all have receptors. Eyes, ears, nose, taste, touch; and where are all of the receptors? In the skin! You and the cell are parallels; it doesn't resemble an eye, ear or nose, but its function is exactly the same. It would be the same as an eye if the cell was responsive to photons, which converts this information of the specific frequency of light, in turn, causing its effectors to send out a secondary response signal. This is exactly how our eyes work, only on a much bigger scale, using the combined information from all of these groups of cells that form our eyes. The combination of signals are transmitted down the connected nerves to our visual cortex area of the brain; a place where our memory cells are in tune to receive these very fast signals at the front of the brain, to form a mosaic of light, just like the pixels of a photograph, or the CCD and CMOS receivers inside today's digital

cameras. In exactly the same way, our eyes, our cells and our brains are symbiotic machines in unison.

The input of the receptor's antenna connects to the effector's output, which makes the behaviour. So, the receptor is tuned to a specific signal. We can compare this to a kid's toy where you have a square, triangular and circular hole, which only accepts the corresponding shape to pass through. When the signal enters the correctly shaped entrance, designed to allow only that specific signal through at the antenna, it gets to pass through the lipid layer of the cell walls, which are surrounded top and bottom by protein molecules. This lipid layer resembles a bread and butter sandwich, with the lipid layer, the oils, sandwiched between the protein crusts, forming the waterproof membrane which makes up the cell's wall.

Once the correct signal enters the cell wall tunnel, into the cell, it causes the root of the protein of the antenna to change shape by altering its charge. Depending on the type of cell it is, changes the types of secondary signals that can be produced by the altering of the components from within the cell.

From its resting state, the effector channels are closed. Once activated, the channel can open, allowing the correct shape of signal to enter the tunnel and into the cell. This is how cells communicate and talk to each other. This signal is either powered on or off, open or closed. Just like binary, ones and zeros, this simple system is the commuter language of all of our body's cells.

Stimulus and response: No signal, no behaviour. It is just a simple switch. When insulin turns up, turn on metabolism. When histamine shows up, switch on protection. For each thing in the environment, there is a switch that alters the behaviour of the cell. The function of the receptor is awareness of the environment. It sees, yet it has to convert this signal into a biological action. The function of the output, the 'effector', is to create a physical sensation to the response of that signal. It represents awareness of the environment through physical sensation which is called 'perception'.

As described in the dictionary: ***Perception****; 1) An act or result of perceiving. 2) Awareness of environment through physical sensation.*

Each cell in your body has perception of its environment. There is no DNA involved. There are no genes involved. In conclusion: If there is no perception, there is no behaviour.

So, let's look at the proteins within the cell. This time, we're going to introduce an enzyme that controls the protein pathways for muscle contraction. Using an environmental signal, the receptor changes the shape of the receptor protein. Now the shape has changed, the floating processor protein can now fit to the shape of the receptor, which allows it to now bind to the shape of the effector, thus activating it. This is the process of the receptor protein conforming to the enzyme. Once attached to the effector it activates the enzyme. This is what creates the secondary signal from the muscle proteins and the receptor. The stationary inhibitor protein is just sat there dormant, until it receives the secondary signal which sends it to the enzyme, which grabs the inhibitor protein and splits it. The split inhibitor protein can now bind to muscle protein and activates its pathway, thus activating the protein.

So, what really activated this protein? The answer is the primary signal in the environment, relayed by the secondary signal, thus activating the behaviour of the cell. The behaviour of the cell is not programmed. The behaviour of the cell is responding to whatever the signals are in the environment.

Okay, another rhetorical question for you. What happens if the required protein is not present inside the cell? Well, what happens is the signal will come into the cell, but it does nothing, as it doesn't have the correct behavioural proteins. So, where do we get these behavioural proteins? It is at this point we require the DNA.

The DNA double-helix is actually the blueprint for all of your body's proteins. If I were to separate the two strands and look at the individual bases (the steps of the double-helix) the sequence of the DNA, codes for the sequence of the amino acids. So, for every 3 bases I can tell you which is the next amino acid. In essence, the plan of how to make a specific protein is built into the DNA. For every 3 bases we could put in Tryptamine, then Proline, next one insert Alanine; so the

DNA is the sequence of aminos that form complex proteins. It doesn't have any other function of use until the time it is required.

So, how do I activate the gene? You've see on the news every now and again about potential new cancer genes have been identified. What; a gene that gives you cancer!? Let me tell you a simple biochemical truth: Genes do not self activate! A gene cannot turn itself on; a gene cannot turn itself off. If you want a gene to be active, it is not up to the gene. So, the concept that there is a cancer gene is a false concept. If the gene really caused cancer and you were in possession of that gene, you would express the cancer right from the moment of conception.

For 60 years we have believed that genes are in control. We have been repeating it and saying it over and over again for 60 years and is now part of every biology text book. The bottom line is that was never a scientific reality. It was never scientifically established that your genes control anything. It is simply not true.

What is the truth? Well, for starters, the conventional belief that genes control biology is totally false. Why? Genes can't turn themselves on or off! How can they control anything when they cannot control themselves? Thus, the genes are not in charge.

The only reason a gene needs to be activated, is to create a copy of the blueprint of a specific protein. A new truth statement would be this: "When a gene product is needed, a signal from its environment, not an emergent property of the gene itself, activates the expression of that gene." That can seem a little complex, let's cut that statement in half. "A signal from its environment activates the expression of that gene."

So, in truth, what does that mean? The genes in your body are selected, not because they are self-selecting; the genes are always selected in response to the environment that you're in. So, after 50 years of not having cancer and then it suddenly develops; are we to say that this is the fault of our genes? Only the signal from our environment can alter the selection of our genes from our DNA.

Do you know what constitutes as a weed in your garden? It's a plant or flower growing outside of the boundaries intended. This is

what cancer is. It is a cell protein that remains happy to flourish in its environment, but against the status quo of its intended surroundings. Cells not in harmony with their surroundings are the weeds in the cellular gardens our bodies.

If you can get your head around the different names and understand these basic biological principles, it is actually very simple indeed to visualise and comprehend. It is absolutely essential that you understand these basic truths about biology, as it is the key to allowing humanity in taking the next steps in our continued path to becoming truly enlightened beings; to be able to understand the form and function of life and creation, in a world without the archaic ties to old wives tales, erroneously assumed understandings, or, religious dogma.

Without humanity's understanding of these fundamental scientific facts, mankind will continue to war over possessions, over power and over religion. The rich will get richer, the hungry will continue to die in their millions, and famine and drought will spread over the earth, as will extreme weather events become more prevalent. Fresh water will become scarcer, rivers will cease to reach the sea and population masses upon river deltas will drown in epic floods or of disease in their millions. Our planetary resources will not be evenly spread, taxation will skyrocket and our proliferation on this planet will prove to be a challenge to our own species, greater than anything we've encountered in our history.

On a geological scale, we are teetering upon complete decimation and destruction, and most of us are entirely ignorant to this. If enough people in the world understand the real reason for life and our place in the universe, there is renewed hope that with this knowledge, we can rise above our own egos and spread love, peace, temperance and understanding over our precious Earth.

Like most of our bodies, filled with the daily stresses of time constraints, long working hours, money troubles, social troubles, tobacco, alcohol, pollution, carcinogens, pathogens and a blatant disregard for our own inner balance; our planet is in just as bad a shape as we are as a populous. To succeed, we need to heal our own environment, to heal our bodies, to heal our minds, to heal our planet.

Our planet is our environment. Our environment provides us with the environmental signals of life. We all have the capacity for the biology of perception. There are no shortcuts. The time is now.

CHAPTER 9

Fight or Flight

We have all heard about the fight or flight reactions that humans and other warm blooded animals instantaneously produce, as they have the ability in an autonomous reaction to perceived danger. The processes that enable this to occur in our bodies are the same processes that happen, which can have huge effects on our mental productivity, our sexual libido, our capacity for learning and retaining new information, and most importantly, our longevity and general health.

To explain in better detail, we need to regress back to the cellular level and back into the realms of our biology.

So, we now understand about the perception of our biology, but us as humans we also have perceptions, and whether these perceptions are correct or not, our consciousness makes them real; so, our perceptions still have significant affects upon our biology.

We now know and understand that our biology is animated in response to our environment. We also understand that genes do not control biology in any way, other than its capacity as our individual blueprints we need to create the new proteins that we need in our bodies, as and when they are needed. But what if we don't have the correct protein in the cell to be able to complete the process?

The protein parts that exist inside our cells break down and need replacing, just like any other machine. When we look at a cell's nucleus where all of the chromosomes and DNA are, you can individually stain the chromosomes and break open the nucleus which will enable you to see all of the different chromosomes. It takes 23 pairs of chromosomes

to make a human. They're called pairs of chromosomes because you receive 23 chromosomes from your mother and 23 chromosomes from your father, forming matched pairs. A cellular biologist can actually see and tell which of the chromosomes derived from the mother and which ones from the father, just by their length and shape. Under an electron microscope I have stained the various chromosomes to make it more obvious for experimentation, but what exactly am I staining? I'm not staining DNA, so what's in the nucleus? The answer is 50% being DNA and the other 50% is protein.

The reason why we have a big problem here is that for 50 of the last 60 years, in cellular biology, our geneticists were so focused on the genes, that when they wanted to study the DNA, what did they do? They'd find the nucleus of the cell, break it open, expose all of the chromosomes, separate the protein from the DNA and then throw away the protein!

For 50 years they threw away the protein and focused on the studying of the DNA. It is only in the last few years that geneticists have started to ask, "What have we been throwing away?"

The answer is: The control. For 50 years they have been throwing away everything that controls the genes! This is what was missing when they cloned poor Dolly the Sheep, who suffered a lifetime of illness and disease. They even said they were close to cracking replicating life when they made the first Jurassic Park film, yet they had no idea how to do it, as they hadn't even sequenced any mammalian or reptilian DNA at this point; computers weren't powerful enough at this time. They knew they were close and understood much of what was required, without having the very basics of biology scientifically proven, stabilised or accepted into any scientific canon.

All of this time, scientists were studying what they thought was pure DNA, without understanding that there is no such thing as pure DNA in any organism. An organism is always associated with protein.

So, what is the function of the protein? Well, the protein forms a sleeve around the DNA. Imagine your bare arm is a gene. Let's say it's a gene for blue eyes. What does that gene look like when I put it back into the nucleus? Pull your shirt sleeve down over your forearm,

which is what the protein acts as. To now read the gene for blue eyes, you have to remove that sleeve first to get to the gene. For 50 years biologists have been breaking open the proteins to get to the genes.

Now, however, we understand how to remove the protein sleeve without breaking it. We can change the shape of the stable, closed, protein structures by adding the correct environmental signal to change the charge of the protein, allowing it to unfurl outwards by repelling like charged particles at either end of the protein, thus exposing the RNA segment of the DNA strand. Add the signal, the protein sleeve will peel off; remove the signal, the protein sleeve goes back.

So, the gene was just sitting there all of the time. For 50 years the conventional understanding is that DNA created the blueprint for proteins, without understanding that an environmental signal in conjunction with a regulatory protein activates the expression of the DNA. The primacy of DNA does not start with DNA as it says in all of the textbooks; the primacy of the environment regulates the protein, activates the DNA blueprint, which removes the protein sleeve, takes a copy of the DNA segment (RNA), which creates the protein.

If a protein doesn't exist inside a cell, an environmental signal enters the cell, causing a secondary signal to go down the protein. If that protein doesn't exist, the secondary signal goes to the nucleus of the cell and activates the gene to create a new copy of the protein. The free signal goes to the cell nucleus where the DNA is covered up by a sleeve of protein. At periodic points along the gene there are control proteins called, 'regulatory proteins'. The environmental signal will bind to the correct regulatory protein, thus activating the removal of the correct piece of the sleeve by changing the charge of the protein, revealing only the correct gene for creating the new protein.

An RNA molecule is best described as a DNA segment photocopier, which contains the cell's equivalent of paper and ink in order to copy the section. By taking an RNA molecule, which copies the blueprint of the gene; this copy is called 'messenger RNA'. It is this copy of the blueprint of the correct segment of the gene, which is actually what is used to make the protein. The gene is not exposed until the signal asks for it, by the absence of the correct protein.

If this was a ‘cancer gene’, but it’s not giving you cancer because it is not expressed; what will cause the cancer to express itself? The signal!

So, what signals from your environment do you perceive that you are selecting negative genes in the processes within your body?

Conclusion: Perception controls genes! The genes did not control themselves. It is the perception of the signal that converts the sleeve of the DNA to come off, so the RNA molecule can copy it, creating a new protein inside the cell.

So, perception not only controls behaviour, but perception also controls which genes are going to be expressed. Now, here comes the 3rd part. What if I am in a stressful environment and I don’t have the appropriate genes to respond to that stress? The only way it manages it is to change the genes!

In conventional biology, the only way the genes change is by a process called ‘random mutation’. This is in all of the text books today. What it says is this: I can chemically cause a mutation to occur, but what it cannot control is the outcome. The outcome is always random.

This is where Darwinian belief comes in. Evolution creates random changes in the genes and these gene changes are only changing by accident. This is also conventional belief.

The basic foundation of biology has recently been changed as biologists now really understand the processes of ‘adaptive mutation’. The genes are not changing randomly; the environment is controlling the mutation. Your body is always adjusting your genes in response to your environment. This is environmentally directed mutation.

If you take a population of bacteria and put them into 5 test tubes: If all of them where put into the same very stressful environment, causing the bacteria to change their genes; in each of the 5 test tubes the mutation results would all be exactly the same. So, where is the random nature of that process? The answer is: IT IS NOT RANDOM!

The evolutionary changes always adapt to the environment. These mutation adaptive radiations, fold in the same way, every time, in response to being given identical environmental niches. We adapt

our genes to fit the environment we think we live in. I say, "we think we live in", because our perception of ourselves maybe right, or maybe wrong; therefore, perception is our belief. If this is true, do you understand what this means? It is your belief that changes your genes. Your life is not an accident!

We have now found out, that in every single one of your cells in your body, you have genes, whose sole function is to rewrite other genes when necessary. So, you are equipped with the ability to adapt your genes as you respond to your environment.

If in your mind you think you're living in a dangerous, hostile environment, even if you are indeed living in a very supportive environment, it will activate your 'genetic engineering gene'. Even though your environment is fine, our perception of our environment trumps all other environmental signals. What we think we are, we become. This is biologically true. Your own beliefs are selecting your genes. If you don't have the right genes to handle the stress that you're in, your body will rewrite your genes in an effort to do so.

Conclusion: Not only does perception activate behaviour and activate your genes; but when necessary, perception can rewrite your genes in an effort to combat any stress it's under.

Are you genetically controlled; are you at the behest of your heredity; are you a victim? Absolutely not!

By adjusting your perception, you're adjusting your behaviour, your genes, and when under stress, you're rewriting your genes. I suggest you don't attempt to rewrite your genes. Most of us arrived at this point just fine. Almost always, when you rewrite your genes, it is a negative process, because your genes are already working. You were born viable. More often than not, change in your genes is bad.

Did you know that lots of illnesses and more than 95% of cancers have no hereditary linkage? 95% of cancers are produced by an individual's perception rewriting their normal genes into cancer genes.

How you see things and how you understand things now become more important, as we are all no longer victims of our heredity, but are victims of our life's perceptions. We all have to be careful what we choose to believe in, as our belief systems in our lives are

imperative to our health. Because our perceptions are our beliefs, we have to be very careful what we believe, especially of ourselves, as any negative perceptions create destructive changes in our lives.

If you get here healthy and you change it, you are rendering yourselves (and your offspring) less effective as living organisms.

The perception of your environment (your nervous system), sees the environment and interprets it. Interestingly, if you take muscle cells from a dystrophic patient and place those cells into a good environment, the cells will grow completely healthy, but when they were in the body, they didn't: Why?

Somewhere between the environment and the cell, the perception became involved with it. So, our beliefs are altering our biology. So, the final rhetorical question would be; what kind of genes are my beliefs affecting? Now, this is a very important understanding. The genes in your cells are like the programs in your computer's memory. So, what kinds of programs are in your body?

There are only two classes of programs in your body. One is for growth (and reproduction, which is another form of growth), and the other is protection. So, in your environment, you will either select growth or protection programs. Again, it's a switch. It's an either, or.

If I was to place cell into two Petri dishes; in one I put in nutrients and in the other, toxins. Over a small amount of time you will discover that the cells move toward the nutrients or any other positive signals which encourage growth, and in the other dish, the cells will have moved away from the toxins in self defence, as toxins are detrimental to the cell's survival. Therefore, cells always move away from its perception of negative signals.

It is very important to understand at this point, that a cell cannot move in both directions simultaneously; so a cell can either be in growth or in protection, but not at the same time. When confronted with an environmental signal, the cells have to make a decision to be either in growth, or in protection. This is relevant to us in life, as when a cell is in protection, the cell stops growing. The more protection we think we need, the more we shut off our growth mechanisms. It is at this point that we start stymieing our own health.

Cells are attracted to positive signals as a mode of growth, and cells are repelled to negative signals as a mode of protection. So cells are either moving in growth or in protection, but never both at the same time. This is just one cell. You are made up of 50-75 trillion cells. So, in humans, symbiotically we are represented in a graded scale. We as humans are either in some degree of growth, or some degree of protection, based upon our environment.

Now, this might sound like some new-age, hippy hocus-pocus; but the most important growth promoting signal in the world today for a human, is love. It exceeds even nutrition. A child getting love will grow. A child not getting love will be stymied in its growth.

In Eastern European orphanages, where the kids are given a lot of nutrition, but no attention, their growth parameters, their intelligence, their height; every aspect of their development is reduced by 30% or more. Most of them becoming autistic: What is an autistic child? Think about it. An autistic child is not responding normally to its environment. Why not? Because, somewhere in its development, it started to put up the walls of protection, thus shutting down the pathways to its environment, which is the highest form of protection; but, look what happens to that child.

Also, when you are in fear, you are shutting down your growth mechanisms. When you are in love, you are enhancing your growth mechanisms.

Do you remember the first time you were in love? You had a permanent smile on your face. You would feel this deep elation and a fuzzy feeling inside. You couldn't wait to speak to them on the phone, or to see them next. The wait to see them felt like an eternity: Those butterflies you get on your first kiss. Do you remember? Didn't you feel great?

This may not be the most eloquent attempt at a description of what love is, but it is the perception of the power of attraction that manifests in physiological and biological growth of the greatest kind. This is our biological manifestation of the perception of love. Biochemically, love is growth, stronger than any other.

Stress, has the opposite effect, with fear as the strongest negative signal. Stress in our environment can come from our mindfulness or dwelling upon life's inevitable problems, or, from a generally negative disposition. If you are feeling low, or down about something, you are sending negative environmental signals to your cells. You can even be stressed without even knowing about it. Depression is horrifically damaging to both the mind and the body. Clambering up from clinical depression is a feat that I wouldn't wish upon anyone. It is a lonely and difficult climb, even from the strongest of characters. If you have ever suffered from depression or know somebody who has, it is the love and support of friends and family that help overcome this silent killer, not prescription drugs, which mask the symptoms, compounding things further.

Time constraints, long working hours, money troubles; how you mentally deal with the negative processes in your life has a direct affect upon your beliefs. If you are an optimist rather than a pessimist, your body will be under considerably less stress; even with exactly the same problems. In my experience, people who say they are realists are actually pessimists, masquerading as optimists.

How you mentally negate a negative thought process in your mind can be found in various self help books available, but first you must understand the power of a positive mind. The power of your own mind creates the biological representation of your perceived self. There is even a mechanism for it. In your system, it is called the 'Hypothalamus Pituitary Adrenal Axis'. The Hypothalamus is the portion of the brain that gauges the environmental signals. The environmental signals come into our mind; the mind has to decide whether this is a positive or negative kind of signal. It is this area of the brain that most of the anti-depressant drugs take action upon, by chemically denying any signal from getting through. No reaction is seen medically as better than negative signals, so the mind altering action of anti-depressants can never be replaced by an acute perceptive awareness of positivity in your environment.

Via the Hypothalamus, it is a negative signal of perception that activates the pituitary gland. The pituitary gland is called the 'master

gland', because it controls the shape of the body. There are two shapes; growth and protection.

With negative signals, what ultimately happens is this: The hypothalamus activates the pituitary gland into 'fight or flight' mode. Fight or flight, is the basic animal instinct to either attack or escape imminent danger. If a loud bang goes off near you, or someone jumps out and startles you, this biochemical reaction is the body's way of quickly instigating its protection mode.

The area of your body that a vest would normally cover is the area of the body called the viscera. The visceral area is the part of our bodies that house all of our vital organs. They are vital because we cannot live without them. This, plus our brains is the reason why soldiers wear helmets and bullet-proof vests. It's armour that protects the vital organs without restricting too much movement.

The visceral area is one of growth. Our extremities, our arms and our legs are designed in times of imminent danger for protection. Our arms are used for fighting and our legs are used for running away. Under fight or flight, our hormones, released by the adrenal glands, cause the blood vessels in the viscera to squeeze out the blood to the periphery of the muscles, enabling a burst of energy in order to flee or attack. It is a very basic and very effective primal reaction that has historically ensured our continued survival from imminent danger.

When the visceral area is temporarily devoid of blood, it stops growing, as the body cannot be simultaneously in a mode of growth, whilst also in a mode of protection. Under stress, your body shuts down your growth mechanisms. Also, your immune system is also your protection system. It doesn't protect you from lions and tigers, but it does protect you from bacteria and other pathogens.

So, the adrenal system is to protect you from things in your environment and your immune system protects you from microbial and viral attack. Because our immune system consumes so much energy, when our body is in fight or flight mode, with adrenaline in our system, our whole immune system shuts down.

When we are under stress, not only are you stopping your growth, you're shutting down your immune system. This system is so

effective, medical doctors use the same stress hormones to inhibit the immune system of patients that they graft tissues and organs into, in order to prevent the patient's body rejecting the donated tissue or organ. When you are under stress, you are opening up your body for an immunosuppressed attack.

Another interesting thing about this phenomenon is when your body is under stress, you stop using your mental thinking capacity and logical behaviour, in favour of the autonomous reflex behaviour. When your body is under stress, the viscera not only squeezes out the blood to the extremities, but the same hormone squeezes the blood from your forebrain toward the hindbrain, where autonomous reflex behaviour comes from.

My point is this: Under stress, you are less intelligent! Some people say that they are no good at exams, even though they know all of the answers they will suffer during an exam. The mental stress of the perceived outcome of the exam causes elevated adrenaline in your body, inhibiting the recollection of information you already know.

What does this mean in the world that we live in? Every time we turn on the news, be afraid of this, watch out for that, you should look and behave this or that way, you need to buy this new gadget; terrorism, war, financial crisis, fear of bankruptcy, fear of losing your job, fear of death or the death of a loved one. Our daily adrenal levels are so high, the fight or flight processes are continually active, which shuts off our body's ability to protect and heal itself. Our stressful lives are making us sick and slowly sending us into an early grave.

How we see life adjusts who we are. Our perception interfaces with our environment and our biology. Your perception is belief. Your beliefs act as a filter between the real environment and our biology. If you beliefs are not accurate, your body will select the genes that are inappropriate for your actual environment.

Keeping your perceptions clear, means that your biology will remain in balance with your environment, and the beautiful thing about life is that is has everything in it, including the answers to all of the questions. You can only see what your perception filters allow you to see. You were taught your perception filters by your parents and by

your schools. Some of you were re-educated by the books you read, by the programmes you watch on TV, or by the church you frequent, thereby, altering the polarity of your perception filters.

The amazing thing is that we can quickly remove these filters, which, for all of your life, may have interfered with your true understanding of life itself. You are all powerful. Knowledge is power. You and you alone have the power over your own life. You have the power over which genes you are going to express. You are not the victim of your genes and you are not a pawn in the unfoldment of the roadmap of your heredity.

See yourself as you really are. For every single one of us, it is a scary process to look deep inside and be honest with yourself. You cannot receive love until you learn to love yourself. If you are the best you, that you can be, then the world will love you back and the stresses of life will wash away.

Choose the person you want to be. Believe it. You will become that person, only if that becomes the true mental perception of yourself.

Gnothi Seauton: Know Thyself. When you truly know yourself, you no longer become afraid. Without fear, stress has no reason for being. When you accept yourself, your environment has no negative signals for change. When you love, you are happy. When you are happy, life has no negative signals. Happiness is the absence of want. Think back to the last time you were really happy. In that moment, you wanted for nothing.

If you want a belief system, you should believe in yourself. Want only for others. Perceive it. Believe it. Your biological capacity for change will make it so; for it is written in the genes, and you are still holding the pen.

CHAPTER 10

Nature's Fractals

We bought into genetic determinism for 60 years, believing that genes control our biology and control our lives. We bought this on a premise founded by Charles Darwin in 1859, that heredity traits control life. There was a search for what those heredity traits are, which led to the discovery of the DNA double-helix 60 years ago. The glove seemed to fit, so without scientifically determining that this was true, it was published in journals and spread by school teachers, thus into our curriculum. No scientist had corroborated this ever! Not only was this assumption wrong, but highly disturbing that as a consequence medicine has been based upon this understanding. We have been going in the wrong direction for so long.

Life is not controlled by our genes; it is controlled by our perception which controls genetic expression. We also know that the most important perceptions we have are in utero development, up to the first seven years of life.

Darwin evolution was the philosophical understanding that life evolved from the struggle of existence. Neo-Darwinism is an accepted extension of Darwin's work using modern data gained from cellular biology and the observed nature of molecules of DNA and RNA.

To summarise the Darwinian theory of evolution, we need to understand two central facts. The first; genes control life. We now know that to be false. The second; genetic mutations occur randomly. As a consequence of that, alterations in the genetic message occur randomly, suggesting that all mutations are just accidents. In fact,

Darwin's evolutionary theory says that life is the chance game of survival of the fittest, with spontaneous mutations, whereby the most beneficial chance mutation is carried on into the genetic gene pool via higher survival rates, introduced and perpetuated by its success and culled for its negative, sporadic changes by its unsuccessful appearance causing negative conclusions to the viability of an organism.

To be born into this world means that we are already viable. Our success or our demise is only ever down to our response to our environment. When Darwinism talks of 'natural selection', it states that nature of selection is the strongest and most viable of organisms make it at perpetuating life. "This is nonsense!" says neo-Darwinism. Nature targets the weakest elements to drop out of the picture, so they don't propagate these elements back into the population. Nature doesn't care who is the strongest! Nature couldn't care less about the survival of the fittest; it only selects to remove the weakest elements. This is the way that neo-Darwinism has redressed Darwin's earlier work on the life's history.

As it turns out, neither of these are correct. Nature only cares about what the whole group does in its interaction with the environment. It only cares about the symbiotic nature of the group as a whole. This is the understanding we have been missing! Why people still hold dear the precept of neo-Darwinian evolution today is beyond me, but it has been perpetuated by those who shouldn't, making them no better than those who peddle ancient literary alternatives based upon various religious canons.

If you start questioning or challenging neo-Darwinism, people have recently started tagging those that do with the sobriquet of 'creationist', which usually derives through the erroneous perceptions of their own misunderstandings. It is imperative that we understand the truth about life's perpetuation on Earth, as we are now facing the 6th great mass extinction event on this planet. The five previous mass extinction events that caused life to have to re-proliferate again from complex micro-organisms, have always been caused by natural events such as comets, meteors, supervolcanoes and other natural phenomena. This one that we are at the threshold of now is being caused by us. Not

only are we killing our environment, we are made in the image of that environment; in doing so, by destroying our environment we are destroying ourselves.

You are the community of 50 trillion cells living in harmony in your body. The community of 7 billion people on this planet is represented by our own bodies as a metastasising cancer, destroying the harmony of everything around us. Remember, everything in your human physiology exists in your cells, so it is an accurate comparison. We as a species can learn so much about the ecologically symbiotic balance of life from our own cells.

The membrane of our cells have a lipid barrier, which I used the analogy of being like a bread and butter sandwich to describe it. This waterproof barrier has protein antennas that allow food and signals in, and effectors which let waste by-products and response signals out. The tops and bottoms of this lipid layer of our cell walls have a charged polarity covering its surface. It is positively charged on the outside surface and negatively charged on the internal surface. This polarity top and bottom causes the lipids in the oil barrier between the polarised protein caps to align in one direction. This solution has micro-crystals aligned to the polarity of the cell walls, meaning that the lipid layer is in a liquid crystal solution. These crystals are aligned, but not connected; just like people standing in a cramped elevator. The crystals are solid crystals, but they are free to move and jostle about. Their structures are crystalline, but unlike salt, sand or diamonds they are held in a liquid solution. So, the foundation of the membrane is a liquid crystal display, just like your telephone or your computer screen.

The communications through these inner and outer layers of the cell's membrane actually acts as a semi-conductor. It doesn't let all signals through, only the signals it is designed to let in. It's not a non-conductor and it's not fully conductive; it's a semiconductor. The two protein types in the cell walls are the receptors and the effectors. These are the gates and channels of the cell wall.

As a theoretical computer scientist it is imperative that I understand the construct of computation and the processes involved in today's and more importantly, tomorrow's computers. I study the future

of computers, databases, algorithms, the analysis of the processes and results of those computations in the real business world and the socioeconomic business frameworks and sciences that allows me to do this; however, you don't need to be a theoretical computer scientist to understand the following: A microprocessor is a liquid crystal semiconductor with gates and channels. A microchip and a living cell have the same definition because they perform exactly the same function.

The channels of a silicon wafer that is formed to make today's computer microprocessors have insulator channels that are turned either on or off by positive and negative signals. When the gate is opened by an environmental electrical signal, the channel opens and passes the signal. This is exactly how your cells work! Outside our cells is negatively charged and inside our cells it is negatively charged, caused by the polarity of the inclination of the of the liquid crystal lipid layer. The processes are exactly the same as the microprocessor. In the cell, this is called the 'membrane potential', meaning that all cells are in fact batteries. They function by having this charge differential. This also means that the cell is a programmable chip.

The nucleus of the cell is the hard-disk. The genes are the programs. Just like your computer, the disk doesn't drive the machinery; you have to command it by external input. The membrane is the interface where the environmental signals are typed in. When typed on, the surface of the cell engages the set of functions out of the hard-drive. It is important to say at this point the cell wall does not resemble or behave like a chip. It's not an analogy. The cell membrane is a chip; an organic chip. The cell and the computer are the same in their components of computation: One being a silicon chip; the other, a carbon chip.

The membrane of the cell is the central processor as it takes all of the environmental signals and turns that into behaviour. The messages going through the receptors and effectors are the inputs and outputs; the binary language of your cells. Your cells can read a binary input, just like a computer. The surface of the cell wall is the keypad and the protein receptors are the keys.

This input-output is measured as a 'bit' of information. Different signals activate different keys. The nucleus turns out to be the disk. It's just the set of programs to make a human. Once the information is downloaded, you don't need the disk once the program is running. The three-dimensional image of the cell is the screen. The three-dimensional image of your body is your screen. The information that you respond to is expressed on your screen. The data of information is shown as a response in your bodies. This is what diagnosis is about in medicine. They can look at your screen and tell you what is being programmed. Your physical state is a readout of your program. Your readout is your cell's LCD monitor.

When we look at cells and see the peaks and troughs of all of those receptors and effectors, they each represent a 'bit' of information capacity. When we talk about the power of a computer, we speak about its data handling capacity. How many bits can your computer handle? Each generation of computer under Moore's Law has more bits of data handling power, so the evolution of the computer is defined in the increase of its data handling capacity.

The most spectacular and amazing revelation occurs when you look at the size of the receptors and effectors that traverse the lipid liquid crystal layer of the cell membrane and you will notice that in every cell, in all organisms, the cell membrane is exactly the same size. It's the same for humans, plants, bacteria and amoeba as it is the molecules that determine the thickness of the proteins in the cell. Because of this uniform thickness, the data capacity (receptors and effectors) can only be increased by adding more proteins to the surface around the area of the heads of the phospholipids. More receptors equal more awareness. This is the premise for evolution as it represents the expansion of awareness.

This for the first time in history gives us a mathematical construct to model evolution. More membrane surface equals more antennas. Evolution now has a mathematical correlation that we can now model using geometry. So, what geometry would you use? Well, the mathematical study of fractals, reveal that the repetitive branching-within-branching structure of a fractal represents the best way to get the

most surface area within a three-dimensional space. What this means is if I have a two-dimensional surface area like a cell membrane and I wanted to put it into a three dimensional space, I would have to use fractal geometry to get the most bits of data onto a cell.

At school, we are only taught Euclidean geometry. A dot on a piece of paper has no dimensions. A line drawn on a piece of paper has only one dimension. The paper itself (ignoring the thickness) is two-dimensional, and the solid shapes such as cubes, cylinders, tetrahedrons, cones and spheres are three-dimensional shapes. These all exist in whole dimensions which is Euclidean geometry.

If you ask a child to screw up a piece of paper into a ball, they would say it has length, breadth and height, so it must be a three-dimensional shape. This is incorrect; as if you cut the paper into a cross-section anywhere it only has two dimensions in what appears to be a three-dimensional space. Euclidean geometry only deals with whole dimensions, whereas the paper ball is actually two and half dimensions. It contains a fraction of a dimension which is fractal geometry. There is no fraction of a dimension in Euclidean geometry. Try and make a tree out of Euclidean geometry? You did it when you were 5 years old. A tree was a cylinder with a sphere stuck on top of it, drawn on two-dimensional paper as a thin, brown rectangle with a green circle on top. Nature doesn't build trees like this! Make a cloud, make a mountain, or make a fern using Euclidean geometry? Nope, can't be done! Nature builds life using fractal geometry.

Fractals are beautiful equations that when plotted out as shapes form extremely complex structures. The equations for fractal geometry are ever so simple. The program of life is very simple addition and multiplication. It is also extremely short. It is just a very simple iterated equation, meaning it is a simple sum, repeated over and over. If you have a number and perform the equation you get a result. Feed that result back into the equation and you get another result. A simple example: Take a line and cut it in half. Take that half and cut that in half. Repeat this again and again. This equation is infinite. The number never reaches zero because you are always halving a fraction of a

number. The number gets smaller into infinity, yet is never zero. Half of something can never be nothing.

Fractal geometry is an infinite geometry. Some famous fractals depicted with stunning visual kaleidoscopes are also simple equations. The 'Koch Snowflake' is a mathematical curve and an early example of a plotted fractal. It is also the fundamental way real ice crystals form snowflakes. Take an equilateral triangle and on every free surface create another equilateral triangle whose sides are the sum of the length of that surface. This equation builds the standard infinity snowflake by placing each equilateral triangle in the centre of the free surface. When building iterative ice-crystals, nature doesn't care whether each fractal is in the centre; that is not the equation. It can be anywhere on that surface on a sliding scale. It's this iterative chaos that gives us all of the different snowflakes that have ever been measured. This is chaos theory in practice bound by rules; otherwise known as organised chaos. This is also what forms the fingerprints on your hand and the reason why they are unique.

The first spectacular fractal depiction in colour was shown by IBM computers running the equation of a fractal known as the Mandelbrot set, named after the mathematician Benoit Mandelbrot. The Mandelbrot set is a mathematical set of points whose boundary is a distinctive and easily recognizable two-dimensional fractal shape. Mandelbrot set images are made by sampling complex numbers and determining for each whether the result tends towards infinity when a particular mathematical operation is iterated on it. Treating the real and imaginary parts of each number as image coordinates, pixels are coloured according to how rapidly the sequence diverges, if at all. More precisely, the Mandelbrot set is the set of values of c in the complex plane for which the orbit of 0 under iteration of the complex quadratic polynomial $z_{n+1} = z_n^2 + c$ remains bounded. That is, a complex number c is part of the Mandelbrot set if, when starting with $z_0 = 0$ and applying the iteration repeatedly, the absolute value of z_n remains bounded however large n gets. For example, letting $c = 1$ gives the sequence 0, 1, 2, 5, 26,…, which tends to infinity. As this sequence is unbounded, 1 is not an element of the Mandelbrot set. On the other

hand, $c = i$ (where i is defined as $i^2 = -1$) gives the sequence 0, i, $(-1 + i)$, $-i$, $(-1 + i)$, $-i$, ..., which is bounded, and so i belongs to the Mandelbrot set.

Images of the Mandelbrot set display an elaborate boundary that reveals progressively ever-finer recursive detail at increasing magnifications. The 'style' of this repeating detail depends on the region of the set being examined. The set's boundary also incorporates smaller versions of the main shape, so the fractal property of self-similarity applies to the entire set, and not just to its parts. The Mandelbrot set when visually zooming into it unto infinity creates a linear curve of chaos in infinitum. This chaos is unpredictable, yet abides by certain mathematical rules. This is the equation of nature.

These spectra of self-similar geometric images are the laws of nature in the physical world. The Earth and the biosphere are fractal images. The rocks, mountain ranges, plants, ferns, trees, clouds, and snowflakes are all examples of the spectrum of fractal geometry in nature.

Geneticists have cross-pollinated broccoli with cauliflower that gives us a non-chaotic fractal, just like the Koch Snowflake. This hybrid is called Romanesco Broccoli, characterised by its striking and unusual fractal pattern in its flower head. These are genetically engineered vegetables that are more resistant to disease, have better flavour and retain more nutrients during the cooking process. Geneticists are also doing this now with tomatoes to give bigger yields, more colour and flavour and a longer shelf life. The same is true of wheat, maize and oilseed rape.

People complain about genetically modified produce, but the reality is that we've been selectively cross-pollinating plants and selectively breeding animals for hundreds of years. Where do you think pedigree dogs come from, or where racehorses, modern tomatoes, strawberries, garlic, potatoes, carrots, peppers and modern rice cultivars come from? These are all genetically sequenced and selectively bred hybrids of the original wild variety of plants and animals. Modern wheat was cultivated and selectively sewn some 10,500 year ago. Wild wheat drops its ears as it reaches harvest maturity. Modern wheat has a

genetic mutation that holds onto its seed. In nature, this plant cultivar would not have survived if humans had not admired its new cultivation, transportation and storage niches, ensuring its proliferation all over the planet. With this in mind, is it really wrong to genetically engineer rice to have more protein, more carbohydrate and more vitamins, to grow faster and stronger and with much higher resistance to disease? All of these varieties are already in our food chain and have been for a very long time. Most people have no idea how much of their food is genetically modified.

We will need this wonderful scientific solution more and more as our limited agricultural land has to feed more and more people and animals year on year. The agricultural belt of land on the northern hemisphere cannot feed the 7 billion people on this planet adequately already, due to the greed and waste of 5% of the population. A massive 800 million people today are living under famine conditions without enough to eat, fighting for survival on a daily basis. A total of 3 billion people, more than 40% of the world's population does not receive enough nutrition from the food they do have access to, lacking essential micronutrients (vitamins and minerals) in their daily diets.

Over the next 60 years, our children will live in a world inhabited by 10 billion people. This same area of agricultural land, which is still being built upon, year on year, for all of these new inhabitants, has to feed another 3 billion people! It is not mathematically possible. The future solution relies on science to address this massive problem which I will discuss in more detail in the next chapter.

The relevance of fractals is that if you go up or down in scale, what happens below is also what happens above. The 'Rosetta Stone' discovered in Alexandria, Egypt, in 1799 is a stone tablet with three layers of text inscribed upon it. When archaeologists found this stone, they had no idea what all of the hieroglyphics meant that were written all over ancient Egyptian monuments. When they found this stone, about three foot high and two feet wide, they found three different languages on it. There was Greek at the bottom, Demotic in the middle and Ancient Egyptian Hieroglyphics at the top. When they interpreted

the Greek story, it was all about the ancient King and Queens of Egypt. When they interpreted the Demotic texts it happened to be exactly the same story. The intuitive leap was if the story below was the same as the story in the middle, then could the story above also be the same story? This one stone tablet allowed archaeologists to decipher all of the hieroglyphs of ancient Egypt. This was based on the precept of what is true below, so it is above. The relevance of this story has meaning in our biology. There is a human cell, there is a human being and there is human civilisation. You are made in the image of the cell. Everything you do is built into the cell. You are a cell reincarnate! But now we, us, you, me are all cells in a larger organism called humanity. The relevance is that if you understand the principles of life at a lower level, then we fundamentally know and understand the principles of life at the higher level.

Why do we need to understand this concept? We are destroying the planet because we have no plan. If I want to know what the plan is for life, then I can tell you exactly by looking at our own cells. You have 50 trillion citizens, with each cell living out its life as a single living entity. The 7 billion people on our planet pale into insignificance when compared to the cells in our bodies, yet they live in complete harmony. They are able to work together, they have energy exchanges with an exchange of ATP molecules; they support each other and they take care of each other. If you want to know the plan for life on this planet, then just look inside yourselves. All of the rules for your cells to live in harmony inside your body are the same rules that we need to live in harmony here on this planet.

Looking at atoms, molecules, our planet, our Sun and our Universe; everything is repeated on unfathomable scales both above and below the world in which we live. In every study of these levels such as cosmology, astronomy, biology, particle physics and quantum mechanics, they all talk about non-linear waves of energy and the interaction of linear particles. This is energy interaction with matter, yet everyone is caught up with what the particles are doing or what the waves of energy are doing. All of the truly amazing stuff is going on at the interface between the two! This is the chaos zone.

The Earth is a particle and the waves of the Sun hit the Earth. Where is all of the action taking place? The surface of our planet! Before there was life the chemistry we had on Earth was inorganic chemistry. This is the chemical non-life environment that seeks stability. A rock wants to be a rock, it doesn't want to change. Once pigments had evolved by the solar degradation of inorganic chemistry, these pigments were able to trap photons of light from the electromagnetic waves of radiation of the Sun. It takes the energy of photons and uses it to move electrons, whereby this process takes in inorganic chemistry, creating organic chemistry. We are all made of organic chemistry, so what does this mean? What this means is that we are all made out of the Earth and the Sun. We are all energised earth. Energised earth does not want to sit still. Energised earth is an active, organised, energised matrix. We are alive, so we represent both matter and energy.

If you think about it, we all come from Mother Earth and our Father is the Sun. It seems that without the anthropomorphic personification, all of the religions of the world have that bit absolutely right. In our own reproduction, the egg (the particle) is the information from our Mother and the sperm (the wave) is the information from our Father. The magic happens when the two meet at the interface. Whatever level you wish to look at it, life works at all these fractal geometric planes where the magic happens at the chaos zone.

In the beginning, there were primeval seas that acquired accretion of primordial nuclides which formed the elementary isotopes that readily bonded to any available free carbon. This formed the known amino acids, which over time formed the proteins that floated around in our seas, which over many millennia became rich primordial soups of proto-life structures suspended in situ. Oceanic volcanic vents provided enough heat energy and a carbon rich environment, along with the various chemicals necessary for proto-life structures to be able to attract the elements to perpetuate the proton exchanges that automated the process, thus creating the self sustaining environment we call life.

The phospholipids are self assembling structures, caused by the power of electromagnetic attraction due to the polarity given to it by the Sun and the Earth. The proteins that get trapped inside the cell causes the reaction to changes on the outside of the cell; however, the environment has stability on the inside which become regulatable domains for the single cells. With proteins, cells could now respond to different environmental signals causing reaction and awareness, thus new functions that can develop via the same power of proton gradients to attract like particles, which in turn allows single cells to develop into communities which collaborate to perform the same set of functions on a larger scale. This process is the harbinger of genetic evolution. This is the Genesis moment of life's inevitable perpetuation on Earth, acting as a biochemical template; the precursor of all subsequent life to come.

The cells we see today come together in communities called a biofilm. This is like a collection of bacteria that surround themselves within a membranous structure. Within that structure the bacteria exchange information, including DNA. There are different bacteria, so you take those different bacterial populations and put them inside a membrane that develop into specialised eukaryotic cells. Structures that on the inside appear to be bacteria, surrounded by a common membrane appear inside humans and all multicellular organisms which are called eukaryotes.

Look at these cells that exist in the human body. These cells live in communities and perform exactly the same function as the human embryo. It has an ectoderm, a mesoderm and an endoderm. We are made in the exact same image, repeated again and again. We are all megalithic communities of cells performing the biological function of the cells themselves. Each cell has a specific role to support the life of the whole organism. Civilisation is a living system comprised of us living as cells.

In our morphology you can see where we are in the line of evolution by the progress of humanity in relation to the evolution of vertebrates on our planet. In order we have fish, amphibians, reptiles, birds and mammals. So, where are we? First of all, the fish cultures in human evolution were called a Mariculture. The first civilisations that

lived on the planet lived at the edge of the continents, travelling across water, continent to continent, but they had to live near to a natural source of water for their survival. The next evolution for humanity was the amphibians. Amphibians were unique in the fact they could take the water with them to the land. They didn't depend on being near water anymore, so the amphibian age was agriculture. We were no longer restricted to the periphery, as we now had aqueducts and irrigation systems, enabling us to move into the land and populating it, just as amphibians did. After the amphibious period came the reptilian period, with their eyes, mouths, tongues and heads clicking and moving like machines that require external energy in order to move. These cold blooded animals are the industrial age, representing the mechanical machines of automated consumption and destruction.

Dinosaurs are the fullest extent of the machine of the reptilian age. A dinosaur and a lizard are exactly the same thing, except for scale. Evolution went astray when everything in the natural world was in equilibrium, as it was in that period where evolution changed the dynamic in a world full of excess with abundant resources. The cells of lizards were expanding their awareness, yet the environment remained the same. A five inch lizard moves its legs at the knee joint in only two directions, forward and backwards. This movement requires just ten muscles and one nerve to fire those muscles. In the case of a fifty foot dinosaur, the same movement required ten million muscles, yet still only one nerve. This is why the dinosaurs living in a world of very high carbon dioxide levels grew bigger and bigger. Having an abundance of food, no natural predators and living in a world of elevated carbon dioxide, thus reducing its relative metabolic rate, meant that dinosaurs could attain massive proportions and maintain the same way of life. They had very small brains, because the model hadn't changed; only the scale was bigger. The problem started when the environment changed and there wasn't enough awareness to adapt to the changing environment. The brain and body need to be in sync as the brain is awareness and the body is administration. The body handles all of the details of what the brain says it should do.

What happened with the dinosaur's demise was an imbalance where the awareness stayed small, but the administration got bigger. This is just like the world we live in today. Government, global finance, healthcare and education all have small awareness and massive amounts of administration. We are living in a dinosaur period in the world right now. The fuel that powers our civilisation today is fossil fuel. Isn't it ironic that the character of the dinosaur period we live in is fuelling our civilisation?

So, dinosaurs represent the industrial age. The birds came from that machine age. This started with Wilbur and Orville Wright over 100 years ago with the first powered flight. The aeroplane changed the entire planet because we can now connect anywhere, making the Earth a very small place to live. From the industrial age we entered into the age of aviation, changing profoundly the perspective we have about our planet. I have travelled around the world five times over. The fullest extent of this period was our civilisation landing on the moon. This gave us the 'Earthrise' picture that led us to ask ourselves the question, "What are we doing to our precious planet?" This represented a relatively small ball which is the only place we have to call our home. We must protect it at all costs. We must take care of our air, our land and our seas as we are destroying our own habitat. We are all shitting in our own back yards!

The next phase in our evolution is the mammal age. Mammals are the nurturers of this world. We are now faced with a choice. There was a time where dinosaurs, birds and mammals all lived together at the same time, just as we do today. What happened next was a crash of the dinosaurs. The meek, the mammals took over the Earth. The difference between reptiles and mammals are that reptiles are conscious and mammals are self-conscious. Reptiles live for the moment; they don't see the future as they can only see what is happening right now. Mammals plan what they do next; planning now so they can flourish in the future. The heads of our government are the willing participants that represent the height of reptilian thinking. Continuing our reptilian ways will be the end of humanity; the destruction of our civilisation.

The reality is that the dinosaurs will fall. Then we will all be faced with a choice. Be on the mammal side or be on the dinosaur side? This is extremely important as it is going to hurt exponentially more if you choose the dinosaur side. The changes that are occurring at the moment will no longer support the way we are all living right now. Until humanity as a whole understands that we have to take care of ourselves, each other and our planet, we will not survive on this Earth. The extinction event we are going through right now is a representation of this character.

Reading this means that you have already started making changes by wanting to know more about yourself and how you involve yourself when interacting with others on this planet. We are the meek and our time will come. This knowledge represents the key to our survival. We will not survive reptilian thinking. Why? Evolution is fractal in its imagery.

The evolution of the Earth once it's fully evolved will resemble the cells in our bodies. The Earth is a cell and you and I are the proteins in the membrane of that cell. We are the perception units in the membrane; the skin of our planet. We receive awareness and we turn that into behaviour and life on this planet. When we start to see this image right as a civilisation, our planet and our humanity will survive.

All of us on this planet are individuals; you have a name and an identity, yet you have something more than that. Your cells know you and you have your own unique brand. Nobody else has this brand but you. If you took my cells and put them into your body, your body would reject them. Your body understands not-self.

Where is self, what is self? What makes you, you and what makes me, me? Your liver cells and my liver cells contain the same information inside them as the enzymes are exactly the same. So, why won't my liver transplant into yours? We know the nucleus is different as it contains the individual genes. The difference is the receptors on the membrane of the cell. If I put your nucleus into my empty cell, it has all of the working parts, proteins and organelles to function properly and will be viable as a single living organism, yet your body will still reject it. These uniquely branded receptors are called 'Self

Receptors'. It is what your body uses as a signature to make sure that you are you. These histocompatibility receptors are the HLA antigens. The human leukocyte antigen (HLA) system is the name of the major histocompatibility complex (MHC) in humans. This group of genes resides on chromosome 6, and encodes cell-surface antigen-presenting proteins and has many other functions. The HLA genes are the human versions of the MHC genes that are found in most vertebrates (and thus are the most studied of the MHC genes). The proteins encoded by certain genes are also known as antigens, as a result of their historic discovery as factors in organ transplants. The major HLA antigens are essential elements for immune function. These self receptors are receivers of self. If I was to take my self receptors off of one of my cells, that cell will become generic. I can implant this cell into any human and it will never be rejected. As it has no identity, I could conceivably put this cell into a mouse and that mouse won't reject the cell either.

If I take my cell with my receptors and put it into your body, it will be rejected. If I take my cell and add your receptors it will be accepted. I transfer ownership of that cell by simply transferring the antennas. It is the antennas which are self. Antennas are antennas; they are the receivers of a signal. Your antennas complement a signal out here in the world. Your identity is the receptors on the surface, reading an environmental signal that is unique to you. If I take that signal and transfer it into somebody else's cell, then that cell becomes your cell because that signal is going to control the cell. It is the signal that comes in from outside that gives it identity. If I was to put your receptors onto an embryo, that embryo is you. If I now add your nucleus, it has all of the information to make an exact copy of you. It is your clone. Not an identical twin, not someone who looks just like you, it is you!

What if I don't add the nucleus? Do you need to look like you to be you? I didn't say if the embryo is male or female. I didn't say if the embryo is black, white, Asian, Amerindian, Aboriginal, Jewish, Arab, Indian, Pakistani, Persian, Baltic, Semitic, Slavic, Nordic, Scandinavian, Hellenistic, Germanic, Prussian, Caucasoid, Mongoloid

or Afro did I? It is still you. Humanity in all of its differences is not only the same genus but also the same species; there are no sub-species. We are all genetically homogenous.

People say that Rooks, Ravens, Crows, Magpies, Jackdaws, Jays, Nutcrackers, Choughs and Treepies are all the same family of birds. They are! They belong to the family of Corvidae. These corvids share the same genus, yet they are all different subspecies as their genetic similarities are much further apart. In humans as a single species, this receptor transfer can take place between all variations in our humanity because at a cellular level we are all one and the same. The identity and the body are two different things.

If in the future the same receptors that you express now appear upon an embryo years after you die, guess what? You are back online! It is like you never died.

Due to the proliferation of heart and lung transplants today, people are starting to take on traits from the donor of those organs. The drugs we use which recipients of transplants have to take for the rest of their lives, mask most of this biological communication to prevent organ rejection. There was a young girl who was murdered. Her heart was transplanted into another person. That other person was successfully able to identify the donor's killer to the police. It lived; it knows!

So, you may think that the cells are recalling the memory? The brain is in the membrane of the cell. It does not have the capacity to distinguish the difference between a cheeseburger and beer from anything else in the world. The memory is not in the cell, the memory is in the field of energy. Our life is a broadcast and our bodies are a television set. We have antennas, we receive the signal. When the picture goes on your television you say the TV is dead. Yes, the TV is dead, but did the broadcast stop?

Go and get another TV set and plug in and turn it on. You have to do one more thing; tune it to the right station. When you hit the right frequency, boom; it's back!

We are immortal. We don't even live in this system. Our bodies are a system for us to come into and live out life. So, if we live out

there, why do we have bodies? If we are just spirit, what does chocolate taste like, what does a sunset look like, what does being in love feel like? It is our cells that take that environmental information and translate that into an awareness that I can understand. This is why humanity has a need for religion. To try and make sense of everything we haven't been able to comprehend until now. God is the metaphorical answer to the historical questions that we could not fathom.

The real world is converted into electromagnetic vibrations that we can pick up. We are only reading the energy; we're not reading the chemistry! We're not really seeing the light, we're reading the energy emitted from it. Your physical body is a device to sense the world. It is a device to be on this Earth and create a world. If anybody has the fondest notion of what heaven is and is looking elsewhere, then I think you have missed the point. Your opportunity to live here was to come here and create what you thought would be created for you in heaven. Just because it might look like hell, it's only because you bought other people's creations. You have the opportunity to take over your own life and create your life as you see fit. If you were given a blank slate knowing this information, you can create anything you want on this planet, including that dream you thought heaven was. It's your dream, you can create it here. We are all cells in the organism of humanity; only our education is incorrect. We have to re-educate ourselves with the facts of life in order to let go of the history of our past, which created limitations and self-sabotaging belief systems. It is the letting go and starting again with a blank page, saying to ourselves, "What do we want from here as a civilisation?" Not who did what to whom back then. Humanity in its infancy has really wasted a lot of time. The moment you close this book, heaven will be available to you right now.

CHAPTER 11

Tomorrow's World

Science holds the key to the advancement of humanity by affording us the luxury of our ever increasing wisdom as we strive to pursue the improbable. Every answer that the truth has historically given us throughout our history has turned out to be not magic. Anything but the mystical wonders that ancient man told us was the truth. With an open mind and head full of universal truths, we are armed with the tools to take on any notion and extrapolate the truth from the burning questions that remain unsolved.

There are imminent issues that we face as the population of this planet continues to explode. We can no longer be veracious consumers anymore and we must face the impending challenge of feeding billions more people on this planet. Dutch water farms feed most of Europe today with its vegetables, which are all grown for the supermarkets on giant floating rafts. These rafts of multi hectare aquatic farms, sit under thousands of kilometres of polytunnels that house every type of salad greens, root vegetables, vines, legumes, squashes and soft fruits, all grown upon automated floating nurseries with only a small food pellet for nutritional sustenance. The food is artificial, the light is very often artificial or extended into night time and the growing season is very often cut down from anywhere by one third to one half. This provides beautifully presented, uniform crops that retain very little of the plant's capacity for best flavour, and best nutrition.

This is the way of multinational conglomerates and their monopoly of the food markets, which means produce is created in half

the time, with less waste, less labour, less cultivation costs, less transportation costs and uniform production with quantifiable profits, greater than ever before. This is industrialisation of our food on a global scale, yet we still don't produce enough quality food to spread to every man, woman and child in the land. This happens because of the nature of consumerism, where the holding companies demand ever increasing profit margins to make next year's books appear better than before. This allows companies to speculate more borrowing to fund even bigger projects that will guarantee the snowball effect of consumerism. It is a flawed system that only benefits the very rich stockholders of those companies. The people who can make a real difference in this world are unfortunately tied into the consumerism system as no other way is catered for, so shunning the system is detrimental to your way of life, meaning that you will have to go without. This is also part of the design of the system.

It looks like the future of the great food problem, like it or not, lies in 3D printed food. NASA are already talking about the benefits of creating 3D printed food for astronauts as a future exercise and several big companies are looking into studying this as an option. Although in its infancy, 3D printed food will become a way of life in our future as the raw materials to produce the food we need in our lives can be readily supplied without growing anything in a greenhouse. Proteins can be created in a machine or in bulk in a factory that can be compiled as and when it is needed to create any food we desire. The technology to create this exists today, but the cost of viable production for the masses is prohibitive for at least the next decade. After this, as things are in a consumerist society, only the very rich will be able to afford this technology, with a decade or two in between before this technology becomes mainstream. Flavinoids will become hot property as they will become branded and copyrighted as the technology matures and everyone wants a piece of the financial pie.

The biggest crisis we have currently other than poverty, pestilence and disease in the third world is the energy crisis. The fact that we have a third world, means there exist emerging markets. Very soon, all of these emerging markets will be simply 'the market', as

there will be no more markets to emerge. One of the greatest redressing of world markets will be the tilting of the scales in technology and manufacturing. Emerging markets in India, Korea and China will be the driving force in automotive and white goods industries. The Middle East will take the majority of the tourism markets with amazing spectacle the westernised world can only dream of. The western world has become fat, lazy, uninspiring and above all greedy for markets to flock to them in droves. The world is redressing the balance, as the sweatshops and slave labour used to create the cheap goods of yesterday, are the skilled workers; who understand the nature of manufacture on a global scale; start to look after their own and harbinger their own tech start-ups that the Western world cannot start to compete with. This is the balance that awaits us all whether we like it or not.

Middle Eastern Emirates and Kingdoms such as Qatar, Saudi Arabia, Bahrain, Oman and the UAE are all investing heavily in clean energy and tourism like no other place on Earth. Qatar has several government sponsored foundations to become the forefront of Solar Energy production, redressing the huge oil and gas reserves it refines for world markets.

Britain is leading the way into Graphene based research. Graphene is an allotrope of carbon. In this material, carbon atoms are arranged in a regular hexagonal pattern. Graphene can be described as a one-atom thick layer of the mineral graphite, whereby many layers of graphene stacked together effectively form crystalline flake graphite. Amongst its other well-publicised superlative properties, it is very light, with a 1-square-metre sheet weighing only 0.77 milligrams.

In essence, graphene is an isolated atomic plane of graphite. From this perspective, graphene has been known since the invention of X-ray crystallography. Graphene planes become even better separated in intercalated graphite compounds. In 2004, physicists at the University of Manchester and the Institute for Microelectronics Technology, Chernogolovka, Russia, first isolated individual graphene planes by using adhesive tape. They also measured electronic properties of the obtained flakes and showed their unique properties. In

2005 the same Manchester Geim group together with the Philip Kim group from Columbia University (see the History section) demonstrated that quasiparticles in graphene were massless Dirac fermions. These discoveries led to an explosion of interest in graphene.

Since then, hundreds of researchers have entered the area, resulting in an extensive search for relevant earlier papers. The Manchester researchers themselves published the first literature review. They cite several papers in which graphene or ultra-thin graphitic layers were epitaxially grown on various substrates. Also, they note a number of pre-2004 reports in which intercalated graphite compounds were studied in a transmission electron microscope.

The isolation of graphene led to the current research boom. Previously, free-standing atomic planes were often "presumed not to exist" because they are thermodynamically unstable on a nanometre scale and, if unsupported, have a tendency to scroll and buckle. It is currently believed that intrinsic microscopic roughening on the scale of 1 nm could be important for the stability of purely 2D crystals.

Graphene is touted to become the next big thing in literally hundreds of applications around the world due to its unique properties. Graphene differs from most conventional three-dimensional materials. Intrinsic graphene is a semi-metal or zero-gap semiconductor. Some of the most important technology to benefit from graphene research will be microprocessor technology, semiconductor technologies, digital storage, optical lenses, sensors, cameras, supercomputing, quantum computing and telecommunications. Graphene is set to replace the market held for so long by silicon.

A team of scientists at Nanyang Technological University (NTU) in Singapore has developed a new image sensor from graphene that promises to improve the quality of images captured in low light conditions. In tests, it has proved to be 1,000 times more sensitive to light than existing complementary metal-oxide-semiconductor (CMOS) or charge-coupled device (CCD) camera sensors in addition to operating at much lower voltages, consequently using 10 times less energy.

The new sensor is able to detect broad spectrum light, from the visible to mid-infrared, with great sensitivity. This will make it ideal for use in all types of cameras, including infrared cameras, traffic safety cameras, satellite imaging, and more.

Why is this so exciting for the photography industry? Camera ISO is one of the three pillars of photography (the other two being aperture and shutter speed). In simple terms, ISO is the level of sensitivity of your camera's image sensor to available light.

The majority of people taking pictures have probably never adjusted the ISO setting on their cameras so here is an explanation. Essentially, a lower ISO setting reduces your cameras sensitivity to light creating higher quality images, while a higher ISO number increases sensitivity and your camera sensor can capture images in low-light environments without having to use a flash. But higher sensitivity comes at a cost; it adds grain or "noise" to the pictures. Not all grain is bad and we often see creative uses of it in black and white photography. But if you are a sports photographer shooting in a poorly lit indoor stadium, in order to freeze action, you have to shoot with a wide aperture and reduce the shutter speed. The only way to do this is to increase ISO and live with the resulting grainy pictures.

Canon and Nikon in particular, have been battling each other to develop the highest ISO levels with the least grain since the beginning of digital photography and no doubt "wires are buzzing" with these new developments. What may be the ultimate heat sink is only possible because of yet another astounding capability of graphene. The one-atom-thick form of carbon can act as a go-between that allows vertically aligned carbon nanotubes to grow on nearly anything. That includes diamonds. A diamond film/graphene/nanotube structure was one result of new research carried out by scientists at Rice University and the Honda Research Institute, USA. The heart of the research is the revelation that when graphene is used as a middleman, surfaces considered unusable as substrates for carbon nanotube growth now have the potential to do so. Diamond conducts heat very well, five times better than copper. But its available surface area is very low. By its very nature, one-atom-thick graphene is all surface area. The same

could be said of carbon nanotubes, which are basically rolled-up tubes of graphene. A vertically aligned forest of carbon nanotubes grown on diamond would disperse heat like a traditional heat sink, but with millions of fins. Such an ultrathin array could save space in small microprocessor-based devices. Testing found that the graphene layer remains intact between the nanotube forest and the diamond or other substrate. On a metallic substrate like copper, the entire hybrid is highly conductive. Such seamless integration through the graphene interface would provide low-contact resistance between current collectors and the active materials of electrochemical cells, a remarkable step toward building high-power energy devices. Whatever the future holds for graphene and the myriad applications it can and will be used for, you will certainly be hearing much more about this wonderful material that will aid in the continued advancement of technology.

A group of researchers from the U.S., Finland, Germany, and Japan worked with the U.S. Department of Energy to develop a way to turn cement into liquid metal. The groundbreaking new process transforms liquid cement into a glass-metal hybrid that's good at conducting heat and electricity. The researchers believe the material could be used for liquid-crystal display screens. The new substance could easily be used as a semiconductor in electronics because it possesses very good conductivity, low energy loss in magnetic fields, better resistance to corrosion than traditional metal, less brittleness than traditional glass, and fluidity for ease of processing and moulding. Mayenite is a rare calcium aluminium oxide mineral; its main feature is cubic symmetry. The team melted the substance at 3632 degrees Fahrenheit using carbon dioxide laser beams. They then took the liquid that was produced and processed it under several different environments so that they could control the way oxygen bonded the glass.

The group developed a technique for suspending the material using an aerodynamic levitator that held the hot liquid in the air. This was to protect the liquid from touching the surface of the container and forming crystals. While in the air the liquid cools and produces the glass-like state that is able to trap electrons for conduction. This is

certainly one very exciting avenue for the tech geek lurking inside all of us.

One of the biggest problems since the dawn of industrial age is the way that humanity has endeavoured to create more and more energy to move more and more matter further and further distances. Every day we find new ways of expending more energy in our daily lives. Rockets, space travel, our transport infrastructure, the world's electricity grids and networks, food production, digital media and entertainment, and home heating and lighting all require massive amounts of power. Even though our light bulbs get more economical and our cars get more economical and our computers get more economical; each and every day we consume more and more energy, by the food we eat, the construction methods we use, the packaging we acquire, the creature comforts of modern day living means that year on year, we as a population consume more and more energy at alarmingly ever-increasing rates.

Mankind for the last 150 years has endeavoured to manipulate matter by using vast amounts of energy. Over the next 150 years, mankind will learn how to manipulate energy using the least amount of matter. Our survival as a rapidly expanding species means that we desperately need to quickly understand being more economical and using quantum physics is the key to understanding where we go next. We know that theoretically, we have the potential to create things that only a few years ago was the stuff of science fiction. Our best particle physicists are planning the next wonders of the age, and to my mind, every one of them deserves a medal for their insight, tenacity, and true inspiration in this modern age.

Stanford University scientists have developed an advanced zinc-air battery with higher catalytic activity and durability than similar batteries made with costly platinum and iridium catalysts. The results could lead to the development of a low-cost alternative to conventional lithium-ion batteries widely used today. There have been increasing demands for high-performance, inexpensive and safe batteries for portable electronics, electric vehicles and other energy storage applications. Metal-air batteries offer a possible low-cost solution.

Most attention has focused on lithium-ion batteries, despite their limited energy density (energy stored per unit volume), high cost and safety problems. With an ample supply of oxygen from the atmosphere, metal-air batteries have drastically higher theoretical energy density than either traditional aqueous batteries or lithium-ion batteries. Among them, zinc-air is technically and economically the most viable option.

Zinc-air batteries combine atmospheric oxygen and zinc metal in a liquid alkaline electrolyte to generate electricity with a by-product of zinc oxide. When the process is reversed during recharging, oxygen and zinc metals are regenerated. Active and durable electrocatalysts on the air electrode are required to catalyse the oxygen-reduction reaction during discharge and the oxygen-evolution reaction during recharge. In zinc-air batteries, both catalytic reactions are sluggish. A combination of a cobalt-oxide hybrid air catalyst for oxygen reduction and a nickel-iron hydroxide hybrid air catalyst for oxygen evolution resulted in a record high-energy efficiency for a zinc-air battery, with a high specific energy density more than twice that of lithium-ion technology.

At the start of 2013, a research paper was submitted to the *Astrophysical Journal* and made public about the discovery of 15 new planets, which add to the dozens of potentially habitable candidates out there. To travel to these planets in any meaningful time requires science to overcome the problem of the vast distances in the universe. Even the closest exoplanet found so far is four light years or 24 trillion miles away. Recent developments have NASA starting a laboratory called *Eagleworks* to develop interstellar warp drive technology. One idea they have is to create warp engine that enables faster-than-light travel. If this sounds all too Star Trek, it’s because the proposed warp drives are directly influenced by the cult sci-fi series.

However, there's a loophole in Einstein's general theory of relativity that could allow a ship to traverse vast distances in less time than it would take light. The trick? It's not the starship that's moving; it's the space around it.

In fact, scientists at NASA are right now working on the first practical field test towards proving the possibility of warp drives and faster-than-light travel. According to Einstein's theory, an object with

mass cannot go as fast, or faster than the speed of light. The original "Star Trek" series ignored this "universal speed limit" in favour of a ship that could zip around the galaxy in a matter of days instead of decades. They tried to explain the ship's faster-than-light capabilities by powering the warp engine with a "matter-antimatter" engine.

Antimatter was a popular field of study in the 1960s, when creator Gene Roddenberry was first writing the series. When matter and antimatter collide, their mass is converted to kinetic energy in keeping with Einstein's mass-energy equivalence formula, $E=mc^2$. In other words, matter-antimatter collision is a potentially powerful source of energy and fuel, but even that wouldn't be enough to propel a starship to faster-than-light speeds.

Space doesn't have mass and we know that it's flexible: space has been expanding at a measurable rate ever since the Big Bang. We know this from observing the light of distant stars; over time, the wavelength of the stars' light as it reaches Earth is lengthened in a process called redshifting. According to the Doppler Effect, this means that the source of the wavelength is moving further away from the observer. Alcubierre used this knowledge to exploit a loophole in the universal speed limit. In his theory, the ship never goes faster than the speed of light; instead, space in front of the ship is contracted while space behind it is expanded, allowing the ship to travel distances in less time than light would take. The ship itself remains in what Alcubierre termed a "warp bubble" and, within that bubble, never goes faster than the speed of light.

Since Alcubierre published his paper "*The Warp Drive: Hyper-fast travel within general relativity"* in 1994, many physicists and science fiction writers have played with his theory; including "Star Trek" itself. Alcubierre's warp drive theory was retroactively incorporated into the "Star Trek" mythos by the 1990s TV series "*Star Trek: The Next Generation."* In a way, then, "Star Trek" created its own little grandfather paradox: Though ultimately its theory of faster-than-light travel was heavily flawed, the series established a vocabulary of light-speed travel that Alcubierre eventually formalised in his own warp drive theories.

The Alcubierre warp drive is still theoretical for now. The truth is that the best ideas sound crazy at first. The first step towards a functional warp drive is to prove that a "warp bubble" is even possible, and that it can be artificially created. That's exactly what physicist Harold "Sonny" White and a team of researchers at NASA's Johnson Space Centre in Texas are doing right now. According to Alcubierre's theory, one could create a warp bubble by applying negative energy, or energy created in a vacuum. This process relies on the Casimir effect, which states that a vacuum is not actually a void; instead, a vacuum is actually full of fluctuating electromagnetic waves. Distorting these waves creates negative energy, which possibly distorts space-time, creating a warp bubble.

To see if space-time distortion has occurred in a lab experiment, the researchers shine two highly targeted lasers: one through the site of the vacuum and one through regular space. The researchers will then compare the two beams, and if the wavelength of the one going through the vacuum is lengthened, or redshifted in any way, they'll know that it passed through a warp bubble.

The new lab at Johnson Space Centre is seismically isolated, so the whole floor can be floated. White is now working on recalibrating the laser for the new location. He wouldn't speculate on when his team could expect conclusive data, nor how long until fully actuated warp travel might be possible, but he remains convinced that it’s only a matter of time.

Astrophysics researchers from the University of Sydney, Australia, published a paper in Physical Review D in March 2012 about its catastrophic side effects. The researchers conclude that not only would a spaceship require shields to protect its crew from dangerous particles moving towards them, but light particles or anything else that’s picked up during the ship’s journey would be deposited at its destination as high-energy particles. Any people at the destination would be gamma-ray and high-energy-particle blasted into oblivion. Now, they plan to analyse this problem in more detail, which may involve parallel computing to simulate the warp physics in various space-time dimensions.

The Sydney-based researchers looked at three different scenarios: a warp bubble at a constant velocity, a warp bubble on a one-way trip, and a warp bubble on a round trip. From their calculations, a ship travelling at a constant faster-than-light, superluminal velocity would have the largest destructive result on a destination, also destroying the ship in the process. Realistically, the large build-up of energy at the front of the ship would almost certainly disrupt the warp bubble before it became too ridiculous.

The most devastating journey when comparing a one-way trip with a round trip would be the round trip, with the ship's origin point receiving the most destructive blast of high-energy particles, picked up as a ship makes its way back from the destination to its origin.

These damaging particles are in a region in front of the warp bubble called P+. Space-time is compressed at such a high-rate that more space-time is compressed than light particles can travel through in the same time period, meaning that any particles caught here are trapped, while increasing in energy.

The burst or beam of explosive energy is a result of the ship decelerating from faster-than-light to sub-light speed, depositing a large number of high-energy particles in a very short space of time. This is similar to high-energy particles impacting our atmosphere, higher than anything created in the Large Hadron Collider at CERN, near Geneva, Switzerland.

Compared to the distances between stars, lightspeed is slow. The neighbouring star system nearest to us (Alpha Centauri) is more than four years away at light speed (as measured from the perspective of an external observer). The nearest habitable planet might be anywhere from 25 light-years to 200 light-years away, and to consider meeting new aliens for each week's episode, our ship would need a cruise speed of at least 25,000 times light speed.

Wormholes and warp drives; approaches to FTL flight are theoretically possible, but the theory has not yet advanced to guide their construction. These theories are based on Einstein's theory of general relativity. The ongoing progress mostly focuses on the energy conditions; how to lower the energy required and how to create and

apply the required "negative energy." One conclusion we have already found is that wormholes are more energy-efficient at creating FTL than warp drive. Quantum physics also presents tempting phenomena relevant to FTL questions. A number of phenomena, such as tunnelling and entanglement, fall under the header of ‘quantum non-locality’.

Picture your favourite fictional starship, where the crew is walking around normally, as if in a studio back on Earth. This means that the ship is providing a gravitational field for the comfort and health of the crew; in the middle of deep space where such fields do not exist. This would be a profound breakthrough! This hugely important feature often gets neglected in the shadow of the difficulty of achieving FTL. It is so ubiquitous in science fiction that many people do not even realise it’s there and the extent of its implications. Unfortunately, it does not yet have a cool-sounding name to help champion and convey its essence.

Given such an ability to create acceleration forces inside a spacecraft, it is not much of a leap of imagination to suggest that forces could be created outside a spacecraft too, thus moving the spacecraft through the universe. Such a nonrocket space drive would be a profound breakthrough. The physics of being able to manipulate gravitational and inertial forces also implies the ability to have "tractor beams" for moving distant objects, "shields" to deflect nearby objects, plus the ability to sense properties of space-time that we cannot yet even fathom. Researchers have published more than one way to generate such acceleration fields, and both methods are theoretically consistent with Einstein's general relativity.

Interstellar flight; even when in the context of foreseeable technology requires enormous amounts of energy, more prowess than humanity has yet achieved. On "Star Trek," they use matter-antimatter to provide energy (antimatter is existing physics), by fully converting matter into energy. Think Einstein's $E=mc^2$. Our fantastical spacecraft will need at least that much energy, perhaps more.

Nuclear power is a reality that, if used for spaceflight, would greatly increase the extent of space activities using foreseeable technology. The power levels required for FTL flight, values which

were once astronomically high, have improved with continued research to where they are now just fantastically daunting. Other science fiction has cited quantum zero point energy as an ample energy source. Though quantum vacuum energy is rooted in credible theoretical and experimental approaches, this research is still too young to answer the hopes and wishes for ample energy conversion. Today, minuscule energy conversions are possible using tiny electrode gaps. Though these experiments are not energy extractors, they do serve as excellent tools to empirically explore this young topic in physics.

Although trends indicate that humanity is becoming more peaceful, overall, there is growing concern that this challenge might turn out to be harder than creating the new physics for FTL and controllable gravity. The good news is that this is something we can all work towards by being more thoughtful about how each of us chooses to resolve conflicts of views, wants and needs. Theoretically, faster than light space travel remains possible. How soon we can build and master such technology will slowly unfold over the next half century.

We are entering a brave new world, full of discovery and excitement. It is this discovery that makes mankind truly unique and very special in this world. First we need to address the current energy problems we face today. We can become masters of energy which is the key to discovering realms of other worlds and potentially other civilisations. Deep space travel would also give us almost endless supplies of natural resources from the depths of the interstellar regions of our universe. For now they are dreams. These are dreams that humanity has had since to the dawn of civilisation. Our drive to reach for the stars has only just begun, but the fate of mankind will ultimately need to terraform new homes upon far reaching planets. To rule the heavens we need to master living on our own planet. We cannot be trusted with the unlimited resources of time and space until we learn to economise with the limited resources we already have.

This is not talk of science fiction. This is open discussion and ferment of today's theoretical potential as seen through the young, naive eyes of our own humanity. A child cannot be expected to think like an adult until it has come of age, with all of life's learning curves

building a picture which comes into focus when we most need it. Before we try to run, we need to learn how to walk. Our technological adolescence will be humorous to future generations. In retrospect, these texts may be seen as insightful, but it is merely an act of logic. We should be humble in our discovery as we should be mindful of where this places us in history and we should develop the foresight to be able to marvel at our own potential in the greater scheme of humanity. The story of our future begins now. What will you do with your life to aid the steering of our humanity in the right direction?

CHAPTER 12

Greater Antiquity

The ancient texts from hundreds of our world's religions say it is such a privilege to be born into this world unto a human body. As many times before in human history, we are at a precipice; teetering upon, plummeting into an abyss of profound change. It is evident that we are now faced with a choice on whether that change is one of growth, or do we let our decision be one of wanton destruction?

Human history is shouting back at us. It has left us breadcrumbs; markers in time which show us traces of a lost civilisation. We are a species with amnesia. We have throughout our long and winding history, forgotten our roots. In many ways, mankind is showing signs of being totally lost. We live in a society that invests huge amounts of money and vast quantities of energy to ensure that we all stay lost: a society, at least in the western world that invests in creating unconsciousness; keeping us asleep so we are quietly obedient, passive producers, who never ask questions about our own locked-in syndrome of pacifistic acceptance.

As pacifists who accept life in the framework passed to us by the culture into which we are born, this journey of our past and the subsequent understanding of these truths in our history becomes a very liberating process, once you've embraced what it really means to us all in terms of ourselves, living out our daily lives.

Earthrise is a name given to a photograph of the Earth by astronaut, William Anders, on 24th December, 1968, during the lunar

orbit of the Apollo 8 mission. It is the most reproduced photograph of all time. In 1990, as the Voyager 1 spacecraft from a record distance of about 6 billion kilometres (3.7 billion miles) from Earth, NASA turned its cameras around at the request of famous astronomer, astrophysicist and cosmologist, Carl Sagan, taking a picture of Earth. That image of Earth was represented by a 'Pale Blue Dot', as the image subsequently became known as; shown as a tiny dot, just 0.12 pixels in diameter. These two images have done more to compel the conservation movement that exists today, than any other. This mental image paints a dramatic picture of how very small and insignificant our home is in the vastness of our own very small and insignificant solar system, in the context of our Universe.

This is where the word 'ecology' had even more meaning, giving rise to movements of a greater understanding of how finely balanced the processes of life are on our tiny planet.

Environmentalism, as a new science has historically been seen as a hippy movement and a scaremongering pseudoscience. In fact, any movement with the word 'mental' in its title is frowned upon. One is tagged with the sobriquet 'Environmentalist', if you speak about or share scientific data concerning global warming, rising sea levels and the monitoring of its seasonal, arctic pack ice; Icelandic and Antarctic ice-sheets and glaciers as well as any mention of the predictions of the rate in monitoring of runaway greenhouse gasses such as methane or carbon dioxide, and its subsequent effects on acidification and sequestration of the oceans; also, the global temperatures and global solar luminosity readings that have an effect on climate, temperatures, humidity, oxygenation, algae blooms, jet streams, ocean currents, soil quality, biomass, desertification, marine biology, extinction rates, river levels and chemical quality, extreme weather events and the stability of methane clathrates in our tundra.

At the peak of Earth's last interglacial period, just 21,300 years ago, the world looked very different. There were gigantic ice-caps covering most of North America, Russia, the Nordic and Baltic States, Scandinavia and Northern Europe. An ice pack two miles deep, ground everything it touched over time to dust.

There was no Red Sea or Arabian Gulf, and the Indian coastline was greatly extended with Sri Lanka joining its tip. South East Asia was a whole continent, now under water, reduced to just a Malaysian Peninsular and the Indonesian Islands. Altogether, 10,000,000 mi^2 of land were above water, which today now lies submerged. That is the equivalent landmass of Europe and China combined. This transition from the end of the last glaciation period 11,700 years ago, to today's landmass is a serious change. This was a change that unfolded over a period of 10,000 years, yet sometimes, not always gradual. Great cataclysmic events occurred numerous times over this period, whereby humans in these areas would have been witness to the destruction of their land, if they were lucky enough to survive.

Glacial lakes of meltwater would pool inside these massive ice sheets that would be enclosed by giant ice dams. These glacial lakes would form over thousands of years before the edges of the dams would eventually give way, releasing gargantuan amounts of water into the surrounding land. One such huge explosion happened in North America in a lake named Agassiz, part of the Wisconsin Glaciation which was more voluminous than all of the Great Lakes of North America today. It covered most of Manitoba, large parts of Saskatchewan, Northeast Ontario and parts of North Dakota and Minnesota, bursting its ice frontier, releasing all of its contents in a two mile high wall of water, travelling right across North America at speeds of 1000kph (620mph), destroying everything in its path. Not only are Lake Manitoba and Lake Winnipeg and several others, remnants of this ancient lake, but 1,400,000kms^3 (336,000mi^3) of freshwater instantaneously spilled into the oceans, raising sea levels overnight by 4m (13ft). The ensuing effects of this volume of freshwater spilling into the oceans turned off the mechanisms of the Gulf Stream Current, plunging Europe back into another ice age for 900-1000 years. This surge of freshwater prevented the cold, dense water that drops its heat from the Gulf of Mexico to Northern Europe, hitting the cold waters of the Arctic, thus, its colder, saline water, much more dense, sinks to the ocean floor, pulling around 19kms^3 of water per second!

The ensuing redistribution of latent heat energy compounded warming in North America, causing sea levels across the globe to rise 12m (40ft) in a decade. During a period from 19,000-6,000 years ago the average jump in sea level were as high as 2.5m per century, much more than the 50-60cms per century rise we are encountering now.
So, when I speak of sea level rises of 4m (13ft) overnight, and put this into context that this today would drown approximately 100,800kms² of land, killing approximately 600 million people worldwide. This is scary when you think that the new scientific consensus is that our sea level will rise 4m again over the course of this century.

Throughout history and many religions there are stories of an all encompassing global flood. Most academics will say that this will be the stories of local flooding events in history, told as tales of epic global floods, long after the end of the last ice age. There were in fact, many global floods toward the end of the last ice age that corroborate these flood myths from all around the world, including the destruction of Atlantis, which are memories of real events recorded in myth and tradition.

Pluto, who is the earliest surviving historian of the story of Atlantis, tells us that he got it from his relative, Solon, who incidentally died just a stone's throw from my Cyprus home in Old Paphos, 11kms east of modern day Paphos, now named Kouklia, mythical birthplace of Aphrodite, the Greek Goddess of love, beauty, pleasure and procreation. Solon oversaw the building of a new kingdom named Soli, on the bay of Morphou, in Northern Cyprus. Before Solon travelled to Cyprus, he was an Athenian statesman, lawmaker and poet, who brought sweeping reforms to Greece and is often credited with forming the foundations of Athenian democracy. Solon is said to have heard the story of Atlantis from an ancient Egyptian who spoke of a time 9000 years before the time of Solon; that is 9600BC, or 11,600 years ago.

In one single day and night, the great city of Atlantis was consumed by a great flood. Many academics think that Plato made this up, as we have yet to discover any hard evidence that the lost city of Atlantis ever existed. However, it is strange that Plato should choose

this time, as this was the absolute peak of global melt and cataclysmic flooding worldwide.

This story is all over the world; in India it is the story of Manu, the Indian Noah, rescued from the flood by Vishnu. In Greece, it is the story of Deucalion and Pyrrha. The ancient Maya too, shares the same story of 'cyclical times', with an ancient depiction emulating the story by Plato. Then of course, we have the story of Noah from the Bible. If you want to find the origin of the story of Noah, then one has to go as far back as the time of ancient Sumer. Sumer, the land of the first great civilisation of the Sumerians, in Mesopotamia (modern day Iraq), in a poem written upon a stone tablet called 'The Epic of Gilgamesh', a 5000 year old version of exactly the same story that is told in the Bible. The Mesopotamian Noah was named Utnapishtim. As the only survivor of the great flood, taking an Arc of every animal before the deluge came, Utnapishtim, an ancestor of Gilgamesh, who was given immortality was also known as the guardian of the Waters of Life. Utnapishtim is considered by historians to be the source story told by the prophet Mohammad, as the Qur'anic figure al-Khidr (Khadir) who was also considered the guardian of the Waters of Life. The mirroring of the Qur'an and its many Abrahamic inspired literatures, told in subsequent prophesies such as the Tawrat (Torah or Pentateuch) of Moses, the Zabur (Tehillim or Book of Psalms) of David, and the Injil (Gospel) of Jesus, means not only a linked familiarity of major narratives from Jewish and Christian scriptures, but is widely regarded as the finest piece of literature in the Arabic language. For me, the poetry and early prose of the Qur'an is just sublime; and if you ever get the joy to behold and read an early original leather-bound copy, you will discover that its texts and artwork are incredibly moving and exquisitely beautiful.

Interestingly, if you go to the Arabian Gulf from where the Epic of Gilgamesh derives, in the time of the last ice age, this whole area was all land. From Basra in Iraq, all the way down to the Gulf of Oman, there was just a large fertile river system, the combined streams of the Euphrates and Tigris rivers, today named Shatt al-arab, meaning 'Stream of the Arabs'. Modern day Saudi Arabia and Iran would have

only been separated by 230m, not the 200km rift that is the Persian Gulf today.

Also, The Red Sea was formed when the Indian Ocean broke into the present day Gulf of Aden over the natural land bridge named Bab-el-Mandeb, which means 'Gates of Grief' in Arabic. The expanding rift valley separating Africa (Sudan) from Saudi Arabia started forming 130 Ma, with the depression which caused the rift valley to appear started forming around 38 Ma. The Red Sea Rift Zone, would have been a beautiful and fertile valley, and regularly flooded at various times throughout recent geological history. It contained salty seawater from historic land bridge breaches and at other times a narrow pluvial lake; an oasis which would have rendered the shores lush and fertile in an otherwise arid land, which in human history was filled only by the Sahel's annual monsoon rains.

There are three tectonic plates in action forming this rift: The African Plate in the West, the Arabic Plate in the East, and in the South, the Somali Plate. The East and West plates are moving apart, causing the rift; however, the Somali Plate is also moving away from the African Plate, yet much slower than the Arabic Plate. The Arabic Plate is moving North-East at a rate of 2cms per year, whilst the Somali Plate moves South-East, away from the African Plate at a rate of only 6mm per year, which causes a land bridge to pinch together at the point of the Bab-el-Mandeb straight.

In the Red Sea, due to the rift being created by tectonic drift, there exist numerous underwater volcanoes. The volcanic activity at Bab-el-Mandeb which causes a giant plug of lava to form, causing the sea to remain contained outside of the plug as the sea levels rose in the Gulf of Aden. This rift valley has flooded and evaporated into a barren salt flat many times in recent geological history over the last few million years. The recent great re-filling of the Red Sea happened around 11,600 years ago, with another influx again around 5,000 years ago. The latter slow refilling and the subsequent new exposure to ocean currents caused daily partings of the Red Sea, enabling islands to reveal several causeways for crossing at certain lunar low tides. Many theorise this is where the Moses story of the parting of the Red Sea derives in

various myths in different ancient cultures. In history there are striking resemblances between these stories depicting the parting of the Red Sea, separated by thousands of years. Hindus, Greeks, Sumerians and Romans had Manou, Minos, Mises and Moses respectively. It is the same story retold throughout history, with very similar names for each protagonist.

Prior to 12,000 years ago, the whole Red Sea Valley would have resembled the proverbial Garden of Eden; a beautiful place to live at that period in time. Then, very quickly, the whole of the Arabian Gulf became flooded. So when you hear of the ancient stories of a great flood, these are perceived even by scientists to be the memories of real events, passed down over time. Even Australian Aborigines separated on the Australasian landmass by 50,000 years as South-east Asia drifted away due to sea level rise, speak of cataclysmic floods from around the same time.

When I first began to explore these mysteries over 20 years ago, one of the first things that struck me was the apparent mystery of the maps. Many of the older maps that derive from ancient antiquity show the world not as it is today but as the world would have looked at the end of the last ice age. When you look into the story of these maps you find that they were copied from older source maps, typically from the 13th to the 17th centuries. So, the maps that we look at are quite recent, yet the origins are much older source maps, which are no longer available to us. These ancient maps seem to recall how the world looked 10,000 to 15,000 years ago!

In around the 13th century, whole new type of maps started appearing, being much more detailed than those cartoonish depictions from the 12th century. These new maps flooded into Europe, but nobody really knows where they came from.

Claudius Ptolemy (AD90-AD168), nearly 2000 years ago had exquisite maps, depicted in his Ptolemaic cartographic tradition, based on Ptolemy's coordinates that had roots from much earlier source maps. These source maps were preserved in monasteries throughout the dark ages, which were then brought back into the attention of mariners in 1295 AD. They're not as good as modern maps, but you could very

effectively navigate by them, whereas you could not before. Another group of maps appeared around the same time called the Portolan cartographic tradition. This set of maps, first found in Pisa and later migrated to the National Library in Paris, the earliest surviving examples were released as the Nordenskiöld, to Marinus of Tyre (Ptolemy's predecessor) , which was re-released more than 1100 years later in 1280 AD, bettering anything which had come before.

One of these maps in the collection was named the Pisan chart, showing Spain, Italy and the Holy Lands with all of the mountainous strata in exquisite detail. Not only did this map show an equirectangular projection, which is still used in map creation today, but they contain incredibly accurate latitudes and longitudes. Latitude is relatively easy to do, by measuring the height of the Sun or stars in relation to the horizon, specifically Polaris, the North Star. However, longitude requires technology as a chronometer that can accurately measure time as Earth spins. Our civilisation was not able to measure longitude until the late 18th century; the reason why many mariners would run aground or miss whole countries by hundreds of miles because their calculations were incorrect. Weirdly, in these much older maps there appears highly accurate longitudes; nearly 1600 years prior to its apparent invention. How do we explain this other than draw the conclusion that we have lost an earlier map making tradition, which was technologically much more advanced.

So, a quick précis of the Portolan tradition; Marinus of Tyre, predecessor of Ptolemy, stored this set of maps in the Library of Alexandria (Egypt), where the library burnt down. Some of these maps were sent to Constantinople (modern day Istanbul, Turkey) until the Crusades, whereby crusaders re-introduced them back into the market of European mariners.

The famous Piri Reis map of 1513 (another Portolan map), shows South America in exquisite detail, also depicting a continuous landmass that appears to be Antarctica! This is a massive puzzle finding Antarctica on a map from the 16th century as our civilisation didn't discover Antarctica until the early 19th century. Maps from all over the world showed nothing at the bottom of our world upon the

release of the updated naval maps in 1800. It is not there in the Atlas of the World because it was not discovered until 1818. Yet, if you go back to the 1500's, Antarctica is all over ancient maps! The beautiful works of Oronteus Finaeus (*Oronce Finé*) of 1532, a French mathematician and cartographer who in 1531 was appointed Chair of Mathematics at the Collège de France where he taught until his death in 1555, composed stunningly accurate depictions of Antarctica in his maps, even though he had never been outside of France once in his lifetime. Another example would be the great maps of the Mercator projection of 1569, showing Antarctica in all of its glory, all of which were drawn upon from earlier source maps. Do these maps go back to an earlier civilisation; one that had the technology to explore the entire globe? Remarkably, the Waldseemüller World Map of 1507, showed details of South-East Asia that actually resemble how the landmass of the whole continent would have looked like at the peak of the last interglacial period 21,000 years ago.

Another Ptolemaic map from 1513 shows an island off the west coast of Ireland, called Hy Brazil, which sits at a latitude in-line with Cork, yet at a longitude of 13° west, some 200kms (124mi) west of Ireland. Sightings and documentation of Hy Brazil historically go back to 1325, although Irish lore goes back much further still, where monks were rumoured to hold the vast ancient knowledge which allowed them to create an advanced civilisation, whereby the inhabitants led a luxurious and near effortless way of life.

The landmass that is in the area as depicted as being Hy Brazil in the ancient maps were exactly where they were purported to be 13,000 years ago. Going back to the Piri Reis maps again, there is depicted an island upon it which doesn't exist. On this island, it is depicted to have upright stones, drawn much like the Moai statues that still exist today on Easter Island. This spot marks exactly the location of Bimini today. Underwater, off the coast of the North Bimini island is the famous Bimini Road. This monolithic, man-made road that is 0.8kms (0.5mi) long, consisting of rectangular and semi-rectangular blocks of limestone ranging from 1-4m in size, lying atop the Bahaman

Beachrock and currently located 5.5m (18ft) below the sea surface. This area has not been above water for nearly 15,000 years!

If we are looking at the traces of a lost civilisation, then a logical question at this point would be to ask, "Who are these people, where did they come from and did they have a religion?"

The Piri Reis map turns out to be drawn on a very modern projection, having an azimuthal equidistant projection; it is based at its centre in Cairo, where Giza is. This is a magical and wondrous place which holds the great Sphinx and the 3 Great Pyramids of Giza. These massive monuments are perfectly aligned with astronomy. The axes of the pyramids are exactly aligned to 'true' north, not magnetic north, with an accuracy of less than $1/20^{th}$ of 1°.

Today, we could not easily achieve this feat without the most expensive and accurate construction theodolites, laser equipment and GPS receivers, to attempt to build a 13 acre monolith to an accuracy of less than 3 seconds of arc to true north. The first thing any architect or builder would ask first would be, "Why?"

The answer to this question is because they needed to accurately measure, record and predict celestial navigations, rather than for just a monolithic building with other spurious intentions. Not only is it amazingly impressive in its own right, even by today's standards; it is incredibly obvious how very important it was to the people who built it. There is one other nagging thorn in this story; no matter how loud Egyptologists rant from their pulpits, when one criticises and challenges the existing paradigm; what will simply not just go away, is the hint of much greater antiquity surrounding the whole Giza complex. From the temple of Seti I, in Abydos, we see depicted in the relief carved into the walls the Pharaoh, Seti, showing his young son, Rameses II, a list of all of the Kings of Egypt who ruled before him. That list goes back to the documented Pharaohs that we know about, to the date of around 3000 BC, when the Egyptian civilisation is supposed to have begun. It doesn't stop there; it keeps going, on and on over thousands and thousands of years before that, until the time of the gods; the time ancient Egyptians called Zep Tepi, meaning, "The First Times".

The gods brought civilisation to Egypt from afar. This is what the Pharaoh is depicted as showing to his son; a connection to the gods going back many thousands of years.

From the tomb of Seti I, again, we see the history going back as far as Osiris. Here he depicts how they should live, how they should create a kingdom and how it should be in harmony with the Earth and Heaven. Everything goes back to the first times, the time of the gods.

At the temple of Horus at Edfu, Horus is the son of Osiris; there are whole walls covered with texts, known as the Edfu Building Texts. These texts are mysterious; many archaeologists will attest that there are no flood stories depicted in Egyptian texts, which is absolute nonsense, as they clearly haven't read the Edfu Building Texts, which speaks of the home of the primeval ones; an island on Earth where the gods of Egypt lived. They say there was a great flood that utterly destroyed their homeland, so they re-created their civilisation in Egypt.

These gods that survived came to Egypt, settling there to re-establish what they had before, building primeval mounds all over Egypt, which were to be the sites of all future temples and religious structures.

The Osirion monument is evidently much older than any of the Pyramids at Giza, located at Abydos and named after the god Osiris. This gigantic structure is curious, as the levels it was discovered in are far older than anything surrounding. Massive 100 tonne blocks precariously balanced, hewn in beautiful detail and geometrically perfect, these giant stones were placed as if it was easy, just stacking massive bricks with impeccable precision. Weirdly, it is 100ft lower in geographical strata than any other nearby ancient artefact, suggesting that this site is much, much older than any other monument. The monument itself maybe more recent, but this site shows various signs of being retrofitted with later additions over many dynasties.

The great Sphinx of Giza itself is another example. Egyptologists are very upset at these finding but the erosion patterns in the area where the Sphinx was hewn out of the land are much older than what has always been attributed to the Sphinx for the last 100 years. The Sphinx, which has been continually patched up over the years, masks much of its erosion from extreme rainfall that weathered

the rock of the Sphinx's trench. There has been no continual, heavy precipitation since 2500 BC, when the Sphinx was attributed to have been built. The outer trench geomorphology points to the climate in Egypt to that of the last ice age.

The Sphinx is 73.5m (241ft) long, 19.3m (63ft) wide and 20.2m (66ft) high, yet completely dwarfed by the great pyramids. The Great Pyramid of Giza was originally 481.39ft (146.71m) tall, has a footprint of 13.1 acres (5.301 hectares), consists of 2.3 million blocks totalling 6 million tonnes. The smooth outer casing which was slowly stolen over time to build much of Cairo, has about 115,000 casing stones missing; each weighing 10 tonnes, of which the 52° slope is devoid of about 22 acres (8.9 hectares).

To describe the wonders of the pyramids at Giza, would be an encyclopaedic book in its own right; full of fascinating tales of our early history in this region. There are already dozens of fantastic books of this ilk that eloquently serve to document The Kingdom of the Pharaohs; however, my intrigue in this wonderful subject is all of that which remains undiscovered; all of the clues left for us to ponder the biggest question of all; why?

Robert Bauval's infamous and revelationary theory tells us about the 3 pyramids of Giza's correlation to the '3 kings' stars of Orion's Belt. Its relation to the river Nile is in the correct place and orientation to represent the Milky Way, with the position for the site at Giza chosen specifically for this reason, with the Sphinx representing the lion bodied constellation of Leo, also in the correct place.

The ancient Egyptians believed the deceased must enter something called the Duat after death, and there confront certain riddles, trials, challenges and ordeals. The Duat was both a place in the heavens and also an underworld, with narrow corridors and passageways that one must traverse through the labyrinth of tunnels to reach the stars, bypassing monsters and demons along the way. In fact, that is what your life was for. It was to prepare you for that moment, for when you make that inevitable journey through the afterlife realm.

The ancient text makes it clear that some great secret lay concealed in the 5th division of the Duat, which is referred to both as

the "Land of Sokar" and as "Rostau". It is not by chance that the ancient name for Giza was Rostau. All of the stories from the Great Book of the Duat are inscribed along the walls of and corridors of many of the Egyptian pyramids.

My interpretation of the Duat is that the Great Pyramid at Giza represents the journey through the Duat in stone. It was a place that you would prepare for your final journey. The King's Chamber inside the Great Pyramid has always been attributed to be the intended burial of the 4th Dynasty Pharaoh of Khufu, however the sarcophagus was hurriedly and poorly fashioned, not in keeping with the rest of the structure, and the absence of any Khufu memorabilia, paintings, reliefs or statues bearing his name, other than a clay seal ascribed to the Pharaoh Khufu, it certainly does not look like any monument built specifically as a burial tomb for a Pharaoh.

To me, it is more probable that the King's Chamber has more to do with the 'Judgement Scene' which takes place at the 5th division of the Duat at the Hall of Mart, the goddess of cosmic harmony, truth and justice, who is symbolised in this scene by a giant feather. Depicted is a deceased Ptolemaic Pharaoh because this is from Dar Al Medinah, the West Bank at Luxor, being ushered into the Hall of Mart, named the 'Judgment of Osiris'.

In the background are a set of scales; standing next to the scales is the God, Thoth, writing inscriptions upon a tablet. Next to Thoth, sat upon a pedestal is Amet; a strange creature who is the Eater of the Dead. Amet is part crocodile, part hippo and part hyena. To the right of the great masterpiece sits Osiris. The scales at the centre of the scene depict the weighing of the heart. Weighing against the feather of truth and justice is a symbol of the heart of the deceased. You would not want your heart to weigh heavy with sin because you would have to face the Eater of the Dead. Your whole life is weighed up at this moment with the 42 advisors asking questions of your life at the very top of the scene. They ask, "Did you kill? Did you steal?", actually, all of the 10 Commandments are there, and another 32 as well. At this point the deceased is supposed to answer, "No", to all of the questions. This is depicting moral behaviour but also as a sense that this judgment

about your behaviour in life is only part of the transition to the stars. It seems as though it is necessary to live a good life but this in itself is not sufficient. These ideas and texts are in fact revealing that it is a precious gift to be born into a human body, so the question is not only, "did you behave morally toward your fellow humans", but "did you use that opportunity?" Did you live; did you really live and give back something greater than you consumed on Earth in this life? Or, did you merely just waste it away?

Thoth watches on in this scene and records the verdict. If your heart outweighed the feather; if your life was lived inflicting cruelty and pain to others; if your spiritual potential was not put to good use and wasted, you would face annihilation, never to return or be born again. The story of you would be over; erased from the book of life.

The Egyptian Book of the Dead, contains some of the earliest poetry, featuring some beautiful lines of text; much of which is reused in much later in both the Qur'an and the Christian Bible. One of my favourite quotes from the Book of the Dead is, *"Name yourself in your heart and know who you are."* This is a powerful verse that, like many, still holds true today. Others include, "*In my heart are the deeds my body has done and my heart has been weighed in the balance.*", and another literary nugget of gold, *"Who you are, is limited only by who you think you are.",* and *"Not a perfect soul, I am perfecting. Not a human being, I am human becoming."*

The Book of the Dead is a fabulous set of scriptures, with exquisite poetry written one and a half millennia prior to Christianity; also predating the books of The Old Testament. The language being used is far more diverse and full of descriptive beauty.

The scriptures for part of an ancient spiritual system that celebrated and nurtured life; seeking eternal life by not taking the one they have for granted.

If you could ask any ancient Egyptian where this religion came from, they would have said it derived from the time of the gods at Zep Tepi, 'The First Time'. When this was, is embedded in the architecture at Giza, which may be decoded with an astronomical key. Just like in

Christianity and hundreds of other monotheistic traditions around the world, that key once again lies in The Precession of the Equinoxes.

If you were to stand on the back of the Great Sphinx of Giza, at dawn, on the morning of the spring Equinox, the Sun rises directly from the top of its head. From Plate 1 of the Book of the Dead, at the end of the 3rd hymn it says, *"[Men] praise thee in thy name [Ra], and they swear by thee, for thou art lord over them. Thou hast heard with thine ears and thou hast seen with thine eyes. Millions of years have gone over the world; I cannot tell the number of them, through which thou hast passed. Thy heart hath decreed a day of happiness in thy name [of Ra]. Thou dost pass over and travellest through untold spaces of millions and hundreds of thousands of years; thou settest out in peace, and thou steerest thy way across the watery abyss to the place which thou lovest; this thou doest in one little moment of time, and thou dost sink down and makest an end of the hours."*

What an amazingly sophisticated understanding of such great numbers and distances that the Egyptians portray in these texts involving the Sun.

So, the Sphinx gazes at the rising Sun at the dawn of the spring equinox. It does this every year without fail; the only thing that changes is the stellar background, which moves in a reverse precession of 1° every 72 years.

The way the pyramids and the Sphinx in relation to the Nile upon Earth is laid out in mirroring the celestial equivalent body in the sky do not match in around 2500 BC. They do, however, match the constellations at 10,500 BC, 12,500 years ago.

Many scholars will attest that the ancient Egyptians could not have known about axial precession. Hipparchus (190-120 BC) has been credited with discovering precession of the equinoxes, although evidence from cuneiform tablets suggest that his statements and mathematics relied heavily on Babylonian astronomical materials that had existed for many centuries prior. The exact dates of his life are not known, but astronomical observations attributed to him by Ptolemy date from 147 BC to 127 BC; however, throughout human history,

knowledge of the precession of the equinoxes crops up in every major religion new and old.

In literally hundreds of myths from all over the world, there are numerous accounts of what are described as 'precessionary numbers'. The number 72 is the heartbeat of the precessionary cycle. Others are:
72 ÷ 2 = **36**
72 + half of 72 (36) = **108**
108 ÷ 2 = **54**
108 x 2 = 216 for **2160**
72 x 30 = 2160 for **2,160,000**
72 x 2 = 144 for **1,440,000**
72 x 60 = 4320 for **43,200**
4320 ÷ 2 = 2160 for **216,000**
2160 ÷ 2 = 1080 for **10,800**
1080 ÷ 2 = 540 for **54,000** and so on and so forth...

For instance, in Norse mythology it is written:
"500 doors and 40 they go,
I ween, in Valhalla's walls;
800 fighters through each door fare,
when to war with the Wolf they go."

The 540 doors multiplied by 800 soldiers, are 43,200 soldiers. In 43,200 years, the Earth's axis rotates once each arc and 240 degrees. The numbers 4,320 and 43,200 are often used in ancient documents throughout the world. On Sumerian clay tablets, it is written that the Anunnaki gods landed on the Earth for the first time 432,000 years ago. Even more interestingly, the radius of the Earth divided by 43,200 equals the height of the Great Pyramid of Giza! Also, the length of Earth's equator divided by 43,200 equals the perimeter distance around the Great Pyramid's base. This is truly amazing!

Did you know that the numerals necessary for calculating precessions are also found in the Mayan Long Count Calculator? Well, 1 Tun = 360 days; 6 Tuns = 2160 days; 1 Katun = 7200 days; 6 Katuns = 43,200 days; 15 Baktuns = 2,160,000 days.

Work containing all historical knowledge of humanity, that was once kept in the Imperial Library of China is said to be handed down from ancient times, which consisted of 4,320 volumes.

The temple of Angkor has 5 gates. Each gate has a road leading to it and each road is bordered by a row of 54 gigantic statues, 108 per avenue, 540 statues in total. Java's mysterious temple of Borobudur, has 72 Mahayana Buddhist statues inside its central perforated stupa, with the whole complex containing a total of 72 stupas.

There are 10,800 stanzas in the Rigveda, one of the ancient texts of Indian mythology. Each stanza is made up 40 syllables, resulting in the whole works containing 432,000 syllables. The correlation to various precessional numbers exists in thousands of religions around the world. Osiris was captured by 72 assistants and there are 108 recited names in the literary of the goddess Devi.

From these calculations using these numbers, to me at least, The Great Pyramid of Giza is a mathematical scale model of the Northern Hemisphere of the Earth.

Take the perimeter of the base of the Great Pyramid and multiply it by 43,200; you get the equatorial circumference of the Earth. If you take the height of the Great Pyramid and multiply it by the same number, you get polar radius of the Earth, or half its diameter from pole to pole. Egyptologists say that this is just coincidence. If it were not a mathematical constituent of measuring Earth by its degrees of travel (72°), and by 43,200, a replete precessional number, especially when the whole mythology is based upon these numbers, there is little doubt in my mind that this is completely deliberate. The 72 x 30 equals 2160; that's a 30° portion of the sky; $1/12^{th}$ of the Great Processional Year, a segment of the Zodiac.

Amazingly, it turns out that from Giza to Angkor, it is exactly 72° of longitude! Isn't that strange? Stranger still, Angkor, in ancient Egyptian translates to, 'Life of Horus.' Convinced?

The Hindu, Angkor Wat temple was built by the 12^{th} Century Khmer King, inspired by Dravidian architecture which today is utilised as a Buddhist temple complex and the largest religious monument in the world, is located 72° away from Giza in Cambodia. Angkor Wat

has an East/West axis line of symmetry running through the whole complex. If you stand on the causeway at the entrance to Angkor Wat on the morning of the dawn of the Spring Equinox, the Sun will traverse exactly up the side of its central pyramid, touching it all the way as it rises, letting go of the pyramid precisely as it reaches the very pinnacle. At this moment, the whole place lights up like a fairytale kingdom at the precise moment the ground and sky touch top and bottom.

At Angkor, there are 72 major temples. There are mysterious pyramidal mounds off to the distance. There is also depicted there from Hindu mythology the churning of the Milky Ocean (Milky Way), to produce Amrita, the elixir of immortality. The serpent Vasuki has gods on one side and demons on the other, pulling at the serpent, back and forth, churning the milky elixir, with 54 on each side (108). Amrita in Greek mythology became Ambrosia, the food and drink of the gods, conferring ageless immortality to whomever consumed it. This elixir of life along with Nectar, a similar and closely relate etymology, a compound of 'Nek' and 'Tar', derive from the Proto-Indo European roots, meaning 'Overcoming Death'.

If you trace the installations around Angkor, they too are laid out to mirror a constellation; this time, the constellation of Draco. To cut a long story short, the only time the correlation works perfectly is in 10,500 BC, exactly the same time as the correlation at Giza. I'm not for one minute implying that the temples at Angkor where build at around 10,500 BC as they most certainly were not, but the technology used to depict the 'First Time' of the gods of humanity, point to a reference passed down in time, suggesting that the origin story, the first religion used as a template for all others, stemmed from a time where mankind was just emerging from hunter-gatherers. Civilisation and religion is supposed to follow on many thousands of years later, after the domestication of animals and the farming of crops, as it was community that brought people together, which formed villages, towns, then later, cities, then religion and temples and other places of worship.

This dating system that keeps cropping up, proves there is greater antiquity in Egypt. A great, lost civilisation with more knowledge than 15th century scholars about time, distance, processions, equinoxes, solstices, geometry, engineering, astrology, astronomy, and also the dimensions of the Earth and its evolution around the Sun over vast aeons of time. This would hint at a great civilisation, lost in time, which set humanity back more than 12,000 years in lost knowledge.

Angkor was built around 1100 AD, yet there are many, many layers that have only just been uncovered that suggest settlements and large structures existed at this site many thousands of years earlier.
We have enigmatic ancient sites and religious ideas widely distributed all around the world, displaying extraordinary similarities, pointing back to a remote date 12,500 years ago toward the end of the last ice age. We even have highly accurate maps that seem to document the world in the time depicting the meltdown of the end of the last interglacial period. Are we looking at the traces of a long forgotten episode in human history?

Because we are a species with amnesia, mankind remains a mystery to itself. There was once a time when humanity was at one with the Earth and heavens above.

Reclaiming this lost knowledge is our birthright. Merely understanding it will re-empower us as a race who again can create wonders of beauty that celebrates the cyclical nature and balance of life on our planet.

In this so-called modern world, very few of such mysteries concern us in our daily thoughts. It is sad that 99.99% of the population of our planet knows less than 5% of the knowledge contained within this book, yet it is something special that a greater portion of civilisation understood this as a way of life in humanity's pre-history.

Having read this far, no longer will you hear words like Neolithic, Hunter Gatherer and Ancient Man and depict a blithering ape-man, bashing rocks together and grunting as he marvels at his fiery creation; for he was more technologically and spiritually sophisticated than many who grace our presence today.

Today, our civilisation's culture admires and venerates one single state of consciousness, which is the alert, problem solving state of consciousness of commerce, consumerism, egocentric distractionism, global finance, business and war. We allow ourselves downtime with absolute drunkenness, mind numbingly hedonistic stupidity and destructive abandon, which are also tolerated as acceptable behaviours. Any kind of other state of consciousness it discouraged and seen via the blinkered eyes of the western world as hocus pocus mumbo jumbo.

It is as if the world is conspiring to trivialise life, trivialise us; portraying life as the sandbox of your inner child, bringing us down to the lowest levels of hedonism as veracious consumers with nothing outwardly being projected as being worthwhile.

The world we live in today was foreseen 2000 years ago when the profound wisdom of ancient Egypt was set down in Greek and Latin in a corpus of mysterious texts now known as the Hermetica. These purport to contain the teachings of the god Hermes, the Greek form of Thoth, the ancient Egyptian god of wisdom. The Romans also knew him as Mercury. The Hermetica have been thought to intellectualise the Gnostic form of Abrahamic literature, having a direct impact of the syncretic texts that were later imported into Gnostic Christian texts of the New Testament. These Hermetica were the dialogues between Thoth (Hermes) and various pupils of his; and in one such dialogue called 'The Asclepius', a lament is presented. This lament is prophesy, which is akin to its equivalent in Mayan culture. Egypt seems to stand as a metaphor for the world in this reading; and is speaking directly to us.

Hermes says to Asclepius, *"Do you know, Asclepius, that Egypt is an image of Heaven, or to speak more exactly, in Egypt all the operations of the powers which rule and work in Heaven are present in the Earth below? In fact it should be said that the whole Cosmos dwells in this our land as in a sanctuary.*

And yet, since it is fitting that wise men should have knowledge of all events before they come to pass, you must not be left in ignorance of what I will now tell you.

There will come a time when it will have been in vain that Egyptians have honoured the Godhead with heartfelt piety and service; and all our holy worship will be fruitless and ineffectual.

The gods will return from earth to heaven; Egypt will be forsaken, and the land which was once the home of religion will be left desolate, bereft of the presence of its deities.

O Egypt, Egypt, of thy religion nothing will remain but an empty tale, which thine own children in time to come will not believe; nothing will be left but graven words, and only the stones will tell of thy piety.

And in that day men will be weary of life, and they will cease to think the universe worthy of reverent wonder and worship.

They will no longer love this world around us, this incomparable work of God, this glorious structure which he has built, this sum of good made up of many diverse forms, this instrument whereby the will of God operates in that which he has made, ungrudgingly favouring man's welfare; this combination and accumulation of all the manifold things that call forth the veneration, praise, and love of the beholder.

Darkness will be preferred to light, and death will be thought more profitable than life; no one will raise his eyes to heaven; the pious will be deemed insane, the impious wise; the madman will be thought a brave man, and the wicked will be esteemed as good.

As for the soul, and the belief that it is immortal by nature, or may hope to attain to immortality, as I have taught you, – all this they will mock, and even persuade themselves that it is false.

No word of reverence or piety, no utterance worthy of heaven, will be heard or believed.

And so the gods will depart from mankind, – a grievous thing! – and only evil angels will remain, who will mingle with men, and drive the poor wretches into all manner of reckless crime, into wars, and robberies, and frauds, and all things hostile to the nature of the soul.

Then will the earth tremble, and the sea bear no ships; heaven will not support the stars in their orbits, all voices of the gods will be forced into silence; the fruits of the Earth will rot; the soil will turn

barren, and the very air will sicken with sullen stagnation; all things will be disordered and awry, all good will disappear.

But when all this has befallen, Asclepius, then God the Creator of all things will look on that which has come to pass, and will stop the disorder by the counterforce of his will, which is the good. He will call back to the right path those who have gone astray; he will cleanse the world of evil, washing it away with floods, burning it out with the fiercest fire, and expelling it with war and pestilence.

And thus he will bring back his world to its former aspect, so that the Cosmos will once more be deemed worthy of worship and wondering reverence, and God, the maker and maintainer of the Mighty Fabric, will be adored by the men of that day with continuous songs of praise and blessing.

Such is the new birth of the Cosmos; it is a making again of all things good, a holy and awe-inspiring restoration of all nature; and it is wrought inside the process of Time by the eternal Will of the Creator."

There is no tale of any religious order on this Earth that at some point doesn't tell of coming days of judgement for mankind. Humanity is forced to endure terrible floods of complete destruction, as past civilisations implicate humanity and its actions for this happening.

Our behaviour has a direct impact on what we manifest upon ourselves as the authors of the story. Only we can change how the story of us is written down in history, the story of our civilisation. We can only change ourselves and set examples to our loved ones about the morality of life. All you need is knowledge, love and the will to change.

CHAPTER 13

Geometry of the Ancients

Having made the geometric and arithmetic correlations between Angkor in Cambodia and that of Giza in Egypt, to me it was as if the ancients where trying to speak to me over time. If one wanted to speak to humanity over millennia, one would need to speak across vast epochs of time by posting your message in the universal language of mathematics. In order to achieve this, one would need to leave a decryption key as a primer, to understand the constants of the geometrics being used, and then, you would need to preserve that knowledge over great distances of time. To accomplish this, one would need a tool to convey this information which would endure the passage of time; like a monolithic monument, perhaps?

All of the evidence so far, points to a lost civilisation with very advanced technology, which should not have existed in this time. In the famous words of Sherlock Holmes, *"...when you have eliminated the impossible, whatever remains, however improbable, must be the truth."* The scientific precept called Occam's razor is a principle of parsimony, economy, or succinctness used in logic and problem solving. It states that amongst competing hypotheses, the hypothesis with the fewest assumptions should be selected. The application of the principle often shifts the burden of proof in a discussion. The razor states that one should proceed to simpler theories until simplicity can be traded for greater explanatory power.

As a statistician with proven visual observational perception, I always cross-reference my findings using Solomonoff's inductive inference; a mathematically formalised Occam's razor, whereby, I can use shorter, empirically correct, irrefutable data to form accurate computable theories that have more weight when calculating the probability of the next observation, using all compatible theories which perfectly describe previous observations.

As I started piecing together the parts of the puzzle, the results were astounding! The first perception that I wanted to address is the apparent 72° gap between Giza and Angkor. Surely, these great civilisations, separated by thousands of years had no knowledge of each other's work? This must be coincidence; so, I set about to disprove this as a theory, with shocking results.

Trying to find and test this theory with other obscure civilisations around the world, strange patterns started to emerge. The two alternative truths as hypotheses I wanted to explore is an either-or experiment. Either there are multiple parallel civilisations who evolved the same geometric and arithmetic solutions to identical problems in their adoration of celestial events, geometric systems in their worship of their gods and a coincidental lineages between civilisations separated by great expanses of time, that perfectly correlate not only linearly, but also mathematically using only precessional numbers; or, the other hypothesis being that civilisations all over the world had fully disclosed knowledge of each other's work; understood the mathematical concept of their deliberate communication correlations, set in place by deliberately placed markers around the world by a single civilisation, that were later described as the gods of 'The First Times'. Both of these hypotheses are remarkable in their own right if proven true, devoid of any other hypotheses using the scientific systems of computational deduction, which should prove which of these theories, if any, are correct.

I started on a trail to understand the exact dimensions located at the Giza Necropolis, to see if there is any significance from my own engineering, physics, mathematical and analytical background, that could shed any new light, which archaeologists may have missed for all

of these years. Upon detailed inspection of the geometrics of these grand monuments in time; little did I know that the Great Pyramid of Giza actually has eight visible sides, not four! Each triangular face is actually crimped in the middle and concaved inwards by an angle of just 1°, forming eight, 90°, right angled scalene triangles, instead of the usual four isosceles triangles found in every other pyramid.

The Sun's movement at sunrise and sunset completes a full rotation about the Earth, at least perceivably, due to the Earth's orbit of the Sun at a rate of 0.986° per day. This means that the Sun will be in the correct position to light up just one of these triangles, per side, per year, visually showing off the fact that the pyramid is eight sided and not four, just one day each, per year. What is even more astonishing are the days that this happens; the vernal equinox, the summer solstice, the autumnal equinox and the winter solstice respectively. This building was created whilst in the adoration of a Sun god, why wouldn't it do this!? Stranger still are the details of its Euclidean geometry, when you start looking at this odd Enneahedron and start crunching its numbers.

Firstly I noticed that the Red Pyramid, ascribed to Sneferu, Cheops' father, had a pinnacle top piece known as Pyramidion, which was discovered by German Egyptologist, Rainer Stadelmann, in 1993. The Pyramidion was documented to be exactly 1m in height when put on public, open air display in 2005. It was 1.00m in height and 1.57m in diameter. It also had an inclination of 51.84° which makes it an exact scale model of the Great Pyramid of Giza, bearing in mind that ancient Egyptians had no metric system that we have today. The metric system wasn't devised until 1790, with the metre being calculated as one ten-millionth of the distance from Earth's equator to the North Pole (at sea level). To understand the concept of a metre, one must know exactly the shape and size of the Earth.

In 1859, Englishman, John Taylor, discovered that if you add the dimensions of the two visible sides of the Great Pyramid, you get the mathematical formula of Pi. This caused huge controversy at the time to suggest the ancient Egyptians had any concept of Pi some 4500 years prior to its discovery and accurately formed calculation. They mocked him, saying at worst, it was the devils work; at best, twisted

coincidence. Did ancient Egyptians really know and understand the building blocks of mathematics, physics and engineering?

Pi is not the only significant number in the Great Pyramid. If you look at the dimensions of the various parts of the pyramid, each part can be multiplied by a whole number to give the total height. The surface of the sides of the Great Pyramid, divided by the surface of its base, equals the famous 'Golden Number', one of the key principles of aesthetics and design. The golden number (φ or Phi) of which the quadratic formula equates to a sum of 1.6180339887 which is unique as geometric equation requiring of the knowledge and understanding Pi (3.1416) to calculate the golden ratio. The golden number is a constant in fractals and its proportions in the natural world. It is the number of proportion and correct aesthetics in art and design. By dividing the half perimeter by its height we get the golden number squared (φ^2).

The official dimensions of the Great Pyramid are 440 cubits long by 280 cubits high. A cubit is the official Egyptian unit of measurement. There are very few ancient Egyptian measuring tools ever found, so experts deduce the exact length of the cubit by the using lengths of Egyptian buildings within their structure. The results are very precise. In 1925, archaeologists agreed to call a cubit 57cms, 3mm and $^{6}/_{10\text{ths}}$ of a millimetre, or 0.5736m. This was so ridiculously precise; it's like measuring the contents of a swimming pool with a thimble. This measurement became the standard for all of the experts.

Now, if I were to draw a circle with a diameter of 1, then this circle's circumference equals Pi (3.1416). Divide this number by six and we get 0.5736, exactly the length of the cubit. Could this be how ancient Egyptians chose the size of their cubit?

If you draw a square, there are infinite heights a pyramid could stand upon this square, with various angles of inclination. If you then draw a circle with the same area as the square, its radius would be the exact proportions of the height of Great Pyramid of Giza. That is why the Great Pyramid contains both Pi and the golden ratio. It seems that nothing was left to chance for this great icon of ancient Egypt, as the builders certainly knew what a metre was. They used it with Pi and the

golden number to determine the length of their cubit. Maybe there were more clues hidden in the pyramids for me to discover?

The trail quickly revealed its answers to me the moment I started looking. In Mexico, a place I have had the opportunity to explore in great detail on numerous occasions over the last 20 years, just like at Giza, there are three main pyramids, located at Teotihuacán. They are the Sun Pyramid, the Moon Pyramid and the Pyramid of the Feathered Snake. Also, just as in Giza, the main pyramid is precisely aligned.

In Shen-Hsi, in central China, there are great pyramids made of clay and dirt. It is almost impossible to get to visit them, as the Chinese government keep them completely secluded from the public, hidden behind the bamboo curtain of communism. There are hundreds of these Chinese pyramids, yet very few westerners have ever seen them. If you draw a line from Shen-Hsi in China to the Sun Pyramid in Teotihuacán in Mexico, this line passes directly through the Great Pyramid at Giza! Was this yet another happy coincidence?

Again, if you draw a line from the most remote and secluded civilisation that ever lived, on the outcrop of Easter Island and connected it to the nearest great civilisation nearest to it, you arrive at the ancient geoglyphs at a place in Peru, called Nazca. This 800km² plateau is scarred all over by the people of the Nazca Culture, who settled in this area from around 800 BC to 800 AD. There are massive carved roads, whose causeways are up to 14kms in length, which are astrological pathways and celestial representations of the Sun and other astrological bodies, including Orion's Belt. There are also anthropomorphic animal depictions carved into the land as large as 270m in length, such as monkeys, fish, sharks, orcas, spiders, hummingbirds and lizards.

If you draw a straight line from between Easter Island and the site of Nazca, and then continue that line, you will eventually arrive precisely at Giza! Is this another truly amazing coincidence? Looking at this line, when measured, it is at exactly a 30° angle in relation to the equator, forming exactly $1/12^{th}$ of the globe, or one zodiacal segment of the planet.

So, what else can I conclude? The mystery builds into a crescendo as I plot out the greatest ancient monuments of civilisations from all around the world. From the most remote and secluded ancient Moai relics of Easter Island, in a 100km wide band I will travel at an angle of 30° toward Giza in a 25,000 mile (40,000km) long circle forming a narrow track around the globe.

In Peru, it passes through the Paracas Drawings, Nazca, Ollantaytambo, Machu Picchu, Cusco, Sacsayhuamán and the Paratoari Pyramids. Then, onto Africa, it crosses Mali and the strange Dogon lands, where they knew the stars Sirius B, Sirius C, the rings of Saturn and the moons of Jupiter before any astronomers and prior to the invention of the telescope. Then, Algeria and the Tassili N'Ajjer and its painted Martian god; in Egypt is crosses the Siwa Oasis and its Zeus-Amun Temple, through the Great Pyramid of Giza, then onto Petra, then Ur, where Abraham was born. Onto Persepolis in Iran, Mohenjo Daro in Pakistan, where the unreadable writing was found that is so very close to the writings found at Easter Island. It then crosses sites which have always been known as the home of the gods; Khajuraho in India, Pyay in Burma, Sukhothai in Thailand, Angkor Wat and Preah Vihear in Cambodia, and it ends with the most isolated and mysterious place on Earth; Easter Island.

There is an astonishing accuracy to this alignment. Although many were built in different eras, nearly all of these sites show signs of much more ancient, sacred sites. At some remote point in the past, someone had built a sequence of sacred sites on this line encircling the globe; a circle as long as the equator, but the mystery doesn't end there.

From Nazca to Giza to where the Magnetic North Pole was 12,000 years ago, off the coast off the Gulf of Alaska, around 330kms East-Southeast of Anchorage, there forms a triangle of the exact proportions of The Great Pyramid at Giza. At this time, if Giza was the longitudinal equivalent of the Greenwich Meridian, geographic North Pole and Magnetic North Pole would represent exactly the same 30° of arc from the equator as shown by the intersection of this new, global 'Ring of the Ancients'. The distance from Nazca to Giza, equals the distance between Teotihuacán and Giza. The same is true between the

distance between Angkor Wat and Nazca. The same again occurs between Mohenjo Daro and Easter Island; all of them forming 30° arcs between the next, forming zodiacal segments around the Earth. The distance between Easter Island and Giza is 10,000 times the golden number. The distance between Giza and Angkor Wat, multiplied by the golden number, equals the distance between Giza and Nazca; and the Giza-Nazca distance multiplied by the golden number, equals the Nazca-Angkor distance.

As surprising as this seems, after much research there is evidence of a twentieth century priest and astronomer named, Abbé Théophile Moreux, who wrote the mathematical compendium *Les Enigmes de la Science*, also writing a book in 1926, called *La Science Mystérieuse des Pharaons* displayed huge amounts of insight. If you can read French, it is a fascinatingly insightful book of Egyptian perceptions and mathematical observations, discovering that the height of the Great Pyramid is exactly one millionth of the distance the Earth is to the Sun. Much of my work on this subject is inspired by his insightful passion about Egypt which I have now taken to a whole new level, writing and publishing many papers on ancient astrotheology over the last decade, which have stunned critics the world over.

As a priest, Moreaux was privy to the secrets of the ancient world, as the ancient scripts were held in safe keeping at his seminary in Bourges; locked away in the vaults as many religions do, to hide the truths that are in direct contradiction within their own religion, or when drawing astrotheological parallels, thus damaging their holy plight. Moreaux was concerned about this rare historical testament as to this ancient documented knowledge in his own faith's history, so he initiated the Bourges Observatory at the seminary of St Célestin in central France, where he later became a professor of science and mathematics. As a Priest he was very open about the astronomical derivatives of Christianity, and was a proponent in advertising this fact, rather than sweeping these things under the rug as he was demanded to do by his peers.

Moreaux highlighted in a hand drawn image the Prime Meridian, passing through the Great Pyramid at Giza, dividing the

world up into an eastern and western hemispheres, making Giza the central zero degree longitudinal point in time, not Greenwich, London or the 16th century claimants of Antwerp, in the Flanders regions of Belgium or the 17th century claimant of the French capital of Paris.

Twenty centuries before him, Agatharchides, an ancient Greek historian and geographer, at the conclusion of his historical epic *On the Erythraean Sea*, he apologises for being unable to complete his work, *"since our age is unable to similarly bear the toil"* and *"as a result of the disturbances in Egypt"* he could no longer access the official Egyptian records that documented these fascinating accounts of geometric wonder. However, he also concluded that the Great Pyramid was built as a geographical reflection of the Earth, which two millennia later we can confirm is completely true.

The length of the two sides of the Great Pyramid is also the average distance a point on the equator moves through space in one second. In Physics, this figure has always been used to calculate the speed of the Earth as it rotates on its axis. The Great Pyramid of Giza, or the Pyramid of Khufu (Cheops in Greek) is stuffed full of significant numbers that connect to our world. Many people in spite of themselves will find this all too hard to believe. Sceptics will always argue that this could all just be chance, but the number of amazing facts that have to be explained away, just keep growing and growing.

Once again, we need to go back to the pyramids for further investigation. Let's take a look at the inner chamber, where each block weighs more than 40 cars each. Every block quarried from 800kms (500mi) away was transported by boat, and cut to shape on board, fitting precisely. Perfect, both vertically and horizontally, even though builders didn't have the tools to check their measurements, each 100 tonne block of granite was accurate to within half a millimetre. Why was this monument built with such precision? Were the craftsmen simply aiming at obsessive, compulsive geometric perfection, or, is there another reason? Is the essence of geospatial perfection needed to accurately measure the cosmic balance of the heavens and Earth as a tool to measure celestial events over huge expanses of time? The short answer; yes!

There is another overlooked reason why Egyptian builders brought 100 tonne blocks of granite 500 miles to Giza; it has one unique property, in the fact that it doesn't change over time. Its dimensions remain the same. This means that the Great Pyramid's secrets could be transported over geological time, through the ages.

If you draw two circles, one from inside the edges of the base of the Great Pyramid and one from the outside of the corners of the pyramid's base; then subtract the length of the inner circle (230.4m diameter) derived from the width of the pyramid, from the length of the outer circle, using Pythagoras' theorem to find the hypotenuse (the diagonal of the base's square) of one of the right angled isosceles triangle, forming the diameter of the larger circle (325.83m), you multiply them both by Π (3.1415) and you get the sum of (325.83 x 3.1415) – (230.4 x 3.1415) = (1023.594945 – 723.8016) whereby you arrive at a sum of 299.793345m.

Instantly, I knew I had seen these numbers before; twenty years ago in my A' Level Physics exam. The speed of light in metres per second is 299,792,458. The Great Pyramid's geometry is 299.79 x $10^{\wedge 6}$ m/s^{-1} which is the speed of light, accurate to within 0.00001% or one ten-thousandth of 1%. Today, in mathematical depictions and calculations, we use 3 x $10^{\wedge 8}$ m/s^{-1} which is only accurate to within 0.21%.

If we look at the Great Pyramid without prejudice and with a fresh eye, using mathematics and physics to draw conclusions as to its purpose, the results are quite disturbing. If a more advanced civilisation ever existed in our pre-history, the only thing that would remain of that history 12,500 years later would be a grand, stone-built megalith. Nothing else would have survived! If our civilisation was to disappear today, our modernity would leave traces of its buildings that would stand unmaintained for maybe hundreds of years, but nothing other than the open-cast mines we drill out today with massive bulldozers and mighty dump trucks would ever have a chance of standing the test of time over millennia. Even giant coal seams and diamond mines would be quickly re-vegetated and covered up over time as the natural world would encroach and consume the new niches left behind by

humanity. We produce nothing today that will stand the test of time that will depict our civilisation in any positive light. Nothing!

The only traceable things that will hint of our activity on this planet will be in the fossil records of the strata demarked by our extremely short lived existence as a species. Our carbon dioxide blip in the oxygen isotope signals left in the ice caps (if we leave any) or the Carbon-14 layers which will be distinguishable as a scar on our land and the marine records, in the sedimentation layers that will be the most profound markers in the geological history of our planet.

On a planetary scale, humanity is the cancer of the natural world. Will the lessons from our past change whether we metastasise or become benign in response to our bloody defecation of the land, sea and air? Will the ulcered sphincter of mankind continue to haemorrhage its natural resources, or, will we become the elixir of life the planet so desperately needs, in order to sustain ourselves from ultimate annihilation? This is not alarmist propaganda. This is a mathematical certainty, if we choose to continue on the same path over continuous generations without change.

So, what is left of this advanced civilisation? We know that they measured the Earth and built a scale model based upon it in the shape of a pyramid, full of numerical significance. They planned and built a source of artefacts that encompassed the entire globe. There must be a reason for all of this? Everything discovered about the Great Pyramid must have been put there for a specific purpose.

On March 2nd, 1974, the second space probe, Pioneer 10, was launched into space with a little drawing on board. It was designed to tell any alien species that encountered it all about humankind. It depicted that we are a sexual species and showed where about Earth relates to major celestial constants in relation to our Solar System. Analysing the dimensions of the drawing, there is much more information being shown, as mathematical and astronomical data is being used for lexical markers, as primers to convey huge amounts of information using the universal language of mathematics. The builders of the great Pyramid did exactly the same thing as the Americans did 4,500 years later. They too sent a coded message out into the universe,

except this message was not intended to convey its message over the vastness of space, but the vastness of time.

The message hidden in the Egyptian pyramids at Giza was addressed to a future civilisation here on Earth. It is a message in a bottle, and it is addressed to us. Now we have to work out what that message means. Since they went to such incredible lengths to speak to us across time, the message it contains must be of utmost importance.

The builders have precisely signalled the equinoxes again and again. Are they pointing to a critical astronomical cycle of the planet? Each star perceivably moves 1° every 72 years. It takes approximately 26,000 years for a star to complete a full reverse precessionary orbit of our planet. The constellations of the zodiac locate our place and orientation in the universe. The Pyramidion has a perimeter precisely 12 cubits long. The presence of Pi points to a circle. Together, that represents a twelve zoned circle; the zodiac.

The four angles of the Great Pyramid refer to the four signs of the zodiac; Taurus, Leo, Scorpio and Aquarius. Four stars belong to these constellations, known by many civilisations as the *Four Guardians of Heaven*. They are Aldebaran in the Taurus constellation, Regulus in Leo, Antares in Scorpio and Formalhaut, today the mouth of Pisces but previously the brightest star in the foot of Aquarius. In ancient Persia they were known as the *Four Royal Stars*, used as a rudimentary calendar by Zarathustra more that 5000 years ago, a religion which bore his name would later heavily influence the derivative religions of Judaism, Gnosticism, Christianity and Islam.

Aldebaran, Regulus, Antares and Formalhaut represented to the ancients the vernal equinox, the summer solstice, the autumnal equinox and the winter solstice respectively. These stars keep the same position is relation to each other, so can be used as steady points of reference over great expanses of time. The Taurus-Scorpio axis passes from the Northeast corner through the Southwest corner of the Great Pyramid, which extends to touch the pinnacle of the second largest Pyramid of Giza, the Pyramid of Khafra (Chephren in Greek), who was the son of Khufu (Cheops). The Northwest-Southeast axis is known as the Leo-Aquarius axis, whose symbolism sits right under our noses; the Leo-

Aquarius axis passes straight through the Sphinx of Giza. Well, at least some of us have noses; the nose and beard of the Sphinx has been lost. Parts of the ceremonial pharaonic beard have been recovered and are now on display at the British Museum, which was a later edition to the original Sphinx's carving. It was an edition to mark Khufu's reign, which also corroborates that the Great Pyramid was not intended, or indeed built for Khufu at all. Even to this day many people attest that Napoleon Bonaparte had the nose of the Sphinx blown off with cannon fire in 1798; however, this is an erroneous myth, as there are depictions of the Sphinx without its nose, many hundreds of years prior to this event.

The Arab historian al-Maqrīzī, writing in the 15th century, attributes the loss of the nose to iconoclasm by Muhammad Sa'im al-Dahr, a Sufi Muslim from the *Khanqah of Sa'id al-Su'ada.* In 1378, upon finding the local peasants making offerings to the Sphinx in the hope of increasing their harvest, Sa'im al-Dahr was so outraged that he destroyed the nose, and was promptly hanged for his vandalism; some 420 years prior to the Napoleonic myth.

The Sphinx; a man's head on a lion's body: Many archaeologists will tell you that the Sphinx was built long after the building of the three pyramids at the Giza necropolis. Don't be too sure! If you draw a line from the Great Pyramid to the smallest pyramid, the Menkaure Pyramid, son of Khafra (Chephren) and Grandson of Khufu (Cheops), then from the vertical, this line is 38.16° from the North, meaning the base, matching the alignment of The Great Pyramid and a perfect East-West axis will form an isosceles triangle with an elevation of 51.84°, exactly the same proportions as the Great Pyramid. The right side of the triangle will also intersect directly through the head of the Sphinx. Carbon-copy the base of the Great Pyramid and place it next to itself on the Sphinx's eastern border. The North-South axis will pass directly through the head of the Sphinx. Draw a circle touching the Great Pyramid and the Pyramid of Khafra, and the eastern part of that circle will pass straight through the head of the Sphinx. Lay all of these shapes on top together and you will find that the only place where all of them geometrically intersect each other

are at the head of the Sphinx, at exactly the same spot. This was the answer I needed; an empirical, mathematically and geometrically derived answer, which states that Giza is a celestial clock. In addition, this clock's gaze turns around precisely once every 25,772 years, 1° every 71.6 years, or 50.3 seconds of arc per year. This is the reason why all of these structures are built within such incredibly accurate tolerances, that even today's engineers would be incredibly proud to showcase. It is a timepiece built by stone artisans much akin to the rare art of traditional matchmaking, with the same levels of tolerances in their craft.

So, how do we know when the cycle begins? There is a mysterious bump on the Sphinx's chest that Arabs call the Lion's Heart. The Lions Heart is also the Arabic name for the brightest star in the constellation of Leo: Regulus. The Sphinx has always been a symbol of Enigma. She speaks to mankind in a famous riddle, *"Who starts his day on four legs, continues on two legs and finishes on three legs?"* The answer is, *"Man, and his destiny."*

Where the Sphinx's eyes line up with the star Regulus, the Lion's Heart, then a new cycle of the equinoxes begins. This huge clock, our planet's clock makes a full circle roughly once every 26,000 years. Everything I have looked at points to this. So, why is this so very important? We know that Earth's heat, light and subsequently glacial cycles are tied to these cyclical events in time. Alignments of angular tilt, axis, perigee, and elliptical, orbital eccentricity from celestial bodies are cyclical events that can be monitored, calculated and anticipated over time. Other cyclical events include sunspot activity, luminosity, and electromagnetic radiation; also, gravitational strength, magnetic polar axis, movement and reversal, which effects the Earth's magnetosphere, directly or indirectly affecting atmospheric irradiation levels and composition ratios, heat transfer cycles, solar refraction and reflection, climate, glaciation, jetsreams, magmatic flow, plate tectonics, convergence, divergence, subduction zones, rifting, volcanoes and earthquakes. Should we not still be paying attention?

In many religions around the world there is speak of cyclical times, times that need preparing for, to enable humanity to continue

living on this world. There are cycles of destruction and rebirth and we know this from geological data. By water and by fire, as depicted in Hindu mythology, with many Greek authors writing about cyclical episodes; Plato among them. Aristotle also talks about cyclical revolutions about the Earth, with the sky wiping out life on the planet. The ancient Maya too had a similar legend, saying that we lived in the era of the 5th Sun. The 5th Sun is documented as the fifth 5,125 year long cycle that started on 11th August, 3114BC and ended on 21st December, 2012. Today, we live in era the 6th Sun. These cyclical times suggest the documentation of the history of humanity goes back at least 25,600 years ago, where our species was already 25,000 years out of Africa and ascribed to be not only anatomically but also behaviourally modern.

Everything about the site at Giza, points to an origin story of their gods around 10,500BC or around 12,500 years ago. Its construction in part is far earlier, yet the site is far older as a site of celestial worship; its heritage, its geomorphology, its documented royal line of the kingdom of the Pharaohs all point to this very ancient civilisation.

As a final measurement, can we say when the first times were? We have a celestial clock at Giza, so let's use it. This journey started when the Sphinx of Giza witnessed the Spring Equinox under the direct gaze of Regulus, during the age of Leo. Christianity gives us the start of the solar deification under the kingdom of Pisces starting at 1 AD. Judaism gives us the kingdom of the deification of the age of Aries, the Ram, starting at 2148 BC; then comes the pre-Abrahamic age of Zoroastrian times, the age of Taurus the Bull which began at 4295 BC. Prior to the age of Taurus was an era under the age of Gemini which began at 6443 BC. Prior to the age of Gemini, there was the age of Cancer which began in 8591 BC. Finally, we arrive at the age of Leo, and the start of 'The First Times', as documented in dynastic pharaonic history, which starts in 10,738 BC, some 12,700 years ago. Bingo!

I have several theories as to why ancient civilisations would send us a message over time; none of which are particularly revelationary as we understand most of the processes that lead to

cyclical cataclysms in our world. The only difference is that humanity today as a species is anaesthetised into numbness with the ravages that our culture bequeathed us and our children. The only thing we have full control over in our culture today is ourselves; for it is our actions in response to our environment which defines our culture. I cannot say where this information will lead us, as this is conjecture based upon the reaction of the populous. If you think this information is worthy to share with your friends and family, I ask of you to effect change in the world, by sharing our story. It is as much a story of you as it is a story of me. Share this story with the tools we have today, through word of mouth, through our social networks and through the conviction of your desire to stand up and say, "I want to change."

I will leave the rest of this story to science fiction writers to finish before the truth reveals itself to us. As a scientist I must remember the boundary between science and myth. The mathematic probability of everything I have divulged in this book so far, to be attributed to mere coincidence is so infinitesimally small, it is like zero. What we do now with this information is now up to us as individuals. Instead of drawing conclusions from my own way of thinking is not fair to you, the reader, as it will be biased with my tainted set of personal life filters. We can all change our life filters, but in order to change, we must first decide it is something we wish to do. Just because all of us can, doesn't mean that all of us should, as it is all relevant to the environment we live in. This information may be an awakening for many, but for some, it will be a time of reflection, choice, reason and change. This is not a self-help book. I am not here to tell you how you should live your life. How dare anyone tell you this! What I present to you is informed choice, based on the most up-to-date knowledge there is in our world today. My hope and wish is for clarity and truth, as it is the truth that will enlighten us as a civilisation. This, I wish for mankind more than any other.

CHAPTER 14

A Spanner in the Works

The amazingly true story of our civilisation's time on this Earth is far more fantastic and varied than any novel could ever aspire to fathom using fiction. There is nothing more compelling than painting a mosaic of mankind's journey, that evokes awe at our greatness, shame at our failings, frustration at our apathy, disgust at our destructiveness and a renewed sense of hope for our future.

From our place on our planet in the context of geological time, our biochemical beginnings from insidious soups of life; an inevitable cellular-level proliferation, a population explosion described by the empirical laws of physics, chemistry and biology, with an underlying prose of renewed philosophical understanding. The interactions and implications of our complex lives can now be seen with increasing clarity, without religious confabulation.

Humanity's awakening and extraordinary divergence from the tree of life; out of Africa, our earliest anatomical lineage of hominid convergence gave rise to sedentary ways, begetting the cults that transpired into the myriad religions of the world, that held captive our species for 20,000 generations, providing comforting succour as we drew concatenated anthropomorphic conclusions of the limited understandings of our umwelten.

Our intricate waves of dispersed migrations and interactions, powered by climate, trade, war and each subsequent civilisation's greed for power and control, gave rise to our social systems, our religious belief systems and the nuanced differences that we continue to war over today.

It is the fleeting spark of our comparatively intelligent lives on this planet, which currently holds the torch of knowledge, passing on our ecosemiotic ideals to the new generations who walk in our footsteps. We are the safekeepers, the keyholders, the trusted guardians of our ecology; our beautiful, natural environment which we call home.

Whilst religions, old and new, struggle to keep pace with the giant leaps that our understanding of the world in which we live, it is the legion of our collective, the voice of the people that drive our civilisation; the symbiotic understanding of ourselves, of each other and our environment, as it is our humanity which is the measure of our progress. It is the quantum change in our understanding of ourselves that will become the unshackling of the lives we live each day in segregated, microcosmic misery.

The change will happen slowly in generations to come, yet, not in our lifetimes. The catalyst for change today will become the measure of our success, so our children inherit something more beautiful than we did, with more tools for continued success that we bequeath to our grandchildren. We are the philosophers that will go down in history; so, let our story be one of an awakening that was instrumental in a rare, positive, drive for change in the unfolding story of mankind.

For this, we need to learn what is so powerful for change, by looking at our past. Today, we get to re-write history again, as the history we have always been taught has been cut in two. A paradox in our understanding who, what and why we are here has now been jilted once again, giving pause for continued thought. Our story, the story of our civilisation needs re-telling once again, as everything we thought we knew about our pre-history may as well be ripped apart, only to begin again. As many stories tend to do, we have to go full-circle, back to the cradle of life, the beginning of our pre-history.

Conventional understanding is that our sedentary living; farming, agriculture and associated settlements after the last ice age, slowly gave rise to our first civilisations, which in turn, spewed out language, stories, legends, ancestral worship, shamanistic cults, anthropomorphology and finally divine worship and ultimately, spiritual awakening.

The Sumerians, the first great civilisation of any magnitude, happened around 3500BC, with the 'Land of Civilised Kings' giving birth to every subsequent civilisation in the fertile crescent of Levant and Mesopotamia, such as the Akkadians, Babylonians and later the Ancient Kingdoms of the Egyptian dynasties which traversed from Western Europe, back into Africa. In the earliest depths of human pre-history, we have had very little data that gives us an account of the daily lives of Neolithic peoples beyond the Levantine corridor of pre-historic Mesopotamia prior to 6500BC, other than fragments of pottery, stone tools, cave paintings and the charcoal remains of fires and early mounds, and burials.

Until 2900BC, the Ubaid and the Uruk people were known to be sedentary across the Levant region with temple-centred cities of more than 10,000 people and were always thought to have been the western cradle of civilisation after our last major wave of nomadic migrations out of Africa. We knew about African migrations from 50,000 years ago, the first large migration waves from 40,000 years ago, stifled in periods of glaciations and hampered by desertification over millennia from our new understanding of migration paths from very precise DNA data. We also understand that the final great nomadic wave spread into Anatolia 10,000 years ago, up to the retreating snowline of the Russian steppes, out into Europe. How very wrong we were!

Conventional belief is this: Homo sapiens burst onto the scene about 340,000 years ago. For most of the millennia that followed, the species changed remarkably little, with humans living as small bands of wandering foragers. Then the Neolithic Revolution arrived, which was a radical change fraught with revolutionary consequences for the whole species. In a lightning bolt of inspiration, one part of humankind turned

its back on foraging and embraced agriculture. The adoption of farming brought with it further transformations. To tend their fields, people had to stop wandering and move into permanent villages, where they developed new tools and created pottery. The Neolithic Revolution was an explosively important event; the greatest in human history after mastering fire.

Of all the aspects of the revolution, agriculture was the most important. For thousands of years men and women with stone implements had wandered the landscape, cutting off heads of wild grain and taking them home. Even though these people may have tended and protected their grain patches, the plants they watched over were still wild. Wild wheat and barley, unlike their domesticated versions, shatter when they are ripe; the kernels easily break off the plant and fall to the ground, making them next to impossible to harvest when fully ripe. Genetically speaking, true grain agriculture began only when people planted large new areas with mutated plants that did not shatter at maturity, creating fields of domesticated wheat and barley that, so to speak, waited for farmers to harvest them.

Rather than having to comb through the landscape for food, people could now grow as much as they needed and where they needed it, so they could live together in larger groups. Population soared. It was only after the revolution; but immediately thereafter, that our species really began to multiply at an increased rate. In these suddenly more populous societies, ideas could be more readily exchanged, and rates of technological and social innovation soared. Religion and art; the hallmarks of civilisation flourished.

Conventional belief is that the revolution first occurred in the Fertile Crescent, the arc of land that curves northeast from Gaza into southern Turkey and then sweeps southeast into Iraq. Bounded on the south by the harsh Syrian Desert and on the north by the mountains of Turkey, the crescent is a band of temperate climate between inhospitable extremes. Its eastern terminus is the confluence of the Tigris and Euphrates Rivers in southern Iraq; the site of a realm known as Sumer, which dates back to about 4000 BC.

Most researchers agree that Sumer represented the beginning of civilisation. Archaeologist Samuel Noah Kramer summed up that view in the 1950s in his book 'History Begins at Sumer.' Yet even before Kramer finished writing, the picture was being revised at the opposite, western end of the Fertile Crescent. In the Levant area which today encompasses Israel, the Palestinian territories, Lebanon, Jordan, and western Syria; archaeologists had discovered settlements dating as far back as 13,000 BC. Known as Natufian villages (name after the first of these sites to be found), they sprang up across the Levant as the Ice Age was drawing to a close, ushering in a time when the region's climate became relatively warm and wet.

The discovery of the Natufians was the first chink in the road, now well trodden, for those who supported the notion of a Neolithic Revolution. As far as the textbooks are concerned, agriculture was the necessary spark that led to villages and ignited civilisation. Yet although the Natufians lived in permanent settlements of up to several hundred people, they were foragers, not farmers, hunting gazelle and gathering wild rye, barley, and wheat. This was the first big sign that the ideas about our origins needed to be revised.

Natufian villages ran into hard times around 10,800 BC, when regional temperatures abruptly fell some 7°C, part of a mini ice age that lasted 1,200 years and created much drier conditions across the Fertile Crescent. With animal habitat and grain patches shrinking, a number of villages suddenly became too populous for the local food supply. Many people once again became wandering foragers, searching the landscape for remaining food sources.

Some settlements tried to adjust to the more arid conditions. The village of Abu Hureyra, in what is now northern Syria, seemingly tried to cultivate local stands of rye, perhaps replanting them. After examining rye grains from the site, some strains appeared bigger than their wild equivalents; a possible sign of domestication, because cultivation inevitably increases qualities, such as fruit and seed size, that people find valuable. Researchers came to believe that nearby sites like Mureybet and Tell Qaramel also had agriculture.

If these archaeologists were correct, these proto-villages provided a new explanation of how complex society began. It was widely believed that agriculture came first, that it was the innovation that allowed humans to seize the opportunity of a rich new environment to extend their dominion over the natural world. The Natufian sites in the Levant suggested instead that settlement came first and that farming arose later, as a product of crisis. Confronted with a drying, cooling environment and growing populations, humans in the remaining fecund areas thought that if they moved, other folk would exploit their resources. It was believed that settling down; exploiting their own areas gave rise to modern agriculture.

The idea that the Neolithic Revolution was driven by climate change resonated during the 1990s, a time when people were increasingly worried about the effects of modern global warming. It was promoted in countless articles and books and ultimately enshrined in Wikipedia. Yet critics baulked in droves as the evidence was so weak, not least because Abu Hureyra, Mureybet, and many other sites in northern Syria had been flooded by dams before they could be fully excavated. An entire theory on the origins of human culture was essentially based on a half a dozen unusually plump seeds! This argument continued, until the revelation of one of the world's greatest discoveries was unearthed.

On a warm autumnal evening in October, 1994, an old Kurdish shepherd named Savak Yildiz, spotted something lurking precariously in the shadows of a sunset-lit mound atop a hill on his farm, a site located in Turkey's Taurus Mountain range; a site known locally as Göbekli Tepe. He brushed away the dust to expose a large oblong-shaped stone. Later that year, German archaeologist, Professor Klaus Schmidt, of the Deutsches Archäologisches Institut inspected the site, realising that it was actually prehistoric in origin. The excavations that were undertaken in 1995 under his direction, soon uncovered T-shaped pillars; some of which had apparently undergone attempts at smashing, probably by farmers who mistook them for ordinary large rocks. Schmidt's view, shared by most experts now, is that the site of Göbekli Tepe (pronounced Guh-behk-LEE TEH-peh), is a stone-age mountain

sanctuary; the oldest religious site yet discovered. This 'cathedral on a hill' was a pilgrimage destination attracting worshippers up to 100 miles (160 km) distant. Butchered bones found in large numbers from local game such as deer, gazelle, pigs, and geese have been identified as refuse derived from hunting and food prepared for the congregants of the day. As the dispute over the Natufians sharpened, Schmidt was carefully working at Göbekli Tepe. What he and his team slowly started uncovering would, once again, force many researchers to reassess their ideas.

Anthropologists have assumed that organised religion began as a way of salving the tensions that inevitably arose when hunter-gatherers settled down, became farmers, and developed large societies. Compared to a nomadic band, the society of a village had longer term, more complex aims; storing grain and maintaining permanent homes. Villages would be more likely to accomplish those aims if their members were committed to the collective enterprise. Though primitive religious practices such as burying the dead, creating cave art and figurines had emerged tens of thousands of years earlier, organised religion arose, in this view, only when a common vision of a celestial order was needed to bind together these big, new, fragile groups of humankind. It could also have helped justify the social hierarchy that emerged in a more complex society: Those who rose to power were seen as having a special connection with the gods. Communities of the faithful, united in a common view of the world and their place in it, were more cohesive than ordinary clumps of quarrelling people.

Six miles from Urfa, an ancient city in south-eastern Turkey, Klaus Schmidt has made one of the most startling archaeological discoveries of our time: the more recent of the massive, carved stones, date to over 11,600 years old; crafted and arranged by prehistoric people who had not yet developed metal tools or even pottery. The megaliths predate Stonehenge by some 7,000 years!

On the hillside today, are four other rings of partially excavated pillars. Each ring has a roughly similar layout: in the centre are two large stone T-shaped pillars encircled by slightly smaller stones facing inward. The tallest pillars tower 18 feet, weigh between seven and ten

tonnes. Some stones are blank, while others are elaborately carved; foxes, lions, scorpions and vultures abound, twisting and crawling on the pillars' broad sides.

These great stone rings, one of them 65 feet across, are now believed to be the very first human-built holy place of worship. Large parts of what has been uncovered thus far, has been dated to being at least 13,600 years old, with as yet, only the initial top 3 layers and just 5% of the megalithic 22 acre site are, so far, uncovered.

From this perch 1,000 feet above the valley, you can see to the horizon in nearly every direction. One can only imagine what the landscape would have looked like nearly 14,000 years ago, before centuries of intensive farming and settlement turned it into the nearly featureless brown expanse it is today.

Prehistoric people would have gazed upon herds of gazelle and other wild animals; gently flowing rivers, which attracted migrating geese and ducks; fruit and nut trees; and rippling fields of wild barley and wild wheat varieties such as Emmer and Einkorn. This area would have been a beautiful paradise, as Göbekli Tepe sits at the northern edge of the Fertile Crescent; an arc of mild climate and arable land from the Persian Gulf to present-day Lebanon, Israel, Jordan and Egypt; and would have attracted hunter-gatherers from Africa and the Levant. As there is no evidence that people permanently resided on the summit of Göbekli Tepe itself, it has been deemed a pre-historic place of worship on an unprecedented scale.

Subsequently, the whole area has now been geologically surveyed. The entire summit has been scoured using ground-penetrating radar and geomagnetic surveys, charting where at least 16 other megalith rings remain buried across 22 acres. Archaeologists could dig there for another 50 years and barely scratch the surface!

Göbekli Tepe was first examined (and dismissed) by University of Chicago and Istanbul University anthropologists in the 1960s. As part of a sweeping survey of the region, they visited the hill, saw some broken slabs of limestone and assumed the mound was nothing more than an abandoned medieval cemetery.

Unlike the stark plateaus nearby, Göbekli Tepe (meaning "Potbelly Hill" in Turkish) has a gently rounded top that rises 50 feet above the surrounding landscape. Schmidt returned in 1995 with five colleagues and they uncovered the first megaliths, a few buried so close to the surface they were scarred by ploughs. As the archaeologists dug deeper, they unearthed pillars arranged in circles. Schmidt's team, however, found none of the telltale signs of a settlement: no cooking hearths, houses or trash pits, and none of the clay fertility figurines that litter nearby sites of about the same age. The archaeologists did find evidence of tool use, including stone hammers and blades, and because those artefacts closely resemble others from nearby sites previously carbon-dated to about 9000 B.C., Schmidt and co-workers estimate that Göbekli Tepe's stone structures are the same age. Limited carbon dating undertaken by Schmidt at the site also confirms this assessment.

The way Schmidt sees it, Göbekli Tepe's sloping, rocky ground is a stonecutter's dream. Even without metal chisels or hammers, prehistoric masons wielding flint tools could have chipped away at softer limestone outcrops, shaping them into pillars on the spot before carrying them a few hundred yards to the summit and lifting them upright. Once the stone rings were finished, the ancient builders covered them over with dirt. Eventually, they placed another ring nearby or on top of the old one. Over centuries, these layers created the hilltop.

Today, Schmidt oversees a team of more than a dozen German archaeologists, 50 local labourers and a steady stream of enthusiastic students. He typically excavates at the site for two months in the spring and two during the autumnal months. (Summer temperatures can reach 44 degrees, too hot to dig; in the winter the area is deluged by rain.) In 1995, he bought a traditional Ottoman house with a courtyard in Urfa, a city of nearly a half-million people, to use as a base of operations.

Göbekli Tepe's builders were on the verge of a major change in how they lived, thanks to an environment that held the raw materials for farming. They had wild sheep, wild grains that could be domesticated, and the people with the potential to do it. Research at other sites in the region has shown that within 1,000 years of Göbekli

Tepe's construction, settlers had corralled sheep, cattle and pigs. At a prehistoric village just 20 miles away, geneticists found evidence of the world's oldest domesticated strains of wheat; radiocarbon dating indicates agriculture developed there around 10,500 years ago, some 2,000 years after Göbekli Tepe's construction!

To Schmidt and others, these new findings suggest a novel theory of civilisation. Scholars have long believed that only after people learned to farm and live in settled communities did they have the time, organisation and resources to construct temples and support complicated social structures, but Schmidt argues it was the other way around: the extensive, coordinated effort to build the monoliths literally laid the groundwork for the development of complex societies.

The immensity of the undertaking at Göbekli Tepe reinforces that view that these monuments could not have been built by ragged bands of hunter-gatherers. To carve, erect and bury rings of up to 20 tonne stone pillars in some instances, would have required hundreds of workers, all needing to be fed and housed. Hence, the eventual emergence of settled communities in the area around 10,000 years ago shows that sociocultural changes came first, with agriculture coming much later. One can make a good case that this area is the real origin of complex Neolithic societies.

What was so important to these early people that they gathered to build (and bury) the stone rings? The gulf that separates us from Göbekli Tepe's builders is almost too unimaginable to comprehend. There are no sources to explain what the symbols might mean, being 8,000 years before the invention of any kind of writing system.

Still, archaeologists have their theories; evidence, perhaps, of the irresistible human urge to explain the unexplainable. The surprising lack of evidence that people lived right there, researchers say, argues against its use as a settlement or even a place where, for instance, clan leaders gathered. Göbekli Tepe's pillar carvings are dominated not by edible prey like deer and cattle but by menacing creatures such as lions, spiders, snakes and scorpions. While later cultures were more concerned with farming and fertility, it has been suggested that perhaps

these hunters were trying to master their fears by building this complex, which is a good distance from where they lived.

Some cultures have long believed the high-flying carrion birds transported the flesh of the dead up to the heavens. Similar symbols at sites from the same era as Göbekli Tepe just 50 miles away in Syria, in comparison, one can really see it's the same culture, with all of the important symbols remaining the same.

For his part, Schmidt is certain the secret is right beneath his feet. Over the years, his team has found fragments of human bone in the layers of dirt that filled the complex. Deep test pits have shown that the floors of the rings are made of hardened limestone. Schmidt is betting that beneath the floors he'll find the structures' true purpose: a final resting place for a society of hunters.

At the time of Göbekli Tepe's construction much of the human race lived in small nomadic bands that survived by foraging for plants and hunting wild animals. Construction of the site would have required more people coming together in one place than had likely occurred before. Amazingly, the temple's builders were able to cut, shape, and transport 20 tonne stones, hundreds of feet, despite having no wheels or beasts of burden. The pilgrims who came to Göbekli Tepe lived in a world without writing, metal, or pottery; to those approaching the temple from below, its pillars must have loomed overhead like rigid giants, the animals on the stones shivering in the firelight; emissaries from a spiritual world that the human mind may have only begun to envisage.

Archaeologists are still excavating Göbekli Tepe and debating its meaning. What they do know, is that the site is the most significant in a volley of unexpected findings that have overturned earlier ideas about our species' deep past. Just 20 years ago most researchers believed they knew the time, place, and rough sequence of the Neolithic Revolution; the critical transition that resulted in the birth of agriculture, taking Homo Sapiens from scattered groups of hunter-gatherers to farming villages and from there, to technologically sophisticated societies, with great temples, towers, kings and priests who directed the labour of their subjects and recorded their feats in

written form. However, in recent years multiple new discoveries, Göbekli Tepe preeminent among them, have begun forcing archaeologists to reconsider.

Klaus Schmidt knew almost instantly that he was going to be spending a lot of time at Göbekli Tepe. The biggest city in the area is Şanlıurfa (pronounced shan-LYOOR-fa). By the standards of a brash newcomers like London, Paris or New York, Şanlıurfa is incredibly old; the place where the Prophet Abraham supposedly was born. Schmidt was in the city to find a place that would help him understand the Neolithic, a place that would make Şanlıurfa look young. North of Şanlıurfa the ground ripples into the first foothills of the Taurus Mountains that run across southern Turkey, source of the famous Tigris and Euphrates Rivers. Nine miles outside of town is a long ridge with a rounded crest which is Göbekli Tepe.

Inches below the surface, the team struck an elaborately fashioned stone; then another, and another; a ring of standing pillars. As the months and years went by, Schmidt's team, a shifting crew of German and Turkish graduate students and 50 or more local villagers, found a second circle of stones, then a third, and then more. Geomagnetic surveys in 2003 revealed at least 20 rings piled together, apparently in no discernible order, under the earth.

The pillars are huge; the tallest are 18 feet in height and weighing 20 tonnes. Swarming over their surfaces was a menagerie of animal bas-reliefs, each in a different style, some roughly rendered, a few as refined and symbolic as Byzantine art. Other parts of the hill were littered with the greatest store of ancient flint tools that Schmidt had ever seen; a Neolithic warehouse of knives, choppers, and projectile points. Even though the stone had to be lugged from neighbouring valleys, there were more flints in one small area, a square metre or two, than many archaeologists find in entire sites.

The circles follow a common design. To any layperson, closely resembling that of Stonehenge, only much more diversely carved. All are made from limestone pillars shaped like giant spikes or capital T's. Bladelike, the pillars are easily five times as wide as they are deep. They stand an arm span or more apart, interconnected by low stone

walls. In the middle of each ring are two taller pillars, their thin ends mounted in shallow grooves cut into the floor.

The T-shaped pillars are stylised human beings; an idea bolstered by the carved arms that angle from the "shoulders" of some pillars, hands reaching toward their loincloth-draped bellies. The stones face the centre of the circle; as at a meeting or dance, a representation, perhaps, of a religious ritual. As for the prancing, leaping animals on the figures, it is noted that they are mostly deadly creatures: stinging scorpions, charging boars, ferocious lions. The figures represented by the pillars may be guarded by them, or appeasing them, or incorporating them as totems.

The puzzles where compounded as the excavation continued. For reasons yet unknown, the rings at Göbekli Tepe seem to have regularly lost their power, or at least their charm. Every few decades people buried the pillars and put up new stones; a second, smaller ring, inside the first. Sometimes, later, they installed a third. Then the whole assemblage would be filled in with debris, and an entirely new circle created nearby. The site may have been built, filled in, and built again for centuries.

Bewilderingly, the people at Göbekli Tepe got steadily worse at temple building. The earliest rings are the biggest and most sophisticated, technically and artistically. As time went by, the pillars became smaller, simpler, and were mounted with less and less care. Finally the effort seems to have petered out altogether by 8200 BC Göbekli Tepe was all fall with no rise.

As important as what the researchers found, was what they did not find: any sign of habitation. Hundreds of people must have been required to carve and erect the pillars, but the site had no water source, with the nearest stream being about three miles away. Those workers would have needed homes, but excavations have uncovered no sign of walls, hearths, or houses; no other buildings that Schmidt has interpreted as domestic.

They would have had to be fed, but there is also no trace of agriculture. For that matter, Schmidt has found no mess kitchens or cooking fires. It was purely a ceremonial centre. If anyone ever lived at

this site, they were less its residents than its staff. To judge by the thousands of gazelle and aurochs bones found at the site, the workers seem to have been fed by constant shipments of game, brought from faraway hunts. All of this complex endeavour must have had organisers and overseers, but there is as yet no good evidence of a social hierarchy; no living area reserved for richer people, no tombs filled with elite goods, no sign of some people having better diets than others.

These people were foragers, who gathered plants and hunted wild animals. Our picture of foragers was always just small, mobile groups, a few dozen people. They cannot make big permanent structures, we thought, because they must move around to follow the resources. They can't maintain a separate class of priests and craft workers, because they can't carry around all the extra supplies to feed them.

Discovering that hunter-gatherers had constructed Göbekli Tepe was like finding that someone had built a 747 in a basement with a Swiss-Army Knife. Paradoxically, Göbekli Tepe appeared to be both a harbinger of the civilised world that was to come and the last, greatest emblem of a nomadic past that was already disappearing. The accomplishment was astonishing, but it was hard to understand how it had been done or what it meant. In 10 or 15 years time, no doubt that Göbekli Tepe will be more famous than Stonehenge; and for good reason. The construction of a massive temple by a group of foragers is evidence that organised religion could have come before the rise of agriculture and other aspects of civilisation. It suggests that the human impulse to gather for sacred rituals arose as humans shifted from seeing themselves as part of the natural world to seeking mastery over it.

This change in consciousness was a revolution of symbols, a conceptual shift that allowed humans to imagine gods; supernatural beings resembling humans that existed in a universe beyond the physical world. The animals seem to be guardians to the spirit world, with the reliefs on the T-shaped pillars illustrating that other world.

Schmidt speculates that foragers living within a hundred-mile radius of Göbekli Tepe created the temple as a holy place to gather and meet, perhaps bringing gifts and tributes to its priests and crafts-people.

Some kind of social organisation would have been necessary not only to build it but also to deal with the crowds it attracted. One imagines chanting and drumming, the animals on the great pillars seeming to move in flickering torchlight. Surely there were feasts; Schmidt has uncovered stone basins that could have been used for beer. The temple was a spiritual locus, but it may also have been the Neolithic version of Disneyland. Over time, Schmidt believes, the need to acquire sufficient food for those who worked and gathered for ceremonies at Göbekli Tepe may have led to the intensive cultivation of wild cereals and the creation of some of the first domestic strains. Indeed, scientists now believe that one centre of agriculture arose in southern Turkey; well within trekking distance of Göbekli Tepe at exactly the time the temple was at its height. Today the closest known wild ancestors of modern Einkorn wheat are found on the slopes of Karaca Dağ, a mountain just 60 miles northeast of Göbekli Tepe. In other words, the turn to agriculture may have been the result of a need that runs deep in the human psyche; a hunger that still moves people today to travel the globe in search of awe-inspiring sights.

Some of the first evidence for plant domestication comes from Nevalı Çori (pronounced nuh-vah-LUH CHO-ree), a settlement in the mountains scarcely 20 miles away. Like Göbekli Tepe, Nevalı Çori came into existence right after the mini ice age, a time archaeologists describe with the unlovely term Pre-pottery Neolithic (PPN). Nevalı Çori is now inundated by a recently created lake that provides electricity and irrigation water for the region, but before the waters shut down research, archaeologists found T-shaped pillars and animal images much like those Schmidt would later uncover at Göbekli Tepe. Similar pillars and images occurred in PPN settlements up to a hundred miles from Göbekli Tepe. It is more as if the occupants of various archaeological sites were all playing with the building blocks of civilisation, looking for combinations that worked. In one place agriculture may have been the foundation; in another, art and religion; and over there, population pressures or social organisation and hierarchy. Eventually they all ended up in the same place. Perhaps there is no single path to civilisation; instead it was arrived at by different

means in different places. Even its age is not yet completely clear; Schmidt is not certain he has reached the bottom layer. "We come up with two new mysteries for every one that we solve," he says. Still, he has already drawn some conclusions. "Twenty years ago everyone believed civilisation was driven by ecological forces," Schmidt says. "I think what we are learning is that civilisation is a product of the human mind."

The imposing stratigraphy of Göbekli Tepe attests to many centuries of activity, beginning at least as early as the epipaleolithic. At this early stage of the site's history circular compounds or 'Temenoi' make their first appearance. They range from 10 to 30 metres in diameter. Their most notable feature is the presence of T-shaped limestone pillars, evenly set within thick interior walls made of unworked stone. Four such round structures have been unearthed so far; geophysical surveys point to there being 16 more, enclosing up to eight pillars each, or nearly 200 pillars in all. The slabs were transported from bedrock pits located approximately 100 metres (330 ft) from the hilltop, with workers using flint points to cut through the bedrock.

Few humanoid figures have surfaced at Göbekli Tepe, but some of the T-shaped pillars have human arms carved on their lower half, suggesting that they are intended to represent the bodies of stylised humans (or anthropomorphic gods). The horizontal stone member above is thought to symbolise the head; thus the pillars as a whole have an anthropomorphic identity.

The discovery of a predator; a crocodile, perhaps, built low to the ground, very muscular, shown baring teeth and featuring a long tail that nearly doubles back on itself; has excited special interest for being carved nearly in the round, hinting at a degree of artistic training and social diversification, completely unexpected in a community still mainly dependent on hunting for subsistence. Some of the floors in the oldest layers uncovered so far, are made of terrazzo (burnt lime), others are bedrock from which pedestals to hold the large pair of central pillars were carefully carved in high relief. Radiocarbon dating places the construction of these early sacred circles in the range of 9600 to 8800 BC; carbon dating suggests that (for reasons unknown) the

enclosures were also backfilled during the Stone Age. Why the enclosures were backfilled is unknown, but it preserved them for posterity.

Since 2003 I have been following the work of Prof. Klaus Schmidt and his team at Göbekli Tepe in an effort to shed any light on what I have known for more than a decade is to become the most important archaeological dig of all time. Amazed by the Geophysics results that were taken at the time, and even more so by the age of the first small area uncovered, I have been trying to unlock the mysteries of Göbekli Tepe for over a decade. Every time a discovery was made, two new questions were created which cannot be answered. So many unknowns in a time that was thought to be nomadic, without writing, without metal tools, without a wheel, without religion, without agriculture and without animal husbandry. What was the significance of Göbekli Tepe? In time, Göbekli Tepe will give up many of its answers, but for now we have to look at the clues that we have already been given. Parts of the lower levels show signs of habitation and ritual for over 15,000 years! How could this be? This predates agriculture by 4500 years!

Truths will start to come to light when we decipher the images, signs and reliefs inscribed all over the site. The anthropomorphised beings are faceless, as more than man, but in the image of man. This seemed to me as least to be man's way of depicting its new superiority over animals, whereas much older cave paintings would honour the spirit of the animals they preyed upon. Is this the first sign that man is looking to the sky, forming ideas about our place in the Universe? There is no 'Rosetta Stone' tablet to uncover the mysteries of these depictions. There is no writing! Is this the first religion?

Historically, there is a format of anthropomorphology in the stars, which affect the very area of worship itself. Stonehenge, Egyptian Pyramids, Inca Pyramids, Mayan Pyramids, Angkor Pyramids and all of the others civilisations had Sun worship, totems to measure the solstices and the equinoxes and the personification of animals in the night sky. Could Göbekli Tepe be the template for all of humanity's religions the world over? If so, where are the clues? To me, the answer

was as plain as day. Everything you are about to read is my personal conclusion based on all of the information I have to hand. This is my theory, which will remain just a theory until either proven or disproven. Remember, as of writing less than 10% of the 22 acre site has been uncovered, so many new and exciting things can and will crop up that will astound the world in years to come.

Many of the reliefs on the stone pillars have depictions of a bull, with long upturned horns, an anthropomorphised humanoid, with arms in front as depicted in Moai statues of the Chinese Polynesian island of Easter Island. Another symbol, a large letter 'H' appears in many places. What does this mean? To me, the 'H' resembled much later H's that appear upon various monuments around the world as the 'Kanaga' symbol. The Kanaga was the original depiction of Orion before Orion was more detailed in its anthropomorphology. The dots either side represent each end of 'The 3 Kings" stars of Alnitak and Mintaka, with the double ended trident intersecting the centre star of Alnilam, or today, Orion's Belt. The Kanaga symbol is still part of the ritualistic symbolism in Mali's Dogon people today in their ancestral worship, where heads are removed from their rotting dead. Is this a symbol that at Göbekli Tepe they are performing ancestral worship? Are the faceless humanoid depictions upon the great pillars reference to faceless, godlike beings in human form, or is it the depiction of ancestral ritual where the heads of deceased family members were buried in shallow graves, whereby after a short time their heads where then removed from their bodies, with shamanistic dances of death, commemorating the dead, leading their souls to the gods of the afterlife into the vicinity of Orion's Belt?

Well, it's a long shot, but one that makes more and more sense as I play with this idea. Interestingly, it's this star system that is the pointer for the rising of the Sun of the 25th December. Sirius, the brightest star in the sky follows the 3 Kings, to locate the rising of the Sun, God's Sun, the light of the world. If all civilisations have depictions of this star system, this ubiquitous cosmic signpost as the basis for elaborate myths, where did they originate?

The next revelation to me is what really knocked me sideways. In 2005, having studied the formation of the Geophysics report in more detail for the location of each of the barrows which house each megalithic circle, the three areas uncovered so far seemed to be placed in a familiar pattern, one which I quickly recognised as parts of the constellation of the open star system of Pleiades. After two more areas were unveiled in 2008 and 2009 as depicted by the Geophys map, it made 5 of the '7 Sisters' of the Pleiades system, with the other 2 represented as being there by the imprint as shown in the Geophys data.

Like Sirius, Pleiades also sits at a 33 arc which points to the sunrise on the morning of 25th December. Spooky! We also have reliefs everywhere at Göbekli Tepe depicting the bull, with a circle above its horns; the very same relief and depiction is also shown 6,000 years later in Egypt. This kinship with signs depicted in ancient Egypt and its story brought me back to Göbekli Tepe as underneath the mysterious 'H' symbol is a disc with a crescent shape underneath. Much like a ball inside a cup, this symbology in ancient Egypt represented Ra, with the crescent representing its world. Did hunter gatherers still in the throes of an ice age have this same depiction? If this was to be proven true, wouldn't this rewrite all of the books on human history and change the way we look at ourselves forever? Shocking though it is to find out that historic modern man had a defined culture that has just doubled overnight, but to suggest that mankind had a ritualistic belief system of a civilisation that pre-dates agriculture is astounding.

This would mean that religion caused the banding together of people outside of their families, where rules and codes of conduct needed to be set in place in order to co-habit with each other. This may have been the first hierarchy of orderly communion, where whole families shared the insight and moral canon of a sect of mythological beliefs. There is no housing, there are no human burials; Göbekli Tepe is looking more and more like the very first holy place on Earth, the working template for all other religions that followed.

The bull geoglyph seemed to be watching itself upon the horizon, as if upright. "Where is that in the sky?" I thought to myself.

Taurus! Taurus stands in-between Pleiades and Orion. In fact, the line from Pleiades and The 3 Kings, pointing the way to the sunrise on December 25th goes straight through Aldebaran, the star known as the Heart of Taurus. So, where does the Sun appear in this picture? On the relief in both Egyptian mythology and as also depicted at Göbekli Tepe, the Sun appears between the horns of the bull. To answer this question, we need to understand what people could see in the sky 12,000 years ago, in the epoch of the day back then.

Using mathematics, geometry, and calculating the degrees of change in the precession of the equinoxes over 12 millennia, I instantly concluded that the Sun on the morning of the Spring Equinox (Easter), the celebrated time of the Sun, officially overpowering the evil darkness and foreshadowing life to the ancients, passed directly in the centre of the horns of Taurus as depicted in the relief of the bull inscribed on the columns at Göbekli Tepe. At this point, I had convinced myself this was the truth hiding, waiting to be discovered. There may be other stories; others no doubt will disagree, having new ideas about the clues that will be uncovered at the site of Göbekli Tepe over the next 50 years.

In May, 2009, I was looking at the updated images of the site by Geoeye, the same images that were added to Google Earth 2 years later, when it hit me. When, looking from above, across the whole site, two causeway arches resembled giant horns, 130m apart. To scale, the shape of the mountain ridge formed the head, neck and body of the bull. Between the horns, there is a massive circle, a 12m wide mound which today has a large tree planted in the middle which also shows up on the Geophys map. It's Taurus! Taurus the bull on the ground at Göbekli Tepe is the anthropomorphology of the constellation of Taurus in the sky. Both of them face the point of the sunrise of the morning of the Spring equinox 12,000 years ago. Why didn't I think of this before? I've been staring at this region on a map for 10 years! What is the name of the mountain range that Göbekli Tepe sits on? Taurus Mountains!

As compelling as these signs are to me, it doesn't make this true. Science deals with empirical evidence, so for now we will have to see how things pan out with the uncovering of the secrets at Göbekli

Tepe. It just goes to show how powerful religion has become to our psyche in order to enable humble hunter gatherers to ponder his place in the Universe. These thought processes and understandings gave us the tools to advance our knowledge of the real world by forcing us to try and understand how things around us work and fit together.

Religion is an unfortunate by-product of this process of discovery, where our imaginations run riot in order to create answers. Since the moments of inception, religious ideals have been guiding the morality of mankind to do great things, by hiding our primitive ways of the past. Somewhere down the line, religion and morality have been inseparable constituents of each other, when in truth, we do not need religion in our lives to be moral. We need understanding, we need the truth. The sad truth is...most people don't know the truth. Most people rely upon a religion to give them the guiding principles of how to live their life. To do this well, one must become adept at something called faith, whereby one must fly in the face of empirical contradictions in order to uphold that faith. These religions, born in the minds of hunter-gatherers more that 12,000 years ago are the manifestation of fears and ideals in an archaic world without rules of conduct.

Over plants, animals are aware. Humans over animals are self aware. Humanity, so far, is only aware. To fully become self-aware and thrive in peace and harmony as a species, we must shed the cults of ancient man; for when we ask all of life's questions to ourselves, we already have the capacity to provide the answers. Our actions today, echo into eternity. Let the ripples in the pond of life become awareness of our place in our Universe. Let our understanding of causality be the guiding principles of mankind.

A life of truth and love is all the sustenance our body's need in order to be able to respond to the harmonic signals of life for eternity. Let us understand each other, let us love each other, let us all see God in everything we see, and everything we know is there, yet cannot see on all 10 dimensions of space and time. Let's believe in everlasting life. I believe in heaven, and heaven is here right now, on our wonderful planet. Our home; our Earth.

EPILOGUE

Thank you for reading my book. It is the culmination of a life's work and study of my great passions of mathematics, physics, biology, geology, computer science, ancient history, coptology, linguistics, epigenetics, biosemiotics, theoretical lexicography and human biology.

I have written so much already, so I will keep these passages short. I do understand that many of these discoveries will rock the foundations of many people's belief systems. As much as everyone has the right to stand up for what they believe in, it is equally important to stand up for what they do not believe. If you in any way have taken offence in anything that I have written herein, then you have my deepest apologies. There is no malice intended or implied as I am simply drawing conclusions from the current data being presented.

I have the deepest respect and admiration for people's beliefs as we can only draw conclusions from the information we have at hand. As someone who has studied at great depth many religions and the language used in ancient writings has given me a greater insight and grounding in religion in general that most people will ever attain. As it is a passion and a gift, I am merely presenting the truths from those facts, truths that may be perceived as unnecessarily inflammatory.

From my defensive perspective, I am presenting informed choice and balance based upon vast quantities of empirical data. We live in a data world where many people get bombarded with so much information we can no longer see the wood for the trees. I have a rare gift of visual perception that would be a shame not to do something actively constructive with. For me, having all of this knowledge locked away is a burden, so this book for me is very cathartic.

This book which has taken three solid months to write does not represent three months work, but the attained knowledge of a lifetime.

It has been both physically and emotionally draining, and the fact that I have now finished feels like a firework is about to explode. Although I have been writing scientific journals, editing blogs and wikis for over 20 years now, this book is my first stab at creating a scientific compendium that will stand the test of time.

I can assure you that every word written in this book has been carefully selected to portray the meaning and inference intended. My goal was to inspire, to educate, to demystify, to shock and to sow the seeds of thought proving nuggets of pure wonderment.

To marvel at our discoveries, old and new, is truly an attempt to view the canvas of humanity and repaint its picture. It is something that I undertook as a challenge from the day I decided that it was time to put pen to paper, drawing upon all of my passions.

I hope you feel the passion I have for the subjects in the book as I was on the same journey that you have just been on, feeling the rollercoaster of realisation mixed with intrigue, joy, sadness, frustration and a realisation that this work could have a profound positive impact on so many lives. This notion is a humbling one; a notion I hope with all of my heart becomes a reality.

We can only ever lead a horse to water, yet we cannot make it drink. The impressions we leave upon the people in our care are much deeper than we realise. Much of these life learning curves only come as a slow realisation with age. The things we choose to do in life cause ripples in life's pond for a very long time.

Before I start my list of acknowledgements, I want to take this opportunity to say a massive thank you to Samantha, my darling wife. Sam has had to put up with endless late nights and a cold empty bed on too many occasions, as I burn the midnight oil, stuck in the world of mankind's history. I am so fortunate to have such wonderful, caring and understanding support. I understand and acknowledge the daily concessions made for me in order for the book to finish in time.

These concessions go out to my extended family that have all provided their own inputs that have helped in various ways to support me through its production.

One fallacy I hope I have disproved during the creation of this work is that science doesn't have to be dull, number crunching. I hope you now agree with me that science and technology is beautifully succinct in revealing wondrous facts about our world. I hope my portrayal of a small sample of these findings; spur a renewed interest and uptake in subjects they left behind at school.

The subject matter was as daunting and difficult to write as it can be to read. I am glad that you persevered to the end, just as I did, as we are all now better empowered for rational thoughts that may one day be of some use in our continued journey into the age of our own humanity.

The religions of our world serve as relics for some, and soul food for others. Whatever your stance, they have provided us with beautiful stories of a world we can all hope to attain, either in this world or the next. Even if we no longer require these stories of old as a moral compass, the poetry and insight remains as true today as they always did. I leave you now with a verse from the book of Romans, as it ties in so nicely with everything I have been saying. Take care of yourselves, and each other. Let us make this world a better place.

3 "For by the grace given me I say to every one of you: Do not think of yourself more highly than you ought, but rather think of yourself with sober judgment, in accordance with the faith God has distributed to each of you. 4 For just as each of us has one body with many members, and these members do not all have the same function, 5 so in Christ we, though many, form one body, and each member belongs to all the others. 6 We have different gifts, according to the grace given to each of us. If your gift is prophesying, then prophesy in accordance with your faith; 7 if it is serving, then serve; if it is teaching, then teach; 8 if it is to encourage, then give encouragement; if it is giving, then give generously; if it is to lead, do it diligently; if it is to show mercy, do it cheerfully." (Romans 12:3-8)

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This book would not be possible without...

The late Biblical Scholar, Professor Marvin Meyer, who expressed so much passion in his teachings and was adored by his peers, sadly passed away on August 16th 2012 at the age of just 64. Marv was one of my great heroes, who inspired my interest and deep understanding of Gnostic scriptures, whose deep love of the Gnostic authors and whose writings he helped bring out from the darkness, where they had long been dismissed as heretical, is testament to this man's infectious brilliance. Marv brought the ancient world alive in his lucid and poetic translations and in his teaching both inside and outside the classroom, not only for students and colleagues but also for others around the globe. Beloved by his students, he was extremely generous with his time, working individually with them, taking groups to Egypt and teaching Greek and Coptic on top of his regular courses. Marv left an indelible mark on the lives of many people, none more so than myself.

My Grandfather, T.A.B Whitaker Esq. (MBE), known to his friends and family as Brian, was one of the great influences of my life. A man of great stature not only in form, but in presence. His grace and imposing knowledge of the world demanded great attention, respect and awe at the encyclopaedic knowledge of a lifetime's study of art, literature, classical music, history, sport, geography, science, physics, mathematics and general knowledge became the bar to which one could only ever aspire to.

My Grandfather was the epitome of both intelligence and greatness, and the hero of both my childhood and adulthood. The aspiration to be revered and genuinely loved and admired became the template for all men in subsequent generations of my family, a shadow I can only hope to fill the best way I can.

This great man, so loved by all who knew him made an indelible mark on me by describing the future of computers. The story telling element was just as important as the amazing facts which slowly transpired when I was just 9 years old, especially as his office as the head of the Department of Pensions & Social Security, he was trialling something called network connected computing, developed by a the guy next door called Tim.

Tim was a really nice man who just so happened to have come down from my home town of Bournemouth but was working at my birth town of Southampton, where my Grandparents lived. He gave me a demonstration of how a something called a Modulator/Demodulator, or a 'Modem' as Tim called it, could be used to transmit the signal of binary code down a telephone line to enable computers in remote places to be able to connect and share information. Wow, I thought. This really blew my mind. It was this meeting with Tim, introduced by my Grandfather that set the stage for a lifetime devoted to Theoretical Computer Science. My Grandfather was a great man whom I adored. Even today I wish he was here so I could ask his opinion about hundreds of things. Just to hear his voice, and see his beaming pride.

The man next door was Sir Tim Berners-Lee, the founding father of the World Wide Web, the World Wide Web Consortium (W3C), The World Wide Web Foundation, Founding Chair of my Alma Mater, MIT Computer Science & Artificial Intelligence Laboratory (CSAIL) and MIT Centre for Collective Intelligence, CERN Scientist, Patron of my Heritage Trust in East Dorset, and Chair of my primary study (Computer Science) at the university of my home town of Southampton.

Sir Tim, I could not have made this book without you, or the genius, love, persuasion and encouragement of my beloved, late Grandfather, Brian Whitaker.

This book would also not be possible without a man who became a father figure to me, a man whose insignificance in the world of science I intend to change by this passage. Mr Peter George Mustoe was a man of great integrity and his impact upon my life will echo through my writing for the rest of my life. Pete instilled temperance and

compassion in my life, he believed in me and encouraged me to do great things of which I am very proud. Pete would happily sacrifice his last to ensure you never went without. A simple man, leading a very simple existence, yet full of great ideas and thoughts that would provoke philosophical conversation. A man of passion about ecology, conservation and the environment and a skilled historian of ancient civilisations and ancient man. I had researched the trail of the outcrop of the Pembrokeshire Bluestones used to make Stonehenge in great detail, matching the petrography to Rhos-y-Felin in a paper for my A' Level Geology, more than 20 years ago. The Pembroke Bluestones were dropped further east by glacial retreat and deposited along a path which is now the glacial valley that forms the river Twyi.

Rhyd-y-Gors (Carmarthen Castle) is made from the broken remnants of the local Bluestones which share exact petrography from the Rhos-y-Felin outcrop from where they originate. They were slowly rolled along the glacial valley, being revealed at the end of the last interglacial period around 11,700 years ago, which later became the natural Brythonic/Goidelic boundary trade paths, tracking east, just north of the Mendip Hills, over a period that would have take many, many years. That route east for most of the long journey would very nearly match the path of the M40 today. Pete took me to the very place of the Bluestone quarry at Rhos-y-Felin, where the monolithic blocks of Stonehenge have only recently been accepted to have derived.

We walked together across the whole of Wales, following the Brythonic/Goidelic trail of the Preseli Bluestones, spending many weeks contemplating humanity's place in the universe and the future in store for mankind.

Peter loved horticulture, arboriculture and the countryside. His giddy excitement would boil over when we would discover together the natural paths of ancient alluvial plains and the paths of long forgotten glaciers. He taught me about the constellations of the night sky and together we would never miss a meteor shower or an eclipse.

Peter Mustoe, you were more of a father to me than the ones who were designated to be. For that alone, I am eternally grateful. With welling eyes, a lump in my throat and with the fondest of memories, I

love you with all of my heart. Thank you for all the love you showed me, for all of the lessons you taught me and all of the patience you gave to me; may you rest in peace my dear friend. I will never forget you.

What I really wanted to say...

Writing a non-fiction epic requires many years of passion, study and hard work; so to inject one's own humour into a piece of contemporary literature of profound inspiration, there becomes a fine line of what is deemed acceptable. The following anecdotes are the flashes of my impish sense of humour, which almost made it into the book before my conscience told me otherwise. I hope they tickle you as much as they did me when they popped into my head? Enjoy.

People who criticize the Bible should probably keep in mind that it was God's first novel, so take it easy on him.

On the 7th Day God said, "Looking back, I guess making those other 700,000,000,000,000,000,000,000 stars was a bit unnecessary."

Amet, the eater of the dead is a Hippocrocahyena!

The Bible belongs in every hotel room the same way a mini-bar belongs in every church.

"In the beginning", is a mistranslation of "Once upon a time".

John turned to Jesus and asked, "Lord, what is the word of God?" Jesus said unto his disciple, "A-well-a, everybody's heard about the bird. Bird, bird, bird, b-bird's the word."

Amet, the eater of the dead is a Hyenacrocahippo.

The problem with government of the people, by the people and for the people is the people.

As usual, the Earth didn't get the gift it really wanted on Earth Day: The instantaneous disappearance of 90% of humanity.

Some people are their own worst enemies and others are their own best friends, but most people are their own total strangers.

And God said unto Creationists, "I like Big Bangs and I cannot lie."

Today, the capital of Turkey is the letter 'T'.

Horus was never homophobic, but he was really upset to find out that his Daddy was now a Mummy.

Atoms are made up of varying amounts of Electrons, Protons, Neutron, and for flavour; Croutons.

My favourite part of the story of Genesis is the way they regrouped after Peter Gabriel left.

The reason why the Bible doesn't mention anything about dinosaurs is shut up!

The path to enlightenment often leads through the valley of absolute morons.

The trick to successful prayer is to ask for something that was going to happen anyway.

The Heaven and Hell paradox: If Hell existed it would be filled mainly with people who spent their lives telling people to go there. These Timeshare Reps get everywhere don't they?

Unlimited data is wasted on limited minds.

God said, "My Universe is still expanding; does it make me look fat?"

Faith can move mountains, if “Faith” is the name of your local tectonic plate.

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Religions of the World

Here is a non exhaustive list of just some of the world's major religions:

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Bahá'í Faith
Orthodox Bahá'í Faith
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Nation of Islam
Shiite
Alawites
Ismailis
Jafari
Zaiddiyah
Ghulat including
Alevi / Bektashi
Ahl-e Haqq
Yazidi
Druze
Ahmadi
Sunni
Berailvi

Deobandi
Hanafi
Hanbali
Maliki
Mu'tazili
Shafi'i
Wahhabi
Sufism
Naqshbandi
Bektashi
Chishti
Mevlevi
Zikri
Judaism (see also: Jew; Hebrews)
Contemporary divisions
Karaite Judaism
Rabbinic Judaism
Orthodox Judaism
Haredi Judaism
Hassidic Judaism
Modern Orthodox Judaism
Reform Judaism
Conservative Judaism (Masorti)
Reconstructionist Judaism (arguably not a religion)
Humanistic Judaism (arguably not a religion)
Historical Sects
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Essenes
Pharisees
Sadducees
Zealots
Sicarii

Sects that believed Jesus was a prophet:

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Elkasites
Nazarenes
Crypto-Jews
Marranos
Conversos

Christianity*
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Roman Catholicism
Oriental Orthodoxy (Monophysitism)
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Protestantism
Anabaptists
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Methodists
Pentecostals
Reformed
Calvinism
Presbyterian
Religious Society of Friends (Quakers)
Unitarians
Waldensians
Latter-day Saints
Church of Jesus Christ of Latter-day Saints
Community of Christ
Fundamentalist Church of Jesus Christ of Latter Day Saints
Seventh-day Adventist
Jehovah's Witnesses
Messianic Judaism (not actually Judaism but rather Jewish-rite Christianity)
Samaritans
Mandaeanists
Rastafarians
Black Hebrews
Hebrew Christians

Dharmic religions:
Religions with a concept of Dharma, also major religions of historical India.

Hinduism (see also Contemporary Hindu movements)
Agama Hindu Dharma (Javanese Hinduism)
Shaivism
Shaktism
Smartism

Vaishnavism
Gaudiya Vaishnavism
ISKCON (Hare Krishna)
Sri Krishna Chaitanya Mission
Six major schools and movements of Hindu philosophy
Samkhya
Nyaya
Vaisheshika
Purva mimamsa
Vedanta (Uttar Mimamsa)
Advaita Vedanta
Integral Yoga
Yoga
Ashtanga Yoga
Hatha yoga
Siddha Yoga
Tantric Yoga
Ayyavazhi
Shramana Religions
Buddhism (see Schools of Buddhism)
Mahayana
Nikaya schools (historically called Hinayana in the West)
Theravada
Vajrayana (Tantric Buddhism)
Jainism
Digambara
Shvetambara
Panth Religions
Sikhism
Kabir Panth
Dadu Panth

Other revealed religions:
Believers in one God, also called classical monotheism, who follow an Indo-European culture of belief, philosophy and angelology.

Zoroastrianism
Magus (see Three Wise Men)
Gnosticism
Basilidians
Bogomils

Borborites
Cainites
Carpocratians
Cathars
Marcionism (not entirely Gnostic)
Ophites
Valentinians (see Valentinius)
Hinduism (Vaishnavism)

Indigenous religions:
The orally transmitted canon of indigenous peoples, many involving some variant of animism and many defunct.

African religions:

Akamba mythology
Akan mythology
Ashanti mythology
Bushongo mythology
Bwiti
Dahomey mythology
Dinka mythology
Efik mythology
Egyptian mythology
Ibo mythology
Isoko mythology
Khoikhoi mythology
Lotuko mythology
Lugbara mythology
Pygmy mythology
Tumbuka mythology
Yoruba mythology
Zulu mythology

African religions in the New World:

Kumina
Obeah
Santería (Lukumi)
Vodou
Candomblé

Macumba
Umbanda and Quimbanda
Xango

European religions:

Anglo-Saxon mythology
Basque mythology
Druidry (Celtic Religion)
Finnish mythology
Germanic paganism
Norse mythology
Greek religion
Greek mythology
Mystery religions
Eleusinian Mysteries
Mithraism
Pythagoreanism
Roman religion
Roman mythology
Slavic mythology

Asian religions:

Babylonian and Assyrian religion
Babylonian mythology
Chaldean mythology
Sumerian mythology
Bön (Indigenous Tibetan belief)
Chinese mythology
Shinto
Oomoto
Tengrism (Indigenous Mongol, Tartar & Kazakh belief)
Yezidis (Modified indigenous Kurdish belief)
Native American religions
Abenaki mythology
Aztec mythology
Blackfoot mythology
Chippewa mythology
Creek mythology
Crow mythology

Guarani mythology
Haida mythology
Ho-Chunk mythology
Huron mythology
Inuit mythology
Iroquois mythology
Kwakiutl mythology
Lakota mythology
Lenape mythology
Navaho mythology
Nootka mythology
Pawnee mythology
Salish mythology
Selk'nam religion
Seneca mythology
Tsimshian mythology
Ute mythology
Zuni mythology

Oceanic religions:

Australian Aboriginal mythology
Balinese mythology
Maori mythology
Modekngei (Republic of Palau)

Nauruan indigenous religion:

Polynesian mythology

Neopagan or revival religions:

Modern religions seeking to recreate indigenous, usually pre-Christian, beliefs and practices

Church of All Worlds
Dievturiba
Germanic Neopaganism also called Ásatrú or Odinism
Hellenic polytheism (modern revivalist forms)
Judeo-Paganism
Maausk

Neo-druidism
Summum
Taarausk
Wicca
Alexandrian Wicca
Dianic Wicca (Feminist Wicca)
Gardnerian Wicca
Faery Wicca
Feri Tradition

Non-revealed religions:
(Philosophies not transmitted by a divine prophet)

Carvaka
Confucianism
Deism
Fellowship of Reason
Spiritual Humanism
Mohism
Taoism

Left-Hand Path religions:
(Faiths teaching that the ultimate goal is separating consciousness from the universe, rather than being absorbed by it.)

Dragon Rouge
Satanism
LaVeyan Satanism
Church of Satan
Order of Nine Angles
Setianism also spelled Sethianism
Temple of Set
The Storm
Quimbanda

Syncretic religions:
(Faiths created from blending earlier religions or that consider all or some religions to be essentially the same)

Arès Pilgrim Movement
Cao Dai

Falun Dafa (Falun Gong)
Huna
Konkokyo
Law of One
Manichaeism
Unitarian Universalism
Universal Life Church
Tenrikyo
Theosophy
Seicho-No-Ie

Entheogen religions:
(Religions based around divinely inspiring substances)

Ayahuasca-based beliefs
Church of the Universe (Marijuana Sacrament)
Peyotism
THC Ministry

New religious movements:
See List of new religious movements for a list based on other sources

See hereunder for religions founded since 1850 with small followings

Monotheistic NRMs

Direct Worship of the Actual God

Indigenous NRM's

Burkhanism
Cargo cults
Ghost Dance
Native American Church

African Diaspora / Latin American NRM's

Rastafari movement
Umbanda
Candomble
Kardecist Spiritism

Hindu-oriented NRM's

Sai Baba/Sathya Sai Organisation
Hare Krishna
Transcendental Meditation
Sant Mat
Swaminarayan
Vedanta Society
Osho/Rajneeshism
Meher Baba (actually a Zoroastrian)
Oneness University
Aum Shinrikyo (Aleph)
Eckankar

NRM's with Islamic Roots

Subud
Ahmadi
Dances of Universal Peace
Nation of Islam (Black Muslims)
Christian-oriented NRM's

Unification Church
Jesus People
Children of God
People's Temple
Pentecostalism
Holiness movement
Iglesia ni Cristo

Buddhist-oriented NRM's

Soka Gakkai
Won Buddhism
Hoa Hao
Friends of the Western Buddhist Order

Chinese-oriented NRM's

Way of Former Heaven sects, including
I-Kuan Tao ("Way of Unity"),
T'ung-shan She ("Society of Goodness"),
Tien-te Sheng-chiao ("Sacred Religion of Celestial Virtue"),
Daoyuan ("Sanctuary of the Tao"),
Tz'u-hui Tang ("Compassion Society").
Falun Gong ("Dharma Wheel Work," a qigong meditation group)

Japanese-oriented NRM's

Tenrikyo
Seicho no Ie
Johrei (Johrei Movement - Sekai Kyusei Kyo Izunome Kyodan)
Reiki
Oomoto
Soka Gakkai
Aum Shinrikyo (Aleph)

Korean-oriented NRM's

Chondogyo
Jeung San Do
Juche (The personality cult of North Korean leaders)
Unification Church

Vietnamese-oriented NRM's

Caodaism
Hoa Hao

Malaysian-Oriented NRM's

Sky Kingdom

Western Magical / Esoteric Groups

Kardecist Spiritism
Theosophy
Agni Yoga
Anthroposophy
Arcane School

Association for Research and Enlightenment
Church Universal and Triumphant
Golden Dawn
Gurdjieff Work
AMORC
Spiritualism
Eckankar
Thelema
Argenteum Astrum
Fraternitas Saturni
Ordo Templi Orientis
Typhonian Ordo Templi Orientis
Process Church of the Final Judgement
Order of the Solar Temple

White Supremacist Religions

Church of Jesus Christ Christian
World Church of the Creator (Creativity Movement)
Church of the American Knights of the Ku Klux Klan
Black Supremacist Religions

Nuwaubianism

Alien-based religions

The Aetherius Society
Raelism
Scientology
Church of Scientology
Free Zone
Urantia, Book of
Universe people

Other NRM's

Antoinism
Breatharianism (Air cult)
Brianism
Elan Vital
Faithists of Kosmon

Virus, The Church of
Tony Samara

Parody or mock religions
Groups that poke fun at other religions or religion in general

Discordianism
Church of the SubGenius (The cult of Bob Dobbs)
Church of Jesus Christ Elvis
Fictional religions turned Parody
Bokononism
Jedi census movement
Flying Spaghetti Monster (Pastafarianism)
Invisible Pink Unicorn
Kibology
Landover Baptist Church
Church of Emacs

Forms of religion or alternative beliefs

Agnosticism
Animism
Atheism
Ditheism (Dualism)
Henotheism
Monolatrism
Humanism
Secular Humanism
Kathenotheism
Maltheism
Monism
Monotheism
Panentheism
Pantheism
Cosmotheism
Polytheism
Shamanism
Suitheism

Non-sectarian and trans-sectarian religious movements and

practices

Esotericism
Alchemy
Anthroposophy
Esoteric Christianity
Freemasonry
Gnosticism
Kabbalah
Occultism
Rosicrucian
Ancient Mystical Order Rosae Crucis
Confraternity of the Rose Cross
Rosicrucian Fellowship
Surat Shabda Yoga

Mysticism

Christian mysticism
Gnosticism
Hindu mysticism
Tantra
Ananda Marga Tantra-Yoga
Yoga
Bhakti
Vedanta
Kabbalah (also part of Judaism)
Kabbalah Centre
Martinism
Merkabah (also part of Judaism)
Meditation
Spirituality
Sufism

Theosophy

Magic (religion)
Astrology
Divination
Prophecy
Exorcism

Faith healing
Feng Shui
Hoodoo (Rootwork)
New Orleans Voodoo
Magick
Chaos magick
Enochian Magic
Grimoire magick
Goetic magick
Miracles
Pow-wow
Seid (shamanic magic)
Vaastu Shastra (Hinduism)

Witchcraft

Ritualism
Prayer
Sacrifice
Animal sacrifice
Human sacrifice

Worship
Organisations promoting Ecumenism

Dances of Universal Peace
Inter-religious Organisations

* There are currently over 41,000 known Christian denominations.

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