

If Jesus was a man of his time, then he believed that the earth was flat, with heaven above and earth beneath, reflecting the state of science and theology at the time.

Jesus' followers believed in an interventionist God, who could make things happen or not happen according to his will.

If we are people of our time then we know that the earth is not flat, and that heaven is not up there somewhere.

Some still believe in an interventionist God, while others see God as the essence within us responding to the power which is beyond our concepts of space and time.

**Jesus calls us to follow him:
to understand the times we live in, and to help change our world for good.**

**This book describes the beliefs of creationists and evolutionists,
the contexts in which they developed,
and the simple Way of Jesus.**

**I invite you to balance your apparent insignificance in the universe against the
Biblical inspiration and conviction that each individual is important:
that each person matters.**

To
Sue my wife,
Janene, Jeremy and Christina, and their families,
and in memory of Nerilea and Beverley,
with thanks for the challenges and ecstasy of family life.



For twenty five years I was a science teacher through to principal in the Education Department of Western Australia, and then foundation principal of K-12 Lake Joondalup Baptist College and Tranby College for the Uniting Church.

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I am an accredited lay preacher, and enjoy playing classical organ, playing piano in a dance band, reading theology, gardening and being a husband, parent and grandparent.

The first edition of *Creationism or The Way of Jesus* was published in print in 2014

This enlarged edition is now online and free so that people can have it instantly and easily.

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May you enjoy the journey as you read,
and may your life's journey be one of wonderment, love and commitment to others.

Blessings
Doug Burtenshaw

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On the website are some lectionary-based sermons and orders of service,
some science teaching materials, some general reading,

Scum Plough – man maker (a novel for young people and beyond), and
Discussion Guide for Scum Plough – man maker

As long as we remain lambs we overcome,
we overcome and are victorious,
but as soon as we become wolves we are lost
for then we lose the support of the shepherd
who feeds not wolves, only lambs.

St John Chrysostom 347 - 407 CE

Creationism or The Way of Jesus?

Introduction	4
THE BASICS	
1. Why do we have to choose: Creationism or The Way of Jesus?	5
2. Creationism and its origins	9
3. Why literalism is abuse of the Bible	19
4. The Jesus approach	24
5. The common Evolution / Natural Selection position	32
BEYOND THE BASICS	
6. The origin and meaning of Genesis chapters 1 and 2	36
7. Original sin: a human artefact	44
8. Noah: a story misunderstood by Creationists	50
9. Other misunderstood stories: Jonah and Ruth	55
10. Sex and sexuality	58
11. Christology: Jesus then and now	65
12. Creationists: Modern Day Pharisees	72
13. Darwinism in your Bible	76
14. Reassembling the pieces: Evolutionary Christianity	79
15. Einstein, Heisenberg, Bohr and others	87
16. A personal viewpoint	90
SCIENTIFICALLY SPEAKING	
17. Examples of separate creation or modification upon modification?	100
A. Cell structure and functioning	
B. Serial Endosymbiosis Theory (SET)	
C. Aerobic and anaerobic ATP / ADP cycles	
D. The RNA world hypothesis	
E. Nucleic acids: the genetic material of life	
F. Protein catalysis	
G. Common metabolism processes	
H. The 1 bone, 2 bone, 5 bone plan and the Coelacanth	
I. The porphyrins: the heme, chlorophyll, vitamin B ₁₂ relationship	
J. The 9 plus 2 pattern in cilia	
18. Some statements by Creationists and their rebuttal	111
APPENDICES	
1. A timeline of the universe	125
2. References and additional notes	138
3. Recommended reading and viewing	140
4. Glossary of terms used	141
5. Some steps we can take which bring us almost full circle	146

INDEX

Introduction

Paul came to our newish youth group. He was sixteen years old and was dressed in a black suit, with black hat. He held out his hand and introduced himself, saying: *Hi Doug, I'm Paul and I'm gay. You're a Christian so you must be a creationist.* His implication was clear: if you are a Christian then you are homophobic and a creationist. In my case he was wrong on both counts. But it gave me a window on the attitudes of some non-Christians towards Christians.

We live in a world of many competing ideals and ideas, and these are exposed to comparison and scrutiny as never before. Christians need to be more clear about what the main message of Jesus is. We need to dispose of the centuries of add-ons, and live our lives with the honesty and clarity with which Jesus did.

Jesus overturned the tables in the temple because the moneylenders had lost sight of their purpose. The lenders were making money out of gullible simple people. As a result, the deeper meaning of sacrificial practice was being lost on the lenders, and probably lost on their customers.

In a similar way we should dismantle the Creationism industry because its supporters have lost sight of being followers of the Way of Jesus. The Creationism industry is making money out of gullible people not conversant with the Bible's purpose and meaning.

The question is how to get literalist, substitutionary sacrifice people in the church to listen, and how can we help the "had a bit of that at Sunday School" people in the wider world to see the deep satisfaction of being a "Follower of the Way": a follower of Jesus?

In the depths of my being I know that there is more to life than what we see and experience. This conviction is informed and explained through what the Bible brings to me. Jesus as the visible presence of God our Creator helps me to understand that our world is a loved creation and that being human is OK, and even that I am OK.

I have been helped enormously over the years by many people, especially Rev Emeritus Prof William Loader and Rev Prof Howard Wallace whose commentaries on the week by week readings in the Revised Common Lectionary have been most formative, and in some cases relied upon here. Most other help has come from people unknown to me personally: people who have carried out the often thankless and repetitive research of which I am merely an informed collater. These people join with us as seekers of the truth about this world, God's world.

The first two parts of this book *The Basics* and *Beyond the Basics* are for general readership. The third part, *Scientifically Speaking*, is for those readers who are interested in some of the technical and scientific aspects of the debate. Then there is an extensive timeline from the 'Big Bang', references, a glossary of terms and an index.

The time has come for the unequivocal rejection of Creationism and the literalist misinformation and hypocrisy which supports it. This book may help.

Doug Burtenshaw BSc (UWA) BEd (UWA)
Byford, 2014, revised and expanded Mandurah, 2023

The *New International Version* (NIV) is one of the best Bible translations available in English. Although the King James Version of 1611 is available, and uses beautiful language of the 17th century, its accuracy is often in question, as is the New King James Version. My personal Bibles are the annotated Jerusalem Bible with Apocrypha, and *BibleGateway.com* NIV.

Regarding dates and time: BCE means Before the Common Era and used to be referred to as BC (Before Christ); CE means Common Era and used to be referred to as AD (Anno Domini, in the year of Our Lord). The common usage for "billion" in Australia, UK and USA is the "short scale" in which billion is 1000 million. Ages such as the Bronze Age are not worldwide but are specific to each geographic area.

THE BASICS

1. Why do we have to choose: Creationism or The Way of Jesus?

The roots of the choice between Creationism or The Way of Jesus are deep and ancient. This book is simply the current face of a much longer and much larger debate. For millennia there has been a tension as people fought and thought about how to build a good society.

From a Judeo-Christian perspective there were two main alternatives. Society could be built on the regulation of people's lives through laws, including purity laws which rejected people who were different, or society could be built on love and compassion and the acceptance of those who were different.

For more than three millennia these and other alternatives have been present in Jewish society. At times the gulf between these alternative views has been small. At other times the gulf has been so significant, and the stakes so high, that writers have felt inspired to write about their views. In some cases these writings were so meaningful that they have survived as a part of the Bible.

One such need to write occurred at a major low point of Jewish history: the Exile. The detailed timeline in the Appendix may be of assistance here.

In 597 BCE and 587 BCE the nation was overrun by the army of Nebuchadnezzar II: king of Babylon. The temple, the centre of sacrificial worship, was destroyed, as was much of the rest of Jerusalem. King Jehoiakim, the servant link between God and his people, was deposed. Their land, promised to Abraham and his descendants more than a thousand years earlier, was occupied by foreigners. Many of God's chosen people were carried off into captivity in Babylon.

One response to this national disaster was: *We have failed to obey the law, and God is punishing us.* As a result, the supporters of this view became more rigorous in the fulfilling of the details of Jewish law. This included the enforcing of racial purity (eg Ezra 10: 1- 44: the divorce of foreign wives and rejection of the children borne by them) and the rejection of those who were diseased or defective (eg Deuteronomy 23:1 *No one who has been emasculated by crushing or cutting may enter the assembly of the LORD.*).

An alternative response was that the nation had forgotten to look after its members who were diseased or different, and that other nations or races were God's children also. These pleas for acceptance of all people, including non-Jews, are the subject of the cleverly written stories of Jonah and Ruth (see chapter 9: Other misunderstood stories: Jonah and Ruth).

In 538 BCE Cyrus the Great of Persia deposed the new king of Babylon, Nabonidus, and allowed the captive Jews to return to Jerusalem, but no longer as an independent nation. Cyrus was not a Jew, yet Isaiah 45: 1 refers to him as God's Messiah (literally: 'anointed one'), whose right hand God will take: *He will rebuild my city and set my exiles free.*

During and after the Exile, the 'Judahs' (Jews), in a strange land without the temple for their rituals, had to devise other ways of living the faith. The outcomes and consequences of the Exile were many and ran deep. They included the formalising of worship practices in the home, the development of the local synagogue, and many writings including Lamentations, some Psalms, and parts of Jeremiah, 2 Kings, and 2 Chronicles.

Later the Pharisees and other significant sects arose. The Pharisees were what we would call lay people: they weren't priests. They were the teachers and defenders of the Jewish faith in the face of competition from Greek influences. These lay people were crucial in defining and rebuilding what it meant to be 'God's people'. The exiled Jews had learned "how to sing the Lord's song in a strange land" (Psalm 137:1-4).

But the lessons learned in response to The Exile became eroded over time. Those promoting purity by exclusion were vocal. Lepers, for instance, were losers and imperfect in the eyes of Jewish society, blamed and avoided because they must have done something wrong. In Jesus' time this debate, this tension, still existed. Luke 17:11-19 records Jesus healing 10 lepers, outcasts, people who were discarded and avoided.

Others, however, still sought a more inclusive society. Prophets such as Joel gave hope for the future, a future in which even girls and women and servants were named and essential: how radical and liberating for girls and women and servants and the whole society (Joel 2: 28,29).

Jesus was inclusive. We can see this in Jesus' acceptance of the baptism offered by John the Baptist. Ritual washing was usually self-administered, but now was being administered by John 'the Baptist'. It was a move towards more openness. But for Jesus it was still too limited in what the ritual was attempting to say about God's love for his creation.

This led Jesus to a more open and accepting attitude to those who were different. There are many examples of this acceptance of those who were different. They include the shocking parable of the Good Samaritan (Luke 10: 25-37), Jesus talking to prostitutes (eg Luke 7: 36-50) and Jesus talking to the woman at the well (John 4: 1-42).

But do people really have to choose between Creationism and The Way of Jesus?

Quite simply, Yes. People need to make that choice. The choice is between an institutionalised, legalistic belief system and a way of life based on love as lived and promoted by Jesus.

One purpose of this book is to expose Creationism for its misleading behaviour: misleading because its claimed foundational document, Genesis, has been misunderstood and abused by the Creationist movement. Another purpose of this book is to see what it means to be a *Follower of The Way*, as the early Christians were called.

There is however a basic and troubling question. What will happen when a person suddenly sees that creationism is a false construct, a house of cards?

In Matthew 18:1-6 we read a note of caution from Jesus.

At that time the disciples came to Jesus and asked, "Who, then, is the greatest in the kingdom of heaven?" He called a little child to him, and placed the child among them. And he said: "Truly I tell you, unless you change and become like little children, you will never enter the kingdom of heaven. Therefore, whoever takes the lowly position of this child is the greatest in the kingdom of heaven. And whoever welcomes one such child in my name welcomes me. If anyone causes one of these little ones—those who believe in me—to stumble, it would be better for them to have a large millstone hung around their neck and to be drowned in the depths of the sea."

We read that Jesus was warning people, including me, to be very careful about shaking the faith of someone. In particular Jesus warned about shaking the faith of a child, probably meaning a child in the faith.

With that in mind, I pray that through this book the teachings of Jesus will become more accessible and understandable to enrich and guide you when creationism crumbles.

May Jesus become available to you as a present companion and example, leading to an understanding of God's presence in our lives and world. I can give testament that the deep satisfaction of God's presence, love and acceptance is in stark contrast to the cold, unloving, divisive legalism of creationism.

So what is the Jesus alternative to Creationism? Let's think about sailing in yachts.

Although I am no yachtsman, I can understand why people love exposing themselves to the danger, thrills, achievements and deep pleasure of yachting. The thrill does not seem to be about the

destination, or even winning a race: it is the thrill of the process. The Sydney to Hobart yacht race is one of the great annual yacht races in the world. It is famous not because of where it finishes, no disrespect to Hobart, but because of the unparalleled challenges of the outdoors and the competitive camaraderie of the event: before, during and after.

Jesus makes it clear that the kingdom of heaven is not about some future destination or the size of the craft you travel in. In yachting terms, he says *Just do it and enjoy the wind in your hair*. Jesus did not ask *Where will you spend eternity?* Instead, he says to us that of paramount importance is the present, and our current relationships with each other and with God.

This is quite radical, and its essence is explained most clearly in the Parables of the Kingdom ⁽¹⁾ and in the Beatitudes ⁽²⁾ and the parable of the sheep and the goats ⁽³⁾. These are considered in some detail in chapter 4: The Jesus Approach.

The path from the clarity of Jesus' message to our current confusion and proliferation in our beliefs and practices, including Creationism, can be traced. The teachings of Jesus are clear and unambiguous, but over the centuries Christians and others have analysed and commented on these teachings to such an extent that the core message is often swamped and obscured by the words. The following short summary may help.

Soon after the death and resurrection of Jesus, Paul changed from being a passionate persecutor of Christians to being a passionate Christian missionary. His were the first Christian writings to survive. In that sense he was the first Christian theologian. His writings tended to codify the gospel and, while they explained many things in a very helpful way, they also made the faith more complex and difficult to understand, particularly for people living in very different societies two thousand years later.

In the Bible, the gospels (or Good News), as written by Mark (and Peter), Matthew, Luke and John, are not factual journals of Jesus and his life. They are theologies of the nature of Jesus, using the broad storyline of his life, and based on what Jesus' disciples and others remembered of life with Jesus. These gospels were written from about 70 CE to about 110 CE, and after the death of Paul. Each Gospel has its own purpose and audience.

The theology of John's gospel, for example, is clear from its first verses: Jesus was the Living Word of God.

In the beginning was the Word: the Word was with God and the Word was God. He was with God in the beginning.....

What has come into being in him was life, life that was the light of men; and light shines in darkness, and darkness could not overpower it.

The Word was the real light that gives light to everyone; he was coming into the world. He was in the world that had come into being through him, and the world did not recognise him. He came to his own and his own people did not accept him. But to those who did accept him he gave power to become children of God, to those who believed in his name.....

The Word became flesh, he lived among us,.... full of grace and truth.

Two hundred years later, the Roman Emperor Constantine, following his conversion to Christianity, encouraged the codifying of the faith, for example summoning the Council of Nicaea in 325 CE. The resulting codifying can be seen quite clearly if we compare the Jesus approach in the Beatitudes with the fourth century Apostles and Nicene Creeds ⁽⁴⁾. These Creeds are used by most churches. In its *Basis of Union*, the Uniting Church in Australia explains the significance of these ancient Creeds in the church ⁽⁵⁾. Jesus' teachings emphasise loving relationships, while the Creeds read more like legal documents, emphasising detailed definitions about God.

Christians of the twenty first century should be seeking to understand what Jesus was saying, and how he lived his life, and should not be distracted by the interpretations, even contaminations, which various groups of Christians have placed upon the church.

Progressive contamination of core truths can be seen in many organizations. What follows are two examples of the modification of the teachings of a religious leader. One example is Buddhist, and one

is Christian.

Gautama Buddha is well known throughout the world, something which he may have approved of. His images and statues are seen around the world, something he would not have approved of ⁽⁶⁾. For the first four or five hundred years he was represented very simply as, for example, a pair of feet or an empty throne. Buddha did not believe in universal reincarnation ^(6 and 7), and instead taught that perfection comes from becoming enlightened, and such people will have nothing to work off when they die and so will not be reborn. And yet later sects within Buddhism have developed a Buddhism which has many people worshipping the statue of the Buddha, and also believing in reincarnation.

A Christian example of this modification of teachings is the Doctrine of Original Sin. It is a core belief in parts of society and Western Christianity, and is based on traceable mistranslations or misunderstandings. For discussion of this significant error see chapter 7: Original Sin: a human artefact.

Reactions to contaminations of belief systems can be purifying, and have occurred frequently throughout history. One such purifying reaction was The Reformation, led by Martin Luther and others. Martin Luther (1483 – 1546) was a priest, a theologian and a major critic of the Roman Catholic Church. He was excommunicated, and became a leader of the Reformation of the Western Church. Erasmus (1466 - 1536) was another priest, theologian and major critic of some of the practices of the Roman Catholic Church during the Reformation, but he stayed within that church. These men knew each other, and each in his own way cut through the misunderstandings, abuses and ritualism of the Roman Catholic Church of the day. Each man assisted in restoring the health of the Christian Church.

In our day there are many variations and deviations apparent in Christianity. Some of these variants are clearly Christian and, except for the Roman Catholic Church, are relatively recent organisations. They are known as denominations, such as Anglican, Uniting Church, Lutheran, Salvation Army, Baptist and others. Each of these denominations has its historical and interpretive reasons for its continuing existence.

Other variants have less noble reasons for their existence, though their views are sincerely held by their believers. To a greater or lesser extent they use Christianity as a building block or reference point. These deviations include Scientology, Voodooism and Freemasonry.

Caught up in this theological stew is inerrant literalism: the notion that the Bible is literally, word for word, the Word of God and contains no errors.

Literalism has given rise to beliefs such as original sin, the virgin birth of Jesus, and that the events in the Creation, Noah and Jonah stories actually happened as written. Literalists looking at the New Testament believe that each word attributed to Jesus in the Gospels is literally correct and in the correct sequence, in spite of clear evidence to the contrary. They also believe that the streets of heavenly Jerusalem exist somewhere and are paved with gold (Revelation 21:21).

Although literalism is the foundation for errors and misunderstandings such as Creationism, it is Creationism which has the attention of the media and is the most vocal and public face of these errors.

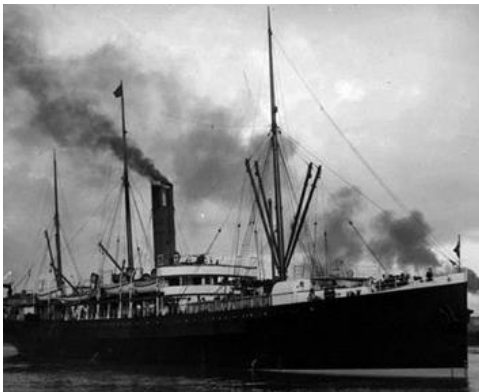
Creationism has taken root and become well established in many parts of the world. It is now a multi-billion-dollar industry involving reading matter, textbooks for schools, a variety of visual and audio media, and displays of greater and greater cost and complexity, the most absurd being the 6500 sq metre Creation Museum, Petersburg, Kentucky, and the 155m long Ark at Ark Encounter, Williamstown, Kentucky USA run by Ken Ham and the Answers in Genesis literalist ministry.

Five hundred years ago the Reformation swept away many of the theological inaccuracies and abuses of power of the Roman Catholic Church. The process was long and painful but necessary.

In a similar way we are now being called upon to remove our own accretions of the centuries, including Creationism and literalism. Then people may more clearly see Jesus who is *the Way the Truth and the Life* (John 14:6), not the rules of Creationism nor the Bibliolatry of literalism.

As later chapters show, the message of Jesus to us is simple and direct, and leads to the commencement of eternal life now.

But why should anyone go to the effort of making the choice and the disruption that may follow?



On 31 December 1899 the ship SS Warrimoo was on its way from Vancouver to Australia. The Captain changed course so that at midnight the ship lay on the Equator where it crossed the International Date Line!

The bow of the ship was in the Southern Hemisphere and the middle of summer. The stern was in the Northern Hemisphere and in the middle of winter. The date in the aft part of the ship was 31 December 1899. Forward it was 1 January 1900. This ship was in two different days, two different months, two different seasons and two different years, and most importantly it was in two different centuries.

It is a great story, but it has a problem. Its foundation for being an amazing story is wrong. The beginning of the next century was 1 January 1901, not 1900. The 1st Century included the years 1-100. In our calendar there is no year zero.

In many faith systems there can be an impressive story, but if the foundational principles are wrong then the superstructure crumbles. Creationism's foundational claim of the literal inerrancy of the Bible supports a multi-billion dollar industry which distorts God's message as lived and preached by Jesus.

Creationism in its various guises needs to be exposed and rejected. I suggest that Jesus would agree.

2. Creationism and its origins

Most of the world's religions state or at least assume that God or gods created the universe. That is, that the universe, this world and ourselves are the deliberate, planned, loved work of God or gods.

The first use of the term *Creationist* to describe a proponent of Creationism appears to be in a letter written in 1842 by Charles Darwin. Modern Creationism is even more of a newcomer, starting in the 1960s. So what happened? Why is it such a recent arrival?

About 200 CE there lived a noted teacher and Christian scholar called Origen (185–253 CE). He was one of the most distinguished writers of the early Church. Origen knew that *Adam* was the Hebrew word for *humankind*. He knew that the story about *Adam* was really giving an explanation of the character of humankind. He also discussed whether the world ever had a beginning. About 400 CE there was another famous Christian teacher named Augustine of Hippo, St Augustine (354 – 430 CE). He was a Latin-speaking philosopher and theologian who lived in the Roman Africa Province. His writings were very influential in the development of Western Christianity. Augustine taught that the six days of creation were *mystical days of knowledge* and not *natural days*. Both Origen and Augustine understood the creation stories as poetry, parable and praise.

Some of the roots of literalism and Creationism can be seen in the Reformation over five hundred years ago and in the Roman Catholic Church's Counter Reformation. At that time the Roman Catholic Church was in need of some revision of its beliefs and practices, a view not now contested by the Roman Catholic Church. The basis of this revision was a return to Bible basics. The reformers, such as Martin Luther (1483 – 1546) and John Knox (1505 – 1572), and the counter reformers within the Roman Catholic Church, such as Erasmus (1466 – 1536), each felt that they had a greater belief in the

Bible than their opponents did.

Several other factors added to the tension and conflict of those times. Most people were illiterate in their native tongue or any tongue, and so could not read the Bible for themselves.

For those who were literate in their native tongue there was still another barrier: the Bible and the liturgy (the language of worship) of the Western Church were mainly in Latin or Greek. If that barrier was overcome, there were still the laws which sought to prevent lay people (people who weren't priests) from reading the Bible. Lay people, the laity, were to be passive receivers from the priests: they were not allowed to be students of the Bible.

One pre-Reformation example of this is from The Council of Toulouse, November 1229, which set up the Inquisition to search out heretics and bring them to trial. It ruled in part: *Canon 14. We prohibit also that the laity should be permitted to have the books of the Old or New Testament; unless anyone from motive of devotion should wish to have the Psalter or the Breviary for divine offices or the hours of the blessed Virgin; but we most strictly forbid their having any translation of these books.*

Some of this command has now been overturned. At the Pope John XXIII Second Vatican Council, in and around 1963, it was decreed: *The Church was to continue to provide versions of the Bible in the "mother tongues" of the faithful, and both clergy and laity were to continue to make Bible study a central part of their lives.*

However, we should note that restriction of interpretation of the Bible and its meaning continues even today. Paragraph 85 of the Catechism of the Roman Catholic Church states: *The task of giving an authentic interpretation of the Word of God, whether in its written form or in the form of Tradition, has been entrusted to the living teaching office of the Church alone.*

The view of the Roman Catholic church for almost two millennia has been that the task of interpretation has been entrusted only to the bishops in communion with the successors of Peter, the Bishops of Rome, commonly and incorrectly known as the Popes. 'Pope' is however a part of the title of the head of the Coptic Orthodox Church of Alexandria.

Translation of the Bible into the language of the people was a dangerous undertaking. An example of this is John Wycliffe (1328-1384), a pioneer of translation of the Bible into English. Wycliffe was opposed to such an extent that after his death as a martyr he was declared a heretic. His books were banned. His body was dug up and burned. His bones were ground up, and his ashes thrown into the river. Referring to Wycliffe's translation of the Bible, one cry of his opponents was: *The jewel of the clergy has become the toy of the laity.* The Bible was seen as the possession of the clergy, and not something to be debased by making it available to the general public.

Soon after Wycliffe's death, Johannes Gutenberg (1398-1468) invented modern book printing. This made the Bible far more readily available, and far cheaper than the handwritten copies. Printing also avoided the errors which can result from handwritten copies being copied by hand.

One outcome of the increasing literacy of the laity and the availability of the Bible in the native tongue was a major shift in the understanding and practice of the Christian faith. No longer were the priests the only Bible scholars. Now the Bible could be read and studied by the laity. Bible study was no longer a ponderous, reclusive activity by a select trained few. Bibles, and various translations and interpretations of the Bible, had become available to everyone.

At times this new availability of the Bible was abused, trivializing its message. Some people had the view that theological training of any sort was no longer considered to be important, leading to statements such as *No creed but Christ, no book but the Bible.*

Overall, the move was towards Biblical fundamentalism and literalism by people who wanted something plain to believe in and which could be obtained without effort.

By any measure the following five centuries in Europe were tumultuous, and not just in the Church.

Nation states were forming, replacing the multi-ethnic empires. New styles of government were being tested with varying success, involving numerous wars and treaties. The Black Death was a constant threat, killing more than a third of Europe's population in the fourteenth century, and returning frequently after that until the eighteenth century.

By a happy coincidence for the historian, the end of the first part of the Reformation is also a convenient marker for the start of the western scientific revolution which would transform Europe and then the world. In 1543 Andreas Vesalius published *De Humani Corporis Fabrica* (On the Structure of the Human Body). In the same year Nicolaus Copernicus published *De Revolutionibus Orbium Celestium* (On the Revolutions of Celestial Bodies). This start of the revival or rebirth of learning, *The Renaissance*, was assisted by the westward migration of Greek scholars and their texts after the fall of Constantinople to the Ottomans 29 May 1453 (Julian calendar). Greek thought which had been uncontested for centuries was at risk of being destroyed or made inaccessible by the Muslim Ottomans. Greek thought became more freely available in Europe, and there was the political will and financial means for it to be tested and challenged.

In England, the relative stability under Henry VIII and Elizabeth I was replaced by the civil war under Charles I who was executed in 1649 as a tyrant. Following this was the abolition of the monarchy, the bloody re-establishment of the monarchy under Charles II in 1660, the great fire of London in 1666, and the mini ice age which in 1684 froze the sea for 3km from England's shore. This was profoundly unsettling. It understandably made people feel insecure.

Throughout this period the Reformation and the Counter Reformation were continuing. Henry VIII broke from Rome and formed The Church of England (1534); the Presbyterian Church began in Scotland (1559) influenced in particular by John Knox and John Calvin; Robert Browne's theory of union helped to start The Congregational Church (1592); the Puritan movement began in the late sixteenth century; and in 1784 the Methodist Church began as a conference of preachers, brought together by John Wesley, an Anglican priest leading a holiness movement. And to add to the tension there was, from 1685, enforcement of Roman Catholicism throughout France.

The Agrarian Revolution in Great Britain in the 17th to 19th centuries produced improvements in the health and wealth of people, and assisted the growth of the Industrial Revolution. People were freed from the land to work in the new rapidly expanding industries, food was available as never before, and most people had more disposable income. Although these developments had many advantages associated with them, they also produced new and significant tensions and insecurity in British society. These tensions, insecurity and the increasing disparity in wealth were obvious by the mid nineteenth century.

The Great Exhibition of 1851 in London was a spectacular showcase of British engineering and innovation. It was centred on The Crystal Palace, a building 1851 feet long (564 metres), containing 18 000 square metres of glass. Six million people visited the exhibition.

At the same time, however, the social costs were rising. There were long work hours, poor living conditions, poor health, dangerous work practices, the lack of a hopeful future, and very high infant mortality. By this time the average life expectancy had dropped substantially, affected greatly by the very high mortality among babies and young children. In the 1840s around 15% of babies died before their first birthday, compared with 0.33% in Australia in 2017. There was not a legal requirement to register births until 1874, so data around those times may be inaccurate.

Society became more diverse and divided in its beliefs and practices. Strict laws were introduced to curb moral decay. Transportation of fellow humans to the other side of the world for relatively minor infringements was considered acceptable. Organised religion became a secure, unchanging, safe haven.

This laid the groundwork for the split in society in 1859 when Charles Darwin published his *On the Origin of Species*. There was now someone to blame for the insecurity, hopelessness and moral decay of society. Many saw Darwin's propositions as an attack on religion, and on humankind's God-given dominant place in the world.

Darwin had collected an enormous amount of evidence from which had developed the Darwin – Wallace Theory of Natural Selection. This theory was being proposed as the mechanism for the observed evolution of the natural world. Details of this theory are included in chapter 5: The common Evolution / Natural Selection position.

Since then, the so-called Creationism – Evolution debate has raged, usually ‘generating more heat than light’. In terms of process, the debate should be between Creationism and Natural Selection: that is, a debate about which mechanism best describes the easily observed evolution of the world around us.

It is interesting to note that, as an example of Natural Selection principles, the various creationist and anti-evolution groups have competed for the attention and commitment of the wider population. Some of these groups have died out. Others have survived and reproduced, in particular the Creation Science Foundation, and its affiliates. This becomes an interesting demonstration of Darwinian principles, an own goal.

The Creationist position has been continually refined, mainly by the Institute for Creation Research (USA), Answers in Genesis (USA), the Creation Science Foundation of Australia (now called Answers in Genesis) and similar groups.

Most creationist groups would probably state their position as follows, condensed from a Creationist book which is still widely circulated: K Ham’s *The Lie: Evolution* Master Books 1987 p23:

In six days God created the heavens and the earth and all that is in them, from nothing - each part is designed to work with all the others in perfect harmony. There was no death. All people and animals were vegetarian, and the earth appeared to have a mild climate from pole to pole, an ideal underground watering system, and no storms.

Because Adam and Eve placed human opinion above God’s word, struggle and death entered the world and God cursed creation. After mankind’s sin and rebellion (the Fall) the earth became so filled with violence and corruption that God destroyed the whole world with a flood and gave it a fresh start with Noah, his family and the animals in the ark. Fossils remind us of God’s judgment on sin.

The earth is filled again with violence, corruption and death because of human sin - putting man’s opinion above God’s Word. As God created the world and judged the world with the flood, our ungodly world will be destroyed by fire. For those who trust in Jesus, however, there awaits eternal life in the new heavens and the new earth. There will be no more corruption because God’s curse will have been removed.

Most Creationists would also say:

- *Adam sinned (not Eve?), sin entered the world, and we all inherit this ‘original sin’.* [Original sin is a concept of the Western Church, not accepted by the Eastern Church, or Muslims or Jews for that matter, and is based on a mistranslation of Genesis, and Romans 5:12. See chapter 7: Original sin: a human artefact. Also see *Grace and Disgrace*⁽⁸⁾ by Professor Neil Ormerod, a Roman Catholic theologian.]
- *The book of Jonah is literally true.* [This is in spite of the clear evidence that it was written after the exiles of 597 and 587 BCE as a clever argument for the acceptance of non-Jews, and as a reaction to the moves towards strict legalism amongst God’s chosen people.]
- *Jesus is seen as the sacrificial lamb atoning for our sins by the shedding of his blood, and so appeasing an angry God.* [This view is Biblical but is only one of many ways in which the life of Jesus is described. The early Christian church grew on the basis of new life in Christ, not sacrificial debt payment. Read the first few chapters of The Acts of the Apostles.]

A more detailed version of the Creationist position follows. It is from the *Answers in Genesis* website, and is the *AiG Statement of Faith*. I have included it to inform the debate.

Section 1: Priorities

1. *The scientific aspects of creation are important, but are secondary in importance to the*

proclamation of the gospel of Jesus Christ as Sovereign, Creator, Redeemer, and Judge.

2. The doctrines of Creator and Creation cannot ultimately be divorced from the gospel of Jesus Christ.

Section 2: Basics

- The 66 books of the Bible are the written Word of God. The Bible is divinely inspired and inerrant throughout. Its assertions are factually true in all the original autographs. It is the supreme authority in everything it teaches. Its authority is not limited to spiritual, religious, or redemptive themes but includes its assertions in such fields as history and science.*
- The final guide to the interpretation of Scripture is Scripture itself.*
- The account of origins presented in Genesis is a simple but factual presentation of actual events and therefore provides a reliable framework for scientific research into the question of the origin and history of life, mankind, the earth and the universe.*
- The various original life forms (kinds), including mankind, were made by direct creative acts of God. The living descendants of any of the original kinds (apart from man) may represent more than one species today, reflecting the genetic potential within the original kind. Only limited biological changes (including mutational deterioration) have occurred naturally within each kind since creation.*
- The great Flood of Genesis was an actual historic event, worldwide (global) in its extent and effect.
The special creation of Adam (the first man) and Eve (the first woman), and their subsequent fall into sin, is the basis for the necessity of salvation for mankind.*
- Death (both physical and spiritual) and bloodshed entered into this world subsequent to and as a direct consequence of man's sin.*

Section 3: Theology

- The Godhead is triune: one God, three Persons—God the Father, God the Son, and God the Holy Spirit.*
- All mankind are sinners, inherently from Adam and individually (by choice), and are therefore subject to God's wrath and condemnation.*
- Freedom from the penalty and power of sin is available to man only through the sacrificial death and shed blood of Jesus Christ and His complete and bodily resurrection from the dead.*
- The Holy Spirit enables the sinner to repent and believe in Jesus Christ.*
- The Holy Spirit lives and works in each believer to produce the fruits of righteousness.*
- Salvation is a gift received by faith alone in Christ alone and expressed in the individual's repentance, recognition of the death of Christ as full payment for sin, and acceptance of the risen Christ as Savior, Lord, and God.*
- All things necessary for our salvation are expressly set down in Scripture.*
- Jesus Christ was conceived by the Holy Spirit and born of the virgin Mary.*
- Jesus Christ rose bodily from the dead, ascended to heaven, and is currently seated at the right hand of God the Father, and shall return in person to this earth as Judge of the living and the dead.*
- Satan is the personal spiritual adversary of both God and mankind.*
- Those who do not believe in Christ are subject to everlasting conscious punishment, but believers enjoy eternal life with God.*
- The only legitimate marriage is the joining of one man and one woman. Any forms of homosexuality, lesbianism, bisexuality, incest, fornication, adultery, pornography, etc., are sinful perversions of God's gift of sex.*
- It is the duty of Christians to attend a local Bible believing church, as portrayed in the New Testament.*

Section 4: General

The following are held by members of the Board of Answers in Genesis to be either consistent with Scripture or implied by Scripture.

- Scripture teaches a recent origin for man and the whole creation, spanning approximately 4,000 years from creation to Christ.*
- The days in Genesis do not correspond to geologic ages, but are six [6] consecutive twenty-four [24] hour days of creation.*

- *The Noachian Flood was a significant geological event and much (but not all) fossiliferous sediment originated at that time.*
 - *The gap theory has no basis in Scripture.*
 - *The view, commonly used to evade the implications or the authority of biblical teaching, that knowledge and/or truth may be divided into secular and religious, is rejected*
 - *By definition, no apparent, perceived or claimed evidence in any field, including history and chronology, can be valid if it contradicts the scriptural record. Of primary importance is the fact that evidence is always subject to interpretation by fallible people who do not possess all information.*
- April
29, 2009

On 5 March 2021 an updated and very much longer and more detailed statement of faith was published, and can be seen by searching [answersingenesis.org/statement of faith](http://answersingenesis.org/statement-of-faith).

Some comments on the Creationist position.

A. Why did the Creation Science movement change its name to Answers in Genesis?

Prof Ian Plimer, professor of mining geology, Honorary Fellow of the Geological Society of London and author of *Telling Lies for God* ⁽⁹⁾, and many other geologists have tried repeatedly to have geological questions answered by the Creation Science movement. 'Dr' Allen Roberts and his Noah's Ark tour of Australia led to a court case.

The Plimer/Roberts Noah's Ark case was not about free speech, nor was it about creationism. The judge was asked to determine, within the strict confines of the Fair Trading Act, whether Allen Roberts had made misleading statements in a series of public lectures about Noah's Ark *in trade and commerce*.

Judge Sackville found that the Fair Trading Act did not apply to this case, because, in his opinion, technically, Allen Roberts was not *in trade and commerce*. He then added that, had the Fair Trading Act applied, Allen Roberts' behaviour *would have constituted misleading and deceptive conduct on his part*.

Judge Sackville found in Roberts' favour because Roberts did not receive a salary from his Noah's Ark lecture tour, that his organisation was not incorporated at the time of the public lectures, and was supported by unpaid volunteers, not by paid staff. Roberts' lecture tour was a one-off event and was not a *business carried on for profit*. Roberts also operated from his own home, not from special premises.

'Dr' Roberts' doctorate is from Freedom University, based at a suburban church in Orlando, Florida. His thesis was *On the teaching of absolute Christian values in Australian primary schools*.

This incident has contributed to the avoidance of the word *science* in the title of this Creationist organisation. One of the new names is "Answers in Genesis".

Alex Ritchie, who has a real Doctorate, on Scottish Silurian fishes, has been a Research Fellow, Palaeontology, at the Australian Museum, Sydney. He attended several meetings of the Creation Science Foundation, and writes: *It was also ironic that Allen Roberts, despite having been found to be "misleading and deceptive", was able to hail his technical legal win as a victory for "free speech"*.

In a democratic society, the concept of free speech surely also includes the right to reply, to dissent, to question. I have attended many public meetings organised by so-called "creation scientists" and can confirm, from personal experience, that many creationists have a strange concept of "free speech". The format of the meeting is always tightly controlled. Various tactics and stratagems are employed to ensure that discussion or dissent is minimized or prevented. This is especially true if any scientist present tries to protest about public misrepresentation of science.

"Dr" Allen Roberts's lecture tour provided a good example of how the process works. Before each of Roberts's public lectures on "Noah's Ark", the meeting chairman would announce to the audience that

Roberts would not respond to questions from the floor. He would only answer written questions dropped in a barrel in the foyer during the interval and left temporarily out of sight when the audience re-entered the hall. Roberts's Ark lectures, heavily dependent on biblical sources, also included many references to supposed scientific evidence supporting his findings. To anyone scientifically literate, these revealed Roberts' limited knowledge of science, and especially of geology.

B. Ken Ham's \$27 million Creation Museum

Ken Ham was a science teacher from Queensland, and has become a full time missionary for the Creationist viewpoint. He has been an aggressive promoter of creationism, using many forms of media.

On 28 May 2007, in Boone County, Kentucky, Answers in Genesis (AiG) opened what it calls a museum. For more on AiG's absurdity see:

noanswersinogenesis.org.au/AiG_museum_utube2.htm
answersincreation.org/creation_museum.htm

Even in this brief walk-thru, it is easy to see the flawed science and wrong Biblical interpretation used by Answers in Genesis. Once again, the world will laugh at young earth creationists (and in doing so, at the church as a whole), as they try to pass off their bad science as the truth: Creation Museum - A Preliminary Review (off Site) Greg Neyman, Answers in Creation, First Published 13 April 2007

I admit I was dismayed by what I saw at the Ken Ham museum. It was alarming to see so much time, money and effort being spent on making a mockery of hard won scientific knowledge. And the fact that it was being done with such obvious sincerity, somehow made it all the worse.

Lord Robert Winston, British scientist, politician, practising orthodox Jew, and television presenter of the BBC documentary *The Story of God*.

Educators criticizing the Ken Ham museum include the National Center for Science Education. It collected over 800 signatures from scientists in the three states closest to the museum (Kentucky, Indiana, and Ohio) approving the following statement:

We, the undersigned scientists at universities and colleges in Kentucky, Ohio, and Indiana, are concerned about scientifically inaccurate materials at the Answers in Genesis museum. Students who accept this material as scientifically valid are unlikely to succeed in science courses at the college level. These students will need remedial instruction in the nature of science, as well as in the specific areas of science misrepresented by Answers in Genesis.

National Center for Science Education Director, Eugenie Scott, characterised the Creation Museum as *the Creationist Disneyland*. *The Guardian* called the facility *quite possibly ... one of the weirdest museums in the world*. Physicist Lawrence Krauss has called on media, educators, and government officials to shun the museum and says that its view is based on falsehoods. Krauss said that the facility is *as much a disservice to religion as it is to science*.

The museum has also been criticised by Christians who are not young Earth creationists. Notable among them is geologist Greg Neyman of Answers in Creation, an old-earth creationism ministry. Neyman released a press kit dealing with the museum's grand opening in which he said:

Those who will benefit least from the museum are the non-Christians, who are firmly grounded in their belief through modern science that the Earth is billions of years old. They will see the museum, will recognize its faulty science, and will be turned away from the church. This will increase the already widening gap between the unchurched and the churched. This gap is the direct result of young Earth creationism.

The Rev. Mendle Adams, pastor of St. Peter's United Church of Christ in Cincinnati, Ohio, joined others, both secularists and Christians, at protests at the museum's opening. He said *my brothers and sisters in the faith who embrace [the creationist] understanding call into question the whole Christian concept and make us a laughing stock*.

Roman Catholic theologian John Haught sees little merit in the museum, saying it will cause an *impoverishment* of religion. He concluded: *It's hard for me to come up with a single reason why we*

should be doing this. ... It's theologically problematic to me, as well as scientifically problematic.

Michael Patrick Leahy, editor of the magazine *Christian Faith and Reason*, says that by replacing the scientific method with biblical literalism, the museum undermines the credibility of all Christians and makes it easy to represent Christians as irrational.

Lisa Park, a professor of palaeontology at University of Akron who is also an Elder in the Presbyterian Church was particularly disturbed by the museum's depiction that war, famine and natural disasters are the result of a belief in evolution. She stated:

I think it's very bad science and even worse theology ... and the theology is far more offensive to me. I think there's a lot of focus on fear, and I don't think that's a very Christian message ... I find it a malicious manipulation of the public.

C. Four brief examples of errors by Creationists

(a) "Evolution is just a theory" and "Theories become facts when they are well supported and/or proven."

My comment: There are three important misconceptions in these statements. The first statement implies that a theory should be interpreted as just a guess or a hunch, whereas in science the term theory is used to describe an explanation for observations which have been made, and this explanation is then made available for testing. The second statement implies that theories become facts, in some sort of linear progression. In science, theories never become facts. Rather, theories attempt to *explain* facts. The third misconception is that scientific research provides proof in the sense of attaining the absolute truth. Scientific knowledge is always tentative and subject to revision should new evidence come to light.

The 1982 ruling in *McLean v Arkansas* found that Creation Science is not science. The teaching of creation science in public schools in the United States effectively ended in 1987 following the United States Supreme Court decision in *Edwards v Aguillard*. It found that the teaching of creation science was unconstitutional because its only real purpose was to advance a particular religious belief.

The court found that Catastrophism (including a worldwide flood) failed as science. Also, it noted that no recognised scientific journal had published any article supporting creation theory, and the claim that such lack of publication was due to censorship was not credible.

In 2005, in *Kitzmiller v Dover Area School District*, Judge John Jones ruled that teaching intelligent design in public school biology classes violates the First Amendment of the US Constitution because intelligent design is not science and *cannot uncouple itself from its creationist, and thus religious, antecedents*.

(b) Dinosaurs and humans coexisted

My comment: If dinosaurs and humans were created during Week 1 of this planet's history then our co-existence with dinosaurs would be common knowledge based on factual evidence. Yet there are **no** art-works from **any** ancient cultures that give **any** indication that **any** of our ancestors had the faintest notion of dinosaurs. Many dinosaurs were so huge that they could not have been overlooked. Aboriginal art in Australia goes back at least 40 000 years, well beyond the 4004 BCE date which is promoted by some creationists as the date of creation. It is also worth noting that Genesis fails to mention the co-existence of humans and dinosaurs.

(c) Dinosaurs

The following quote is from an official Creationist website which has so many errors that I have concerns about even mentioning it. The whole site has Biblical errors, theological errors and errors in what it calls science. Here is one simple example of its shallowness.

When reconstructing dinosaurs from bony remains, scientists make all kinds of guesses and often disagree. For example, debate has raged about whether dinosaurs were warm- or cold-blooded. It is even difficult to tell whether a dinosaur was male or female from its bones. There is much speculation about such things.

Read this quote in: answersingenesis.org/articles/nab/what-happened-to-the-dinosaurs

My comment: This is another example of Creationists using terms they don't understand, and simply being wrong. Regarding *debate has raged about whether dinosaurs were warm- or cold-blooded*, there is no debate raging. Dinosaurs were far more than smart reptiles. Robert Bakker's *The Dinosaur Heresies* ⁽²³⁾ was radical at the time it was published, but it is clear that the later dinosaurs were able to maintain a relatively constant body temperature; that is they were warm-blooded. The evidence includes stride length (their top speed requires the efficiency of warm-bloodedness), ratio of predator to prey (and it corresponds to the ratio of warm-blooded predators), the pattern of vascular supply in the fossil bones (first identified in 1930), and growth rates of the young.

Regarding the creationist comment whether or not you could tell male from female, creationists simply are not prepared to consult the extensive research on this matter. Sex in dinosaurs is easily determined. For instance, see: news.softpedia.com/news/How-to-Determine-the-Sex-of-the-Fossils-48154.shtml

(d) Changing rates of atomic decay

My comment: Creationists claim that there is proof of a billionfold increase in rate of atomic decay at first, making it possible for the earth to be only 6000 years old. This is one part of a flood of material produced by the Creationist movement. Searching of their references shows that they refer to their own publications, giving them names which are designed to cover up their lack of scientific credibility, or that they deliberately misunderstand and misuse reliable research.

Just one example of their fraudulent activity is given below, with links to the complete Creationist articles and their rebuttal by real scientists.

Because radiometric dating refutes their simplistic biblical interpretations, young-Earth creationists (YECs) are desperate to undermine the validity of these methods. One popular YEC scheme for attacking radiometric dating is to claim that God increased radioactive decay rates during the 'Creation Week', the 'Fall of Adam and Eve' and/ or 'Noah's Flood'. Under this imaginative scenario, YECs believe that rocks that are only a few thousand years old would quickly accumulate abundant radioactive daughter products that would make them **appear to be** millions or billions of years old.

YECs (like John Woodmorappe, whose name is possibly Jan Peczkis) frequently search the literature for any shred of information that they can distort to challenge the consistency of radioactive decay rates. In *Billion-fold Acceleration of Radioactivity Demonstrated in Laboratory* Woodmorappe misuses studies by Bosch et al. (1996), Kappeler et al. (1989) and other researchers to argue that increases in radioactive decay rates were feasible during the 'Creation Week.'

In his web article, Woodmorappe mentions that the decay rate of rhenium 187 (¹⁸⁷Re) may increase by a billion-fold under special conditions, that is, if the element is in a plasma state. Woodmorappe admits that for the decay rate of ¹⁸⁷Re to increase by a billion-fold, all of the electrons must be removed from the Re atom. However, Woodmorappe does not appropriately stress that stripping off all of the electrons from any massive atom requires an enormous amount of energy - quantities of energy that only occurred during the Big Bang or presently in the interiors of very, very hot stars. Woodmorappe does not tell us the temperatures that are required.

However, he later admits that accelerating the lutetium 176 (¹⁷⁶Lu) decay rate would require an environment with a minimum temperature of 200 million degrees Kelvin (K). This is about 13 times hotter than the core of the Sun. (Rhenium and lutetium are chemical elements, which are metals: extremely rare and rare respectively.)

However, if such radiation bursts did occur, how could any rocks escape destruction through melting, and how could Adam, Eve and Noah have escaped the enormous amounts of heat.

Billion-fold acceleration of radioactivity demonstrated in laboratory John Woodmorappe, August 1, 2001. Read all about it at: answersingenesis.org/articles/tj/v15/n2/acceleration#r8

Also read what a real physicist says about this deliberately fraudulent article at:
noanswersingenesis.org.au/woody_distortion_henke.htm

This helps to explain why the common outcome for submissions of articles on Creationist ‘research’ is to reject them, simply because they are wrong, or their theories have used false observational data, or they are theologically flawed, or a combination of these.

D. Creationism’s anti-intellectual shallow thinking

Creationism print and visual media are widely available, and effectively promote Creationist thinking. I will leave you to investigate Kent Hovind’s training, including his doctorate by correspondence at Patriot University, Colorado, an unaccredited Independent Baptist diploma mill, and read his claims and conspiracy theories.

His son Eric Hovind’s contribution: *Why evolution is not science* is on the creationtoday.org website. It considers amongst other things the Big Bang, referring to the creation of the universe. Hovind claims that evolution is a religion, confuses evolution with natural selection, uses his own definition of science, uses mockery, and is clearly selling a commercial course promoting his worldview. He does not seriously consider what the Bible says, or who wrote Genesis 1, or when it was written, or why. The presentation has numerous factual errors, the most glaring being the calculation of the rate of stellar formation, and it abuses the quotes from a high school science textbook.

The ‘Big Bang’ is actually a well-tested scientific theory widely accepted by the scientific community because it is the most accurate and comprehensive explanation for the full range of phenomena which astronomers observe. Since its conception, abundant evidence has arisen which further validates the model. The observed abundances of the light elements throughout the cosmos closely match the calculated predictions for the formation of these elements from nuclear processes in the rapidly expanding and cooling first minutes of the universe.

Another example of the confused thinking of Creationists is the following quote from the blurb on their timeline for the earth, based of course on the earth being only 6 000 years old.

The Seven C’s of History provide a framework for understanding the true history of the universe as presented in the Bible. Although there are many other important biblical events, these ideas are often attacked by sceptics who believe the earth and universe are billions of years old.

The first 11 chapters of Genesis provide the foundation for the Christian faith—if Genesis cannot be trusted then the rest of the Bible has no basis.

These seven critical events in history are depicted on the timeline with a picture, description, and historical events—Creation, Corruption, Catastrophe, Confusion, Christ, Cross and Consummation. A great evangelistic and teaching tool for homeschools and Sunday school classrooms!

This is adding clever marketing to deliberate abuse of the Bible.

The quote, above, says: *if Genesis cannot be trusted then the rest of the Bible has no basis.*

I trust Genesis for what it is trying to say to us, but too often its message is drowned out by this simplistic and error-ridden treatment.

E. The Clergy Letter - from American Christian Clergy *An Open Letter Concerning Religion and Science*

Within the community of Christian believers there are areas of dispute and disagreement, including the proper way to interpret Holy Scripture. While virtually all Christians take the Bible seriously and hold it to be authoritative in matters of faith and practice, the overwhelming majority do not read the Bible literally, as they would a science textbook. Many of the beloved stories found in the Bible – the Creation, Adam and Eve, Noah and the ark – convey timeless truths about God, human beings, and the proper relationship between Creator and creation expressed in the only form capable of transmitting these truths from generation to generation. Religious truth is of a different order from scientific truth. Its purpose is not to convey scientific information but to transform hearts.

We the undersigned, Christian clergy from many different traditions, believe that the timeless truths of the Bible and the discoveries of modern science may comfortably coexist. We believe that the theory of evolution is a foundational scientific truth, one that has stood up to rigorous scrutiny and upon which much of human knowledge and achievement rests. To reject this truth or to treat it as "one theory among others" is to deliberately embrace scientific ignorance and transmit such ignorance to our children. We believe that among God's good gifts are human minds capable of critical thought and that the failure to fully employ this gift is a rejection of the will of our Creator. To argue that God's loving plan of salvation for humanity precludes the full employment of the God-given faculty of reason is to attempt to limit God, an act of hubris. We urge school board members to preserve the integrity of the science curriculum by affirming the teaching of the theory of evolution as a core component of human knowledge. We ask that science remain science and that religion remain religion, two very different, but complementary, forms of truth.

See: theclergyletterproject.org/rel_evolution_weekend_2013.html

F. And now a word from the editor of the Baptist Standard, USA

Marv Knox, the editor of the Baptist Standard in the USA, shared his own views on creation and evolution in a blog post from February 2009.

He says of creationists:

I've been listening to this debate my whole life, and I've decided I'm a Christian who's comfortable with theistic evolution. The Bible—my authoritative guide for faith and practice—tells me God is the Who behind creation and God's love is the why. Science seeks to explain how life developed on Earth through the millennia.

Sometimes, atheistic evolutionists annoy me. They overstep their bounds, confident that because they feel they have good answers for the what and how of creation, they do not need a Who or why. But more than annoy me, they make me sad. For when they close their minds to the possibilities outside their sphere, they also close their hearts to a relationship with the God of love, Who has transformed my life and filled it with meaning and purpose. I feel sorry for them.

Almost always, however, hardline creationists embarrass me. I guess it's because we're fellow believers, part of the same family. Your kinfolk can humiliate you far more intently than neighbours and people you don't even know. Their arrogance is bad enough, but their lack of faith is worse. They think they've figured out how God did creation, and they deny the possibility of any other process. Don't you see the irony? They become the ones who would limit God.

And worse still, their stridency, anger and mean-spiritedness gives God a bad name and drives unbelievers away. That never was God's divine plan for creation.

Read the whole blog at:

www.baptiststandard.com/index.php?option=com_myblog&show=Faith-vs.-science.html&Itemid=114

3. Why literalism is abuse of the Bible

Is the Bible literally true? Many people will say: *Of course it is. It's God's Word.*

On reading the Bible more carefully however it becomes obvious that each part of the Bible cannot be literally true. Trees of the field cannot clap their hands (Isaiah 55:12). But what I understand this passage in Isaiah to mean is that the new creation which God is encouraging in you and in me will cause such fundamental deep joy and happiness that we will feel that even the trees, and all of creation, will be joining in praise to God. It would be a completely different and joyful world. The Gospel, the good news of Jesus, tells us that such a new creation can be a present reality and not a distant future hope.

The parables of Jesus clearly are not recordings of actual events. They are however stories about situations which we can recognise and identify with, and which help us see beautiful and eternal truths.

Many more examples of literalism's problems are given later in this chapter, but first let us look at the implications of applying literalism to the New Testament. You may accuse me of being picky by viewing the text with sceptical eyes. We should remember however that it is through such sceptical eyes that people not of the Christian faith will view the text of the Bible.

One purpose of this chapter is to help us see the flawed nature of the Biblical record, to filter out the flaws, and then see more clearly the underlying story about Israel, the new Israel (Christians), and God's loving action towards all of us through all of time.

The authors of the New Testament were Jews by race and religion. The death and resurrection of Jesus took place about 30 CE. Saul, a Jew, was an anti-Christian zealot, and he actively persecuted them. He is better known by his Greek name, Paul. In about 36 CE Paul became a follower of Jesus. He also became Christianity's most prolific New Testament writer and its earliest written theologian. Paul wrote many letters, some of which have survived. They are letters to people living in Corinth: the Corinthians. Similarly, there are letters called Thessalonians, Galatians, Romans, and others. Paul was executed in about 65 CE.

It was after the execution of Paul that Mark wrote the first of the gospels, in about 65 -70 CE. There is good evidence that his writing was influenced by Peter.

In 70 CE the Second Temple in Jerusalem was destroyed, this time by the Romans who were the conquering power at that time. After 70 CE the Jews needed to rethink the focus of their worship, now that the physical focus of their religious life was no longer available. Their sacrificial rites at the Temple were no longer possible.

With no temple, it was like The Exile all over again. How should Jews express and maintain their faith? This question also affected Christians.

For several decades Christians had been a sect of Judaism and were starting to become distinct from Judaism. They were establishing the Christian Way in their own right. Even so, the destruction of the Temple in 70 CE led to changes for Christians too. The gospels of Matthew, Luke and John were written after the destruction of the second Temple, and this very new environment is reflected in their Gospels.

Mark's Gospel was widely circulated and it clearly influenced the writing of the gospels of Matthew (80-90 CE), Luke (80- 90 CE, assisted by his disciples) and John (90-110 CE, assisted by his disciples).

The writers of the four Gospels were Jews, steeped in Jewish schools of thought. The discipline or rules of their writings were Jewish, and it helps us to understand their writings if we understand these rules.

As an example, Matthew's genealogy of Jesus⁽¹⁰⁾ is not a genealogy in the western sense. It was not written to record historical facts, and that is clearly seen in its structure and contents. It was written to make a theological point. This was acceptable because Matthew was writing for a Jewish audience which understood the difference between essential truth (Midrash Halakha) and the story line which carries the truth (Midrash Aggadah). See the Glossary or chapter 11 *Christology: Jesus then and now* for further explanation of this distinction.

Matthew, though stressing the foreign element on the female side (Tamar, Rahab, Ruth, and Uriah's wife), limits his genealogy to emphasise Christ's Israelitic descent. Its aim is to show how Jesus is connected with the leading recipients of the messianic promises, i.e. with Abraham and David and with the latter's royal line. Luke's genealogy is universal in scope and goes back to Adam, head of the human race. The two lists, from David down to Joseph, have only two names in common. There are two possible explanations: either Matthew has preferred dynastic succession to physical descent, or else legal descent (levirate law, Deuteronomy 25:5 ff) has been reckoned equivalent to physical.

In Matthew, moreover, the systematic nature of the genealogy is brought out by the division of Christ's ancestors into three series of 2 X 7 names, a device which forces the omission of three kings between

Joram and Azariah. It also compels the double reckoning of Jeconiah in verses 11 and 12. This is made possible by the fact that the same Greek name can translate the two similar Hebrew names Joiaqim and Joiakin.
Commentary from The Jerusalem Bible

Overall, the purpose of Matthew's genealogy was to make a point, that Jesus was of the line of David. The writer wanted to show that Jesus was a Jew of good sound lineage.

The audience for Luke's gospel and its genealogy ⁽¹¹⁾ was wider however. It included people who were Greek or were being influenced by Greek thought. This is described further in chapter 11 *Christology: Jesus then and now*.

For Matthew, Mark, Luke and John the purpose of their Gospels was to advertise the Good News. They are not histories: they do not record in a diarised fashion the activities of Jesus. These four surviving Gospels are theological statements about God, and about Jesus as remembered by some of his faithful disciples.

Only Matthew and Luke have birth stories, and they differ from each other. Their genealogies and the birth stories are an overture, a taste of the attitudes and lifestyle of Jesus the adult, and written from a perspective seen from decades beyond the death and resurrection of Jesus. Literalism was not a part of the world of these writers or their audiences.

When Jesus taught, he used parables. Probably none of them was literally true, even though they were about common everyday things which were believable. For example, you would expect a person to throw a party at the discovery or return of something which had been lost (Parables of the Lost Sheep, Lost Coin, and the Prodigal Son, Luke chapter 15).

These parables were Jesus' way of helping people to understand that God's love is searching and boundless, joyfully accepting those who come back home into his family.

Paul's letters are quite different but, again, they should not be taken literally. They are one side of a conversation with various churches. They can be seen to be personal and at times very direct. Paul was not aware that he was writing what later became collated with many other writings to become God's Word.

This is fundamental for understanding the two letters of Paul to the Christians at Corinth. We know of at least two more letters, one sent before 1 Corinthians and one written between 1 and 2 Corinthians, referred to in 2 Cor 2:3. We know of delegations from Corinth before 1 Corinthians (1 Cor 1:11; 16:17) and of a letter (7:1). 1 Corinthians 6:12-20 has slogan-like statements, which appear to be slogans emanating from Corinth, perhaps inspired originally by Paul's preaching.
William Loader

Paul's letters were real letters written to real people at a particular time and contained guidance, congratulations and criticism. They had a cultural context which can be seen in what was written.

When Paul wrote in anger, "I hope those who bother you will mutilate themselves" was that the Word of God? Surely it was nothing more than the word of Paul. Similarly, when Paul suggested that a woman's head must be covered in public worship, he was expressing a cultural norm not a universal principle. When Paul said, "I forbid a woman to have authority over a man" or when he suggested that those who do not worship God properly would have their sexual identities confused, does one really want to suggest that this badly dated bit of human ignorance is to be revered as the voice of God?
John Spong

Creationists do not accept or do not understand these interpretations or influences. Nor do they accept the clear incompatibilities in the gospels. Creationists cannot see that the gospels, and the letters, are theologies based on observed events, events which occurred up to 70 or 80 years earlier.

What follows is some of the evidence showing why the Bible should not be read as equally literally true throughout, the inerrant Word of God. Only one of these examples needs to be accepted for us to discard the view that the Bible is literally true. That is, only one of these examples needs to be true for Creationism to be discarded. Many of the examples require access to a Bible (I use *BibleGateway.com*.)

and some Biblical knowledge. There are many, many more examples than these.

(a) Why is the story of the tower of Babel (Genesis 11) and the commencement of different languages recorded after the description of well-established tribes and their languages in Genesis 10?

(b) Where did Abram come from? Not Ur of the Chaldeans (Gen 11:31, 15:7). The half dozen tribes that invaded southern Mesopotamia were known collectively as Chaldeans. To call Abraham's Ur 'Chaldean' as the Bible does is anachronistic by 800 years as well as geographically incorrect.

(c) Are these three stories really different: Abram and Sarai (Gen 12: 10-20) Abraham and Sarah (Gen 20: 1-18) Isaac and Rebekah (Gen 26: 7-14). Or, are they deliberately paralleled ways of praising the beauty of the ancestresses, the wisdom of the ancestors and the protection of God?

(d) Are Genesis 16 and 21 the same story from two different traditions, or does chapter 21 really come after chapter 16 in which case Isaac, at 15 years of age, is carried by his mother and weeps. Some Bibles, appreciating this problem, say that in v14 he is not carried by his mother, and in v16 it is Hagar who weeps.

(e) Who was Jacob's father? Taking the Bible literally, it was Abraham (Gen 28:13 and elsewhere).

(f) Is this the genetics and the morality we should teach? In Genesis 30:32-43 Jacob arranged the mating of sheep and goats to produce mottled offspring and obtain revenge. In Eastern countries the sheep were usually white and the goats black. Jacob had asked for his wages to be paid in the form of abnormal animals – and then arranged for abnormal animals to be produced by mating the goats in front of striped rods (v39) and mating the sheep in front of striped or black animals in Laban's flock (v40).

This passage demonstrates a primitive and erroneous understanding of genetics. It also demonstrates deliberate fraud and deceit.

(g) Jacob wrestling with God (literally, wrestling with *a man* who says that Jacob has been strong against God) (Gen 32:23). Why is the forbidding of the eating of the sinew / muscle / sciatic nerve in the socket of the hip (v 32) not mentioned elsewhere in the Bible? This ban is not observed.

(h) Rachel died giving birth to Ben-oni / Benjamin (Gen 35:18, 19). How then can she visit Joseph in 37:10?

(i) How can any person come face to face with God and live? (Ex 33:20) But face to face meetings took place between God and Abraham (Gen 18:22), Jacob (Gen 32:30) and Moses (Ex 33:11).

(j) Who was Moses' father-in-law? Literally it was Jethro (Ex 3:1, 4:18) or Hobab (Judges 4:11).

(k) How can the manna of Ex 16:34 be placed before The Testimony (the tablets of the law) which have not yet been made?

(l) Priests are mentioned in Ex 19:22 but are not yet set apart (Ex 28 and 29, Lev 8).

(m) Are the commandments of Ex 34:10-26 a deliberate repetition of Ex 20 or a separate ritual law?

(n) The ten commandments are recorded in Exodus 20 and in Deuteronomy 5. There are more than ten commandments however, and they are grouped differently by various translators and church groups. Also, Exodus and Deuteronomy give different reasons for resting on the seventh day: because God rested on the seventh day of creation (Exodus 20:11), or because you were slaves in Egypt (Deuteronomy 5:15).

(o) Ex 38:21-31 appears to be a later addition: the Levites were not yet established (Numbers 3), the tax was not yet imposed, nor the distinction made between the shekels.

(p) How many men were in the Exodus?

Exodus 12:37	'about 600 000 men'
Exodus 38:26	603 550 men (and women in some translations) who were 20 and over
Numbers 1:46	603 550 'twenty years old and upwards, everyone able to go to war in Israel' (a population of perhaps two and a half million; doubtless artificial)

(q) *Listen to these ordinances, be true to them and observe them: No man or woman among you shall be barren, no male or female of your beasts infertile. Yahweh will keep all sickness far from you.* (Deut 7:12-15) Is this true? According to this, all observers of the Law would be fertile and never experience illness.

(r) Who killed Goliath of Gath? It was David according to 1 Sam 17, or Elhanan according to 2 Sam 21:19, and then 1 Chron 20:5 says that Elhanan killed the brother of Goliath. It is likely that the Chroniclers were aware of the differences between the earlier passages and so wrote their smoothing version.

(s) 1 Sam 17:54 was probably added later for Jerusalem was not yet captured (2 Sam 6:5-9). Also, at this stage David did not have a tent of his own.

(t) *The anger of Yahweh once again blazed out against the Israelites and he incited David against them. 'Go,' he said 'take a census of Israel and Judah'.* (2 Sam 24:1)

Satan rose against Israel and incited David to take a census of the Israelites (1 Chron 21:1)

These quotes are about the same census event. Is Satan the 'anger of Yahweh' rather than a person?

(u) In David's census how many men?

2 Sam 24:1-9 *men capable of drawing sword.*

Israel 800 000

Judah 500 000

1 Chron 21:5,6 *men capable of drawing sword. But he did not include Levi and Benjamin in the numbering, for the king's command was abhorrent to Joab.*

Israel 1 100 000

Judah 470 000

But according to 1 Chron 27:23,24: *David did not count those below twenty years of age, for the Lord had promised to make Israel as numerous as the stars of heaven. Joab son of Zeruiah began to count them, but did not finish; yet wrath came upon Israel for this, and the number was not entered into the account of the Annals of King David.*

These census figures appear to be inflated and unreliable.

(v) In maths we say that circumference is (approx) 3.14 times diameter, but according to 1 Kings 7:23 (paralleled in 2 Chron 4:2) it has a ratio of 3 to 1.

(w) Does *covering his feet* literally mean that? It actually refers to defaecation in Judges 3:24, 1 Sam 24:3, etc and to sexual organs in Isaiah 6:2.

(x) *The third day He rose again according to the scriptures.* (1 Cor 15:5) Which scriptures?

It could be the Jonah story, about God's love of Gentiles too. In this story Jonah is in the belly of the fish for three days. See chapter 9: Other Misunderstood Stories: Jonah and Ruth.

It could be Hosea 6:1.2 *Come, let us return to the Lord ... he will heal us ... he will bind us up ... after two days he will revive us; on the third day he will raise us up, that we may live before him.*

Jesus had said: *Destroy this temple, and in three days I will raise it up.* He was speaking of the temple of his body (John 2:19-21), but this cannot be *according to the scriptures* referred to by Paul because there was not yet a written gospel record to which he could have been referring. The gospels were among the last of the books of the New Testament to be written.

(y) *In this way the words spoken by the prophets were to be fulfilled: 'He will be called a Nazarene'* (Matt 2:23). Spoken by which prophets? There is no use of that term in the Hebrew Bible / Old Testament. The closest reference is in Judges 13:5, but that is Nazarine and refers to someone who is set apart or consecrated.

(z) Jesus *could* work no miracle there, though he cured a few sick people by laying his hands on them (Mark 6:5). Apparently, curing sick people is not a miracle.

If God wrote every word of the Bible, as is claimed by literalists and Creationists, it is clear that their version of God has passed his use-by date and needs replacing, preferably by Jesus and the God to whom Jesus points. The God of literalism and Creationism can be forgetful of what he has promised (Genesis 9:8-17), records different versions of the same event, blesses unethical behaviour, and misquotes himself in the New Testament. Sadly, literalism is abuse of the Bible, and the supporters of literalism are depriving themselves of the Bible's riches.

Also, in many of its details, the Bible is simply wrong. Epilepsy is not caused by demon possession. David did not write all of the Psalms (eg Psalm 137). The earth is not the centre of the universe (Psalm 104:5, the "Galileo verse"). On other issues of great public concern, the Bible is no longer even regarded as moral. Its verses have been used to affirm war, slavery, segregation and apartheid. In some places it defines women as inferior creatures and suggests that homosexual persons be put to death.

Some people say that the Bible is literally true, but some people also believe in homeopathy, fortune telling, healing by crystals, horoscopes and alien invasions.

I invite literalists to step out of the repression of literalism into the brightness of God as revealed in scripture. Refreshing life is waiting for us if we can judge everything in the light of the revelation in Jesus.

That revelation is a commentary on domination in all its forms, a commentary that can be used to look at the Bible itself. In this way the Bible contains the principles of its own correction. We are freed from bibliolatry (the worship of the Bible), and it is restored to its proper place as witness to the Word of God.

4. The Jesus approach

He was born in an obscure village, the son of a peasant woman. He grew up in another village, where he worked in a carpenter's shop until he was thirty. Then for three years he became a wandering preacher. He never wrote a book. He never held an office. He never had a family or owned a house. He didn't go to college. He never visited a big city. He never travelled two hundred miles from the place where he was born. He did none of those things one usually associates with greatness.

He had no credentials but himself.

He was only thirty-three when the tide of public opinion turned against him. His friends ran away. He was turned over to his enemies and went through a mockery of a trial. He was executed by the state. While he was dying, his executioners gambled for his clothing, the only property he had on earth. When he was dead he was laid in a borrowed grave through the pity of a friend.

*Twenty centuries have come and gone, and today he is the central figure of the human race and the leader of mankind's progress. All the armies that ever marched, all the navies that ever sailed, all the parliaments that ever sat, all the kings that ever reigned, put together, have not affected the life of man on this earth as much as that **One Solitary Life**.*

Anonymous

Jesus has made simple our search for truth, and for meaning in life. Early Christians were not known as Christians but as *Followers of the Way*. Since then, the way of Jesus has been followed by countless millions of people, some of whom have associated themselves with institutional churches. And over the centuries there have been waves of rediscovery of *The Way of Jesus*.

But what is *The Way*? The Beatitudes, or beautiful sayings, are the most explicit, and are a part of *The Sermon on the Mount* (Matthew's Gospel, chapters 5, 6 and 7).

The Sermon on the Mount can be called the central document of the Christian faith, for nowhere else do we read that Jesus *sat down, opened his mouth, and taught them*. Rabbis taught from a seated position. *Opened his mouth* means that a deep insight is coming. *And taught them* is used in the sense that Jesus continually taught them about these things.

After the death of Jesus, the Beatitudes were remembered and spoken about for at least thirty years before they were written down in the form that we find them in the Gospels. The Beatitudes are like other teachings of Jesus in that they are not rules for excluding people. They are about relationships which include and accept people, and in doing this each person starts to experience God's new creation.

The call of Jesus to each of us is to be transformed, and to help others to be transformed, including seeking out the poor, the sick and those trapped by circumstances, even if the circumstances are of their own making. A result was that Jesus' followers became instruments of radical change.

The Beatitudes are serious central teaching, and are not about future happiness on earth or in heaven. They are reminders of blessedness or deep happiness which people can enter even now, a bliss which John's Gospel calls eternal life.

We will probably not achieve the level of bliss referred to in the Beatitudes. But that's OK. Jesus was talking to people who were already his disciples, and they weren't perfect either. We are invited to make a start from where we are now: not next week, or when we've got time, or when we feel religious. We can start now on experiencing the deep joy of the Beatitudes - and *The Way of Jesus*.

William Barclay's *The Plain Man Looks at the Beatitudes* ⁽¹²⁾ is worth reading, and is drawn on in what follows. The traditional Authorised Version (or King James Version) of the Beatitudes is shown as well, in italics.

1. *The Bliss of the destitute*

Blessed are the poor in spirit, for theirs is the kingdom of heaven

A poor humble faithful person who is in the pits can most clearly see what is important and becomes wholly committed to God, a citizen of the kingdom of God. Doing God's will is our peace.

2. *The Bliss of the broken-hearted*

Blessed are those who mourn, for they shall be comforted.

There are some things which only sorrow can teach. Jesus was repeatedly deeply moved, to the depths of his being, by what he saw in the people around him. Our world would be much poorer if there were not people who were prepared to share the sorrow of their fellows.

There is blessedness in sorrow; there is blessedness in taking the right way even when the right way is the hard way; there is blessedness in sorrow for the sins and sorrows and sufferings of people around you; and there is blessedness in sorrow which leads to confession before God and the seeking of forgiveness. Forgiveness can give an overwhelming feeling of comfort, trust, encouragement, stimulus and strength.

3. *The Bliss of the disciplined self*

Blessed are the meek, for they shall inherit the earth

The Greek and Hebrew words translated as 'meek' describe the person who only becomes angry on behalf of others, and never for personal reasons.

Your instincts and passions will be focussed on the needs of others, and you will be blameless.

4. *The Bliss of the starving soul*

Blessed are those who hunger and thirst after righteousness, for they shall be filled

The Christian life is not for the dabbler. It is for those who desire righteousness as a matter of life and death. The blessed are not those who have become righteous, but those who hunger and thirst for it. This righteousness which is being sought is for being in a right state of relationship with God and all people, and for justice for others in society. God will not send you away empty.

5. The Bliss of the kind heart

Blessed are the merciful, for they shall obtain mercy

This mercy is the outgoing and searching kindness of God, seeking the lost or different or alienated. This mercy is outward-looking, focussed on individuals, tolerant, forgiving, and active. Mercy is characteristic of the nature of God, and of those who practise it in their lives, and was in contrast to Jewish Law and the practices of Roman and Greek society.

6. The Bliss of the pure in heart

Blessed are the pure in heart, for they shall see God

The word for purity which is used here appears many times in the Bible, referring to purity of materials, ceremonial purity, and personal moral and spiritual purity. Jesus said that it was a person's inward purity, of heart, mind and soul, which mattered. It makes a difference to what that person sees, and in so doing allows that person to see more, or see less, of God. This demands the death of self, and the growth of Christ's attitudes and actions. It is the bliss of entering into the intimate fellowship of love. Jungian analysts call it the death of the ego. This is noted later in chapter 11 (Christology: Jesus then and now) in the comments of Sebastian Moore and John Sanford, and in chapter 16 (In summary: a personal viewpoint).

7. The Bliss of the breaker-down of barriers

Blessed are the peacemakers, for they shall be called the children of God

Peace (shalom) is not just the absence of war. It describes happiness and well-being, the perfection of human relationships. Those who are blessed are not the peace-lovers (an easy task) but the peace-makers: those who face the issue, and are prepared to give it everything to achieve peace. This peace needs to be with yourself; between you and others through breaking down the barriers of race, religion, sex, colour, age and mental capacity; and through a right relationship with God. *Children of God*, more accurately translated as *sons of God*, means *God-like*.

8. The Bliss of the martyr's pain

Blessed are those who are persecuted for righteousness' sake, for theirs is the kingdom of heaven.

Blessed are you when they revile and persecute you, and say all kinds of evil against you falsely for my sake.

In the early church the words for witness and martyr were the same. Christians were seen to be different in many ways. The early Christians met privately, had rituals which were thought to be cannibalistic (communion), apparently brought their children for sacrifice (baptism), and seemed to be immoral at their love feasts (the Christian meeting was called Agape, the Love Feast, and there was the kiss of peace). They also refused to carry out the annual Roman requirement of saying *Caesar is Lord*, because Jesus, not the emperor, was their Lord. As a result, Christians were systematically persecuted, mutilated and executed. But persecution is in fact a compliment, a proof of the utter genuineness and sincerity of the faith of the person being persecuted. A time-serving, compromising, facing-both-ways, hypocritical, uncommitted Christian will never be persecuted.

In the words of Martin Luther King: *Unearned suffering is redemptive*. Or as Scott Peck notes: *one measure – and perhaps the best measure – of a person's greatness is the capacity for suffering*⁽¹³⁾.

The Sermon on the Mount, which includes these Beatitudes, is not about what to believe, but what we should do. It is a behavioural manifesto, which includes suffering. Yet three centuries later, when the Nicene Creed became the official oath of Christendom, there was not a word in it about what to do, only words about what to believe.

The first followers of Jesus trusted him enough to become instruments of significant change. Today, in contrast, many worshippers of Christ agree to believe things about him in order to receive death benefits, exaggerated and packaged by a religious institution, not by Jesus.

Christianity as a belief system requires nothing but acquiescence, 'going with the flow'. But Christianity as a way of life, as a path to follow, requires a second birth, the conquest of ego, and new eyes with which to see the world. It is no wonder that so many of us have prefer to be saved rather than to be transformed.

Frustratingly, Jesus never defined the Kingdom of God. Instead, through more than 40 recorded parables, he said that the Kingdom of God is a present fact, which people must recognise: the Kingdom of God has already come. Luke 9: 9-11 is an example of this. In some translations this passage ends with the words ... *that the Kingdom of God is very near* in the sense of its immediate accessibility.

The nature of the Kingdom of God, and the relationships which it encourages, can be seen in the parables of The Lost Coin, The Lost Sheep and The Lost (Prodigal) Son in Luke chapter 15, and the Sheep and Goats parable in Matthew (Ch 25: 31-46):

When the Son of Man comes in his glory, and all the angels with him, he will sit on his glorious throne. All the nations will be gathered before him, and he will separate the people one from another as a shepherd separates the sheep from the goats. He will put the sheep on his right and the goats on his left.

Then the King will say to those on his right, "Come, you who are blessed by my Father; take your inheritance, the kingdom prepared for you since the creation of the world. For I was hungry and you gave me something to eat, I was thirsty and you gave me something to drink, I was a stranger and you invited me in, I needed clothes and you clothed me, I was sick and you looked after me, I was in prison and you came to visit me."

Then the righteous will answer him, "Lord, when did we see you hungry and feed you, or thirsty and give you something to drink? When did we see you a stranger and invite you in, or needing clothes and clothe you? When did we see you sick or in prison and go to visit you?"

The King will reply, "Truly I tell you, whatever you did for one of the least of these brothers and sisters of mine, you did for me."

Then he will say to those on his left, "Depart from me, you who are cursed, into the eternal fire prepared for the devil and his angels. For I was hungry and you gave me nothing to eat, I was thirsty and you gave me nothing to drink, I was a stranger and you did not invite me in, I needed clothes and you did not clothe me, I was sick and in prison and you did not look after me."

They also will answer, "Lord, when did we see you hungry or thirsty or a stranger or needing clothes or sick or in prison, and did not help you?"

He will reply, "Truly I tell you, whatever you did not do for one of the least of these, you did not do for me."

Then they will go away to eternal punishment, but the righteous to eternal life.

New International Version

The message in the parable of the separating of the sheep and the goats at the end of time is similar to the message in The Beatitudes. Jesus states that those entering into the eternal love and acceptance of God are those who have been compassionate, not to gain any reward but because that was their nature. They had been transformed.

Our status counts for nothing. What counts is attitude and action. Jesus said that the children of Abraham, including us, have no special place or privilege now or at the end of time. Judgment will be by our fruit. The only test for entering the kingdom of heaven is whether we serve the sick, the imprisoned, the destitute and the hungry. And it is the only test for entering the kingdom of heaven right now.

The message in the Beatitudes (Matthew 5) and the story about the Sheep and Goats being divided (Matthew 25) is basic and essential teaching by Jesus, and in each case it emphasises service to others rather than trying to please or appease God by rituals or formal prayers.

What matters is whether we are transformed in our relationship to others, and not whether we pray a lot, or speak in tongues, or go to church, or are a preacher. Praying, speaking in tongues, going to church, or being a preacher are only important to the extent that we are transformed in ourselves and are transforming the world.

Giving and receiving hospitality is a part of living the new life in Christ, living the new creation. In Matthew 11 we read that Jesus not only accepted hospitality, he seemed to become the life of the party. He celebrated God's creation, leading to the accusation of him being a glutton and a drunkard, a friend of tax collectors and sinners.

Jesus used joyful feasting as a picture of the hospitality of God. His last meal was not a few crumbs while hiding in an alley somewhere. It was with his disciples and he asked them to remember that meal and to invite others to such a meal in memory of him. We call that memorial meal communion, or eucharist which comes from *eu* (well) and *charis* (goodwill, favour).

What Jesus offers is an open invitation to a party, not a command by a dictator. God's party is a common theme in the Bible, a party in which the hungry are fed. When we remember that Jesus said that the kingdom of God is a present reality, within grasping distance (Mark 1), it means that the party has already started, even if the rest of the world chooses to live in hostility and pain.

That doesn't seem to fit with the time when he said that he would split families, which sounds not very nice (Matthew 10, Luke 12). But his point was that his call to a new way of living, a new hospitality, a new way of caring for everyone with no barriers, would upset those whose life was built around status and hierarchy and power.

His call to this new way of living comes across the centuries to us in our world, a world which seems so different and yet in other ways a world which really needs to listen to what he says. Two World Wars and many other failures of people to live peaceably have led to ways of life like the Post-Modern movement, a meaningless intellectual desert, sceptical of everything and adding nothing of value.

Jesus says quite clearly, to each of us, that there is a choice: you can live according to guidelines which establish a new, meaningful community of loving care, a kingdom of God in which everyone is equal and equally valued, or you can continue with your mind-numbing, self-centred, media-based, status-based lives of no purpose. That is why he said that families will be split.

Jesus was saying: *If you follow me your life will be very different, and your family may not want to know you.* Can rejection happen? Yes, it can. In a Bible School in India our son mentored young men who had become Christians and were now destitute and regarded as dead by their Hindu families. Closer to home, we see some new-creation Christians in our society being shunned too. As noted earlier, commenting on the last Beatitude, persecution is a compliment, a proof of the genuineness and sincerity of the faith of the person being persecuted.

So how should we live? Restrained piety is the solution for some, as it was for John the Baptist. Jesus however had broken from John's penitential lifestyle to an enjoyment of life which was refreshing and even alarming.

Jesus was a radical, a firebrand in his society. Although he did not lead an armed revolt against the Roman overlords, his followers did ultimately overturn these rulers of Palestine. People's minds had been changed. Their outlook on the world had changed. Jesus rewrote the rule book on what faith in God meant, and how that affected their daily life.

HG Wells, author of *War of the Worlds*, and *A Short History of the World* wrote:

I must confess as a historian that this penniless preacher from Nazareth is irrevocably the very centre of history. Jesus Christ is easily the most dominant figure in all history.

Two *Followers of the Way* from our times, and whose lives were shaped by Jesus' teaching, were Dr Martin Luther King Jr and Senator Robert Kennedy of the USA.

Extracts from their speeches appear below.

I encourage you to see the full speeches on Youtube.

Martin Luther King Jr (15.01.1929 – 04.04.1968)

28th August 1963: a 17 minute speech *I have a dream*, including:

I am happy to join with you today in what will go down in history as the greatest demonstration for freedom in the history of our nation. In the process of gaining our rightful place, we must not be guilty of wrongful deeds. Let us not seek to satisfy our thirst for freedom by drinking from the cup of bitterness

*and hatred. We must forever conduct our struggle on the high plane of dignity and discipline. We must not allow our creative protest to degenerate into physical violence. Again and again, we must rise to the majestic heights of meeting physical force with soul force.
I have a dream that one day this nation will rise up and live out the true meaning of its creed.*

3rd April 1968: *I have seen the promised land*

Martin Luther King's speech on behalf of rubbish collection workers, and seeking support from the wider community for them and for all black people, ended with:

Like anybody, I would like to live a long life. Longevity has its place. But I'm not concerned about that now. I just want to do God's will. And He's allowed me to go up to the mountain. And I've looked over. And I've seen the Promised Land. I may not get there with you. But I want you to know tonight, that we, as a people, will get to the promised land.

And so I'm happy, tonight. I'm not worried about anything. I'm not fearing any man! Mine eyes have seen the glory of the coming of the Lord.

Martin Luther King was assassinated the next day.

Senator Robert Kennedy (20.11.1925 – 6 June 1968) was informed of the assassination of Martin Luther King as he was stepping onto the back of a truck, and about to speak as a Presidential candidate to a crowd in Indianapolis. Indianapolis was one of the few cities not to riot that night.

View this powerful and unprepared speech from a true leader on

[youtube.com/watch?v=GoKzCff8Zbs](https://www.youtube.com/watch?v=GoKzCff8Zbs) which includes:

Ladies and Gentlemen, I have bad news for you, for all of our fellow citizens, and people who love peace all over the world, and that is that Martin Luther King was shot and killed tonight. Martin Luther King dedicated his life to love and to justice for his fellow human beings, and he died because of that effort. In this difficult day, in this difficult time for the United States, it is perhaps well to ask what kind of a nation we are and what direction we want to move in. My favourite poet is Aeschylus. He wrote: "In our sleep, pain which cannot forget falls drop by drop upon the heart until, in our own despair, against our will, comes wisdom through the awful grace of God." Let us dedicate ourselves to that, and say a prayer for our country and for our people.

Robert Kennedy was assassinated two months later on 5th June 1968

These men knew the risks of the way of Jesus. They also changed the world.

Life has its choices, and the choices made by Martin Luther King and Robert Kennedy were consequences of the transformed lives they were leading. Two people given the same circumstances may choose different courses of action, dependent upon factors such as their genetics and their past experiences and their current state of mind. Options also present themselves as we seek to answer questions of the purpose of life, whether God exists, and the manner in which God may affect or control our lives. To say *God has a plan for your life: pray hard and you will find it* is, I suggest, simplistic, unhelpful and unbiblical.

God's call to lead a transformed life is very clear, as we have seen in the Beatitudes and the parable of the sheep and goats. But proof of this transformation is often sought by people. They seek proof that something has happened. They want confirmation to show that their sins are forgiven and that their lost lives have been restored (redeemed).

The Abrahamic religions (Judaism, Christianity and Islam) and many other religions understand this need for confirmation of sins being forgiven, and have a similar view concerning the nature of transformation and redemption. Usually, violence is necessary to obtain redemption. Someone or something has to suffer.

In Judaism both the sins of the individual and the sins of the nation can be annulled by doing violence to something else. In Leviticus 16 the sins of the nation were carried away by doing violence to two goats: one slaughtered for a sin offering and one (the scapegoat) released to die in the desert, carrying the nation's sins with it. Temple and synagogue practice was based on this way of dealing with sin and salvation. This is still celebrated in Jewish communities as Yom Kippur, the Day of Atonement. The

concrete reality of these actions helps to confirm the spiritual processing of memories of sin.

If we are not careful, vicarious suffering (making others suffer in our place) can infiltrate and permeate daily life to become the common and accepted means of living our whole life. Letting something else or someone bear the consequences of our problems can be harmful if it does not have a transforming impact on ourselves.

Exposure to such views of how to live life can also affect our reading of scripture, encouraging us to see violence as the path to redemption. But this can prevent us from seeing Jesus' message of love and acceptance and reconciliation. Jesus did violence to no one. Even when he was being arrested and his life was clearly in danger Jesus did not attempt to struggle or fight. He did not even allow others to fight on his behalf.

Unfortunately, many Christians do not seem to have heard this Gospel message, this Good News from Jesus. Instead of the costly love and reconciliation as seen in Jesus, many Christians pursue what can be described as *redemptive violence*, in which one person or a group or even an animal is made to suffer so that another person or group can be redeemed. There is the perception that real suffering of someone else or something else is a necessary part of the redemption process.

A common interpretation of the essence of the Gospel story is that someone had to suffer to redeem the people of God, including you and me: that Jesus took this suffering on our behalf, and he bled and died, and his blood washed away our sin. This is redemptive suffering and violence on a cosmic scale.

It is difficult, even strange, to move away from sacrificial redemptive violence into the warm light of Jesus' example and presence. But it can happen.

Recently a young adult and I had a chat about various things including who Jesus was, and faith matters generally. She was a medical technologist who, over several years, had been given Creationist publications by her parents, but the Creationist information didn't seem right and was contrary to the science she was experiencing at university. Her solution was to cease going to church, and to worry continually that she was going to hell.

She was relieved and very happy to hear a message which was not about original sin, literalism and a vindictive God who needed blood to be shed to satisfy his anger. The Christian gospel became exciting, in part because it included even her, right there, right now. It became a central part of her life.

"God is love" we read in 1 John chapter 4

⁷ Dear friends, let us love one another, for love comes from God. Everyone who loves has been born of God and knows God. Whoever does not love does not know God, because God is love.

¹⁵ If anyone acknowledges that Jesus is the Son of God, God lives in them and they in God. And so we know and rely on the love God has for us. God is love. Whoever lives in love lives in God, and God in them.

Some translations use the term *mutual indwelling* of us in God and God in us.

John chapter 6 links the feeding of the five thousand to an underlying message that Jesus is the bread of life, the true bread which will be broken and shared. At first we read of Jesus having a picnic with everybody. Nobody was special - no fancy meal in an exclusive restaurant or the house of some high official. This was Jesus simply being Jesus with ordinary people like you and me. Perhaps some priests were there incognito, and imagine their shock, their disgust, at being offered food from a nobody! But this was Jesus being Jesus with food, sharing it without barriers or exclusions, just as he shared his emotions, his teaching, and ultimately his life.

Then, from feeding bread to many people he offered himself as living bread to chew over. Jesus offers us in his body what he also offers through his death. There is fundamentally no difference - the death of Jesus is the climax and fulfilment of his life. *The Word became flesh* (John 1:14). Jesus declares that his 'flesh and blood' is our nourishment in a special way: a memorial feast.

Phagocytosis is a great word. Our white blood cells, and single celled animals such as Amoeba, feed this way. It uses three Greek words *phagein* (to devour) and *kytos* (cell) and *osis* (process), and refers to the engulfing devouring action of cells as they consume food particles.

Phagein, or devouring for nourishment, is one Greek translation of Jesus' words. Jesus said he was the bread of life, our only source of nourishment, by engulfing, partaking, consuming him. Another translation uses *trogein* which occurs only 6 times in the New Testament and in general use refers to animals audibly gnawing on bones. Jesus is something for us to chew over.

Jesus says that he is the true bread of heaven, in contrast to the manna which fed the Israelites in their exodus from Egypt 1300 years earlier. He is saying that the other bread, the Law of Moses, only symbolised the Law and was not the true bread. The Law of Moses foreshadowed the Bread of Life. In Communion / Mass / Eucharist / the Lord's Supper we are given bread that requires us to chew. May this symbolize our chewing over and ingesting of the life and example of Jesus, the *daily bread* that we pray for in The Lord's Prayer.

Jesus said: *The Spirit of truth ... you know him, for he lives with you and will be in you. I will not leave you as orphans; I will come to you. Before long, the world will not see me anymore, but you will see me. Because I live, you also will live. On that day you will realize that I am in my Father, and you are in me, and I am in you.*

In Acts 17 Peter says the same thing. Jesus was in God, we are in him, and he is in us? Yes, he was being entirely serious. Jesus and the Father will take up residence in us. This is not some future, end-of-the-world scene. This is about each of us here, right now. Jesus said that it is his Spirit and the Spirit of God the Father which will permanently stay within us.

Creationists say that these quotes are fine but point out that they are followed by reference to the atoning death of Jesus, that his death was necessary for God's anger to be calmed or satisfied. This view risks missing the essence of the atonement.

The atonement (originally and literally *at-one-ment*), for Christians, is more than Jesus' blood being shed on the cross and washing away our sins. The death of Jesus is but one part of the atonement. The full picture includes the incarnation (God becoming carnate: taking on bodily form), the example and teachings of Jesus, the death of Jesus, his resurrection, and the presence of the Holy Spirit. All of these are aspects of God's loving action towards each person. All of these speak of God's desire to establish and maintain a deep love relationship with creation. All of these are aspects of the atonement.

Jesus taught about sacrificial love. He lived his life like that and died like that. To the Jewish mind, brought up on frequent sacrifices to wash away sins, the death of Jesus as a sacrifice made sense. But the early church grew on the unshakeable belief that Jesus did not just die but rose to new life. The early chapters of Acts describe this, and we celebrate it now in the new life represented in Easter Eggs, not pictures of blood. The Christian message is one of joy and new life without barriers.

An example of the removal of barriers can be read in Acts (8:26-40). It is the story of the Ethiopian eunuch who had gone to Jerusalem to worship. As a eunuch he had no biological future and, because he was *wounded in the stones ...*, he could not *enter into the congregation of the Lord* (Deuteronomy 23:2), and was not considered to be a complete man. But the Gospel or good news of Jesus is for all people, including the eunuch. This was explained to him by Philip. The eunuch, a person without a future, now had a future as an equal in God's kingdom, and *went on his way rejoicing* (Acts 8:39).

Each of us has a future as an equal in God's kingdom. This raises however an old question about equality in the church: *Who may join the church - the institutional body which is a part of God's non-institutional body? What does someone need to do or be to become accepted?*

This was a problem in early Christian times. And in 1977, for the new Uniting Church in Australia, what should be acceptable concerning membership, and access to communion by children. When the Uniting Church commenced it was similar to each of the three churches from which it had sprung. Congregational, Methodist and Presbyterian understandings and restrictive practices were continued.

Since then it has grown and changed. Now, in the Uniting Church, children who love Jesus are welcome to participate fully in every aspect of church life, including communion.

A full life, a life overflowing, is about growth and change, and markers of that change. The Beatitudes and other teachings of Jesus show clearly that access to eternal life is about giving, rather than acquiring, but even more it is about transformation. This crucial step, the step of full transformation, changes the way in which the world is viewed by us. Eternal life is not about doing, but being.

The need for transformation of thinking lies behind the stories of Ruth and Jonah. Each story is a well written and very persuasive argument against the pressures at that time which sought to strictly enforce marriage law and other laws which had built up over the years; laws which sought to exclude foreigners from God's loving action. See Chapter 9: *Other misunderstood stories: Ruth and Jonah*

In Mark's gospel (Mark 10:17-27) we read about the rich young man who was challenged to transform his thinking, to clear away his barriers, so that his world could become part of God's new creation. A similar point is made by Jesus in the parable of the rich fool, where Jesus said: *Watch out! Be on your guard against all kinds of greed; life does not consist in an abundance of possessions.* (Luke 12:18)

Jesus transformed in his thinking as well. When he was baptised by the Holy Spirit it was not a mark of his arrival at a final destination. Even he was still being moulded. Part of his moulding, his growth, was so important that we can read about it in the encounter with a woman, and a foreign woman at that, who wanted her child to be healed, but Jesus had said: *No*.

At that stage Jesus saw his mission as being strictly for his fellow Jews. He even referred to her and her kind as dogs who didn't deserve to be fed. Her reply was that even the dogs can eat the scraps from the master's table.

Jesus was surprised and instructed by her response. Here he was, not just a Jewish man but a rabbi, being taught a lesson about God's love by not just another person but a foreigner and a woman! Jesus said she had answered well and that her daughter had been healed. We should not overlook the importance of such a story being remembered, and then recorded over thirty years later by Mark (Mark 7:25ff).

The Bible record is that even God had to change. He had to rethink his understanding of humans. In the Noah story we read that God decided that he would never curse the earth again, and even created rainbows as a continuing reminder to himself (Genesis chapter 9). Or maybe the writers were rethinking the nature of God, as is apparent progressively through the Bible. And this progressive rethinking of the nature of God can occur in us too.

Peter, one of Jesus' disciples, had to embrace personal painful change as he piloted the new church. His transformation, following his vision (Acts chapter 10), transformed the nature of the very young Christian church. Debates were raging about whether converts had to be circumcised first as Jews before being accepted as Christians. Peter had to learn that circumcision was not required, that no food is unclean, and that all people can be a part of God's reconciled, recreated world.

Peter also knew that this new understanding would meet opposition among some Jewish Christians. We know that he experienced this. You can read about it in Acts chapters 10 and 11.

At other times Peter slid back into his old prejudices. This is important to remember because all of us have weaker moments when we are likely to falter, and take a backward step. We become a bit afraid when we are led into new ways that are more awkward than we expected.

Part of what makes the gospel such good news is that Jesus has walked our walk, as a friend would. He continues to do so, not just to show us how things should be done, but to accompany us on our way.

Jesus showed that no one is beyond God's love: no one is beyond redemption. And no-one should be beyond our love. God's searching love for us should be the pattern for our behaviour towards

ourselves and others. Jesus was both that message and the carrier of it.

Jesus sought to eliminate the rituals of religion. He encouraged the elimination of the letter of the law and even the elimination of the need for synagogue worship: your whole life and heart is what matters. Jesus was radical and subversive in saying that the law and its rituals do not save – love does.

5. The common Evolution / Natural Selection position

To call the debate Creationism versus Evolution is erroneous. Creationism is the name of a cultic belief system and Evolution is a name for the observations that organisms have changed. If anything is to be debated it is not the observations, called evolution, but the process, called natural selection. However, natural selection is no longer seriously questioned by scientists, contrary to what Creationists would have people believe.

A plagiarised explanation of the relationship between evolution and natural selection is:

- We observe that apples fall off trees. Sir Isaac Newton explained this in the theory of gravity. Since then, the theory has undergone some alteration but the essence of the theory remains and apples still fall off trees.
- We observe that organisms have changed over time. Charles Darwin and others explained this in the theory of natural selection. Since then, the theory has undergone some alteration but the essence of the theory remains and organisms keep on changing.

This debate needs to be examined because there are significant implications for teaching. The following subjects as currently taught are at odds with a literal use of the Bible. The corresponding Bible views and passages are shown in *italics*.

1. The age of the universe is approximately 14 billion years. *Genesis 1 taken literally leads to several proposals about the date of creation, one of them being 4004 BCE.*
2. The earth is not the centre of the universe: note the Copernicus/Keplar/Galileo vs Roman Catholic Church debate of the sixteenth century onwards. *Ps 104:5 He set the earth on its foundations; it can never be moved.*
3. The sequence of formation of the universe is heavenly bodies, then much later the Earth, and then its living things. *Genesis 1 refers to day and night, and the creation of greater lights and lesser lights after the creation of plants on Day 3.*
4. Human evolution has been long and complex. *Genesis 1 and 2 have different views on the creation of humankind, and Genesis 2:7 implies God breathed life into the body of an existing being.*
5. Pi, the ratio of circle circumference to diameter, is approximately 3.14: 1 and is a frequently encountered constant in maths and science. *1 Kings 7:23, paralleled in 2 Chronicles 4:2, gives pi the value of 3.*
6. Genetic information is known to change (mutate) at what appears to be an alarmingly high rate. For example, between 1% and 10% of human eggs and sperm are mutant for at least one of the genes being carried, but the vast bulk of mutants die. Mutation rates can be increased by high temperatures, radiation and various chemicals but not by the colour of the branches in front of which the mating of sheep and goats takes place. *According to Genesis 30:32-43 the colouring of the offspring of sheep and goats can be altered by mating them in front of different backgrounds. Also, Jacob did this to manipulate the outcome of a breeding agreement: this behaviour is ethically abhorrent.*
7. Continental drift, plate tectonic theory, ice ages, temperature changes of ancient oceans, radioisotope dating, studies of magnetic reversals, etc. These and many other studies clearly point to a world almost a million times older than 6 000 years. *The (mis)application of 'a thousand years is as a day' (Ps 90:4) does not solve the problem.*
8. Certain events mentioned in the Bible are not supported by independent evidence e.g. *a worldwide flood less than 6 000 years ago (Genesis 6) according to Creationists.* There was no 'Noachian Flood'. See chapter 8: Noah: a story misunderstood by Creationists.

The fossil record has a lot of value, but there is far more evidence for evolution than the warehouses

full of bones which have been discovered so far. Such evidence for evolution is inside our cells, information which is easier to see and work with, and which provides undeniable proof of Evolution and Natural Selection. See chapter 17: Examples of separate creation, or modification upon modification?

Also see: *What is the evidence for Evolution?* [youtube.com/watch?v=llEo05KdPvg](https://www.youtube.com/watch?v=llEo05KdPvg)

Evolution can be observed and demonstrated in cell biology and chemistry. One complex organic molecule, *cytochrome c*, occurs in the cells of all plants and all animals except for some unicellular animals. Cytochrome c has a large number of variants, traceable back for millions of years. But all variants allow the common function of the transport of high energy electrons to occur. See 'An overview of the evolution of chlorophyll and haemoglobin' which is a part of chapter 17 (section I).

Evolution is an observable fact that populations of organisms are continually under pressure to adapt to their current environments, and have changed substantially over time. Evolution, or change, has happened and is undeniable. The Theory of Natural Selection is a hypothesis which proposes a mechanism for how this observed evolutionary change occurs.

The Theory of Natural Selection is not seriously disputed for there is no current significant evidence against it. There is no other mechanism which explains all the observations. Scientists "see" that evolution has occurred, "accept" natural selection as the mechanism but "believe" in neither.

In summary the theory of natural selection is based on three observations and two conclusions:

- * **All organisms overproduce** (an observable fact), barring human interference. One pair of elephants, if all their offspring survived and reproduced, would become 19 million after 750 years. In one hectare of a jarrah forest there may be just one tree which is, say, 38 years of age. But 38 years ago there may have been 10 mature jarrah trees in that hectare, each with say 5000 gumnuts, each containing 10 viable seeds, totalling 50 000 seeds dropped in that hectare and yet only 1 has survived (over a 99% death rate).

- * **Populations of all organisms except humans remain fairly constant** (an observable fact). Therefore, there must be a high death rate (a deduction).

- * **All organisms show a variety of forms for any given characteristic** (an observable fact). This variety results from mutations, and processes in sexual reproduction. A human couple can have over 8 million genetically different children from 2^{23} ways of combining the chromosomes in each egg and sperm. Crossing over, nondisjunction, mutation and other events add to that variety.

- * **The high death rate is not random but is due to natural selection** (a deduction which becomes the working hypothesis). It is not any random 90% (say) of organisms which die, but a particular 90% which die, determined by whatever the most critical survival factors are in the environment at the time for members of that population.

- * **The variants which survive do so because of the expression of their genetic makeup in that environment, and variations of these are passed on to the next generation.** (This was a hypothesis but is now an observable fact).

Darwin's basic point was that over millions of years it was the natural environment that selected which organisms would survive to reproductive age and successfully produce the next generation. Their survival or not did not require conscious forethought of the environment or the organisms. The environment in its change or its status quo presented each new generation with circumstances in which not all could survive.

There is a sad but important consequence to Darwinian natural selection. It is not necessarily the prettiest flowers nor the largest elephants nor the fastest kangaroos that survive. What survives is simply the variety of that animal or plant which produces the greatest number of fertile competitive offspring in that year's conditions. Many beautiful organisms have lost the competition for survival, and many ugly ones too: the common factor in their demise has simply been that other organisms have been more successful in survival and reproduction.

Many chances are required for the necessary genetic combinations to occur for the development of our complex life forms. Really vast numbers are involved, but we too easily forget that molecules are colliding at enormous rates.

To put this collision rate into perspective, the air which we breathe has molecules of oxygen, nitrogen and other gases colliding with each other at the rate of approximately ten thousand million times per second, every second, and during that second each gas molecule travels about 400 metres. The oxygen molecules in air at room temperature move about 50 percent faster than jet planes, and hydrogen molecules are nearly 4 times speedier again. Gas molecules have been colliding at rates like these for billions of years, and even faster than this when the temperatures are higher. Collisions of gas molecules with the walls of a container produce what is observed as the pressure of the gas. Molecules of liquids collide less frequently but still at a very high rate.

Chemical reactions, such as those involved in the formation and maintenance of life, result from a small proportion of these collisions which have sufficient energy and have the appropriate angle of attack between susceptible molecules. New compounds are being formed in our bodies every minute of the day, and at an enormous rate.

For example, as explained later in chapter 17, each person's life depends upon an energy-transferring molecule called adenosine triphosphate (ATP). The total quantity of ATP in the human body is about 50 grams. But the energy used by human cells requires the breakdown of 50 to 75 kilograms of ATP daily in an average adult. Each ATP molecule is therefore being recycled up to 1500 times during a single day. Our cells are very complex and very busy.

People have attempted to reproduce the early conditions on earth, and to calculate the chances of life spontaneously happening. The Miller-Urey experiment in 1952 simulated conditions thought at the time to be present on the early Earth, and then tested the resulting soup to see if any of the chemicals considered necessary for life were present. Over 20 different amino acids were produced.

Newer evidence is that Earth's original atmosphere had a different composition from the gas used in the Miller-Urey experiment. Major volcanic eruptions 4 billion years ago released vast quantities of carbon dioxide, nitrogen, hydrogen sulfide (H₂S), and sulfur dioxide (SO₂) into the atmosphere. Experiments using these gases have produced even more diverse molecules.

Detailed descriptions of the evolution of life on earth are widely available. See ABC TV's *Australia: The Time Traveller's Guide*: www.youtube.com/watch?v=UlhMBH6U8pU
The various series by David Attenborough and the BBC are also excellent.

Hundreds of years prior before Origin of Species hysteria, the Creationism - Evolution debate would have fizzled out. From a Biblical-theological viewpoint there were evolutionary approaches evident in the writings of Origen, Augustine and Chrysostom over fifteen hundred years ago, and this was received without reaction.

Van Helmont, who lived in the seventeenth century, carried out excellent early work on the mechanism of photosynthesis. He also amazingly published a recipe for mice, consisting of wheat and a sweaty shirt in a box for three weeks. There was no reaction at the time to Van Helmont saying that wheat *became* mice, because the idea of non-living things becoming living organisms was widely held. Other beliefs, that mud *becomes* frogs, and that underground nests of leaf cutting ants *become* wild pigs, still exist in the world today among some tribal forest dwellers.

There are three main approaches in the creationism / evolution debate.

One is that the earth was created about 6000 years ago: a view only seen by people who start from a literalist view of the Bible. These are the young earth creationists. As far as I am aware there is no scientist who believes this. Their approach can be read on www.answersingenesis.org.

A second view is that the earth is old and that the Bible is God's word and that *Because of the false teachings of young earth creationism, many people do not realize that a Christian can believe in an*

inerrant Bible, a literal translation of Genesis, and believe that God created the world over a period of billions of years. Further information on this approach can be read on www.answersincreation.org.

The third view is that the earth is old and that the Bible is not literally, word-for-word, the Word of God. Some people of this view are Christians and believers of other faiths, some are agnostics (unable to know whether God exists or is involved), and some are atheists (there is no God to believe in).

At a more personal level, what follows is a brief list of examples of modification upon modification which I have found interesting. These observations have formed and continue to form my thinking about the current debate. There are many, many other examples from areas such as embryology, common cell structures, common cell biochemistry, and stem cell research.

A. Cell structure and functioning.

Is each variation an example of separate creation? Or does each variation come from an earlier common plan?

B. Serial Endosymbiosis Theory (SET).

Is each variation an example of separate creation? Or does each variation come from an earlier common plan?

C. Aerobic and anaerobic ATP / ADP cycles.

Why do all cells use the same ADP / ATP cycle? Does this imply a common ancestor?

D. The RNA world hypothesis.

Is RNA an evolutionary remnant predating DNA? Is DNA a separate new creation, or is it a modification from an earlier RNA plan?

E. Nucleic acids: the genetic material of life.

Why do all cells use the same genetic coding process? Does this imply a common ancestor?

F. Protein catalysis.

Why do all cells use the only same 22 amino acids? Does this imply a common ancestor?

G. Common metabolism processes.

Why do all cells have common metabolic pathways? Does this imply a common ancestral origin?

H. The 1 bone, 2 bone, 5 bone plan and the Coelacanth.

Is each variation an example of separate creation? Or does each variation come from an earlier common plan?

I. The porphyrins and the heme, chlorophyll, vitamin B12 relationship.

Is each porphyrin variation an example of separate creation? Or does each variation come from an earlier common plan?

J. The 9 plus 2 pattern in cilia.

Is each type of cilium and flagellum an example of separate creation? Or is each of them a variation from an earlier common plan?

For more detailed information on these examples see chapter 17: Examples of separate creation, or modification upon modification? The chapter includes terms in common use in biochemistry and biology.

These and many other observations raise philosophical and religious questions which require robust answers rather than the house of cards babble of the Creationist movement.

Are we prepared to say evolution could never happen? Or could God have set up the universe in such a way that evolution could happen?

Seeing creation as the work of God in which natural selection is the most likely mechanism is exciting and humbling. I hope you feel the same.

BEYOND THE BASICS

6. The origin and meaning of Genesis chapters 1 and 2

Genesis chapter 1

1 In the beginning God created the heavens and the earth. Now the earth was formless and empty, darkness was over the surface of the deep, and the Spirit of God was hovering over the waters.

3 And God said, "Let there be light," and there was light. God saw that the light was good, and he separated the light from the darkness. God called the light "day," and the darkness he called "night." And there was evening, and there was morning—the first day.

6 And God said, "Let there be a vault between the waters to separate water from water." So God made the vault and separated the water under the vault from the water above it. And it was so. God called the vault "sky." And there was evening, and there was morning—the second day.

9 And God said, "Let the water under the sky be gathered to one place, and let dry ground appear." And it was so. God called the dry ground "land," and the gathered waters he called "seas." And God saw that it was good. Then God said, "Let the land produce vegetation: seed-bearing plants and trees on the land that bear fruit with seed in it, according to their various kinds." And it was so. The land produced vegetation: plants bearing seed according to their kinds and trees bearing fruit with seed in it according to their kinds. And God saw that it was good. And there was evening, and there was morning—the third day.

14 And God said, "Let there be lights in the vault of the sky to separate the day from the night, and let them serve as signs to mark sacred times, and days and years, and let them be lights in the vault of the sky to give light on the earth." And it was so. God made two great lights—the greater light to govern the day and the lesser light to govern the night. He also made the stars. God set them in the vault of the sky to give light on the earth, to govern the day and the night, and to separate light from darkness. And God saw that it was good. And there was evening, and there was morning—the fourth day.

20 And God said, "Let the water teem with living creatures, and let birds fly above the earth across the vault of the sky." So God created the great creatures of the sea and every living thing with which the water teems and that moves about in it, according to their kinds, and every winged bird according to its kind. And God saw that it was good. God blessed them and said, "Be fruitful and increase in number and fill the water in the seas, and let the birds increase on the earth." And there was evening, and there was morning—the fifth day.

24 And God said, "Let the land produce living creatures according to their kinds: the livestock, the creatures that move along the ground, and the wild animals, each according to its kind." And it was so. God made the wild animals according to their kinds, the livestock according to their kinds, and all the creatures that move along the ground according to their kinds. And God saw that it was good. Then God said, "Let us make mankind in our image, in our likeness, so that they may rule over the fish in the sea and the birds in the sky, over the livestock and all the wild animals, and over all the creatures that move along the ground." So God created mankind in his own image, in the image of God he created them; male and female he created them. God blessed them and said to them, "Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground." Then God said, "I give you every seed-bearing plant on the face of the whole earth and every tree that has fruit with seed in it. They will be yours for food. And to all the beasts of the earth and all the birds in the sky and all the creatures that move along the ground - everything that has the breath of life in it - I give every green plant for food." And it was so. God saw all that he had made, and it was very good. And there was evening, and there was morning - the sixth day.

Chapter 2

Thus the heavens and the earth were completed in all their vast array. By the seventh day God had finished the work he had been doing; so on the seventh day he rested from all his work. Then God blessed the seventh day and made it holy, because on it he rested from all the work of creating that he had done.

What is the context? Those words should be written on every page of our Bibles. And seeing Genesis in its context is essential to understanding its message.

One aspect of the context is its historical setting. A brief overview of the history of the Jews can be

seen in the timeline, appendix 1. It includes reference to Abraham (possibly around 1700 BCE), Isaac, Jacob (renamed Israel), Moses, and the exodus from Egypt.

The anointing of David the shepherd boy as King in about 1010 BCE was a high point in the life of the nation of Israel. David had captured Jerusalem, making it the capital of a kingdom which brought together the twelve tribes who traced their origins back to Jacob / Israel: the two tribes of the south and the ten tribes of the north. His son Solomon organised the kingdom and in time became its king. Solomon's wealth is legendary, but was extracted at great cost to the combined kingdom of Israel and Judah.

After the death of King Solomon in 933 BCE the kingdom broke into two. The southern kingdom of Judah was established, with Jerusalem as its capital, and it remained faithful to the dynasty of David. Its prophets included Micah, and Isaiah who wrote chapters 1 to 39 of the book called Isaiah.

The northern kingdom of Israel was based at Samaria. In contrast to the southern kingdom, its kings did not have significant religious importance. Israel's prophets were the leaders of the people, and they resisted the influences of the surrounding Canaanite religion. Elijah, Amos and Hosea were some of Israel's prophets.

Initially the laws were collected in the North (Israel) and then adopted by the South (Judah). These laws became the basis of the book called Deuteronomy.

In 721 BCE the North (Israel) was destroyed by the Assyrians, and are now referred to as the ten lost tribes of Israel. In 587 BCE many of the people of the South (Judah) were exiled, and deported to Babylon. This exile was a major event in the history of the Jews. The name 'Jews' is based on the name of one of the two tribes of the south: the 'Judahs'.

Another aspect of the context of Genesis is its place in the Bible as we now know it, the canon of scripture. The canon is the list of books recognised as authoritative in some way for ordering the life and doctrine of a community of faith.

The many different Hebrew Bibles / Old Testaments which exist today reflect the way in which they developed. By about the 5th century BCE the Jews saw the five books of the Torah (Genesis, Exodus, Leviticus, Numbers and Deuteronomy) as authoritative. Later, by the 2nd century BCE, the Prophets (such as Isaiah, Jeremiah and Ezekiel) were regarded as being almost the same in authority. Apart from this, the Jewish scriptures were fluid, with different groups seeing authority in different books.

These scriptures were translated into Greek between about 280-130 BCE. Around the time of Christ there was no collection of these Jewish scriptures. The various texts were read as separate scrolls. It was only in the early centuries of the Christian era that the scriptures began to be bound together into books and that Bibles as we know them today were produced.

These Greek translations were called the Septuagint (LXX) because seventy Jewish scholars were involved in the translation. It contained several books not found in the modern Hebrew Bible / Old Testament: 1-2 Esdras, Judith, Tobit, 1-4 Maccabees, Wisdom of Solomon, Sirach (or Ecclesiasticus), Baruch, and numerous additions to other books. This larger form of the Old Testament is used in the Eastern Orthodox Church, which includes the Greek, Russian, Serbian and other Orthodox Churches.

The Jewish canon, (Hebrew Bible / Old Testament), was not 'fixed' until the early New Testament period. It usually excluded what is called the Apocrypha (books not considered to be the fully inspired word of God: a 'B team', including the books mentioned above, such as Tobit, Maccabees and Wisdom).

In 331 CE, the Roman Emperor Constantine I commissioned Eusebius to deliver fifty Bibles, containing the Old and New Testaments, for the Church of Constantinople. Athanasius recorded Alexandrian scribes around 340 CE preparing Bibles for Constans, the youngest son of Constantine and who later became an Emperor.

Christianity in the Western half of the Roman Empire used Latin rather than Greek as its common

language. About 400 CE Pope Damasus commissioned Jerome, the leading scholar of the day, to produce an updated Latin Bible.

But which form of the Bible did he use? And which Bible should we use: the Greek one (the Septuagint LXX) or the Latin (Hebrew) one? Which one is used now?

The Hebrew Bible is a much shorter canon of only 24 books, and Jerome used it instead of the Greek Septuagint as the basis for his translation. His Vulgate, or common language, Old Testament became the standard Bible used in the Western Church, while the Churches in the East continued to use the Septuagint (the Greek translation), and still do.

Jerome had wanted to leave out all the books that did not appear in the Hebrew Bible, but St Augustine successfully opposed him in 397 CE. In the 16th century the Protestant reformers reopened the debate, and sided with Jerome.

Protestant Bibles now have only those books that appear in the Hebrew Bible, but in the order of the Greek Bible. The Catholic Church uses most, but not all, of the Greek Bible: 3 Ezra and 3 and 4 Maccabees are excluded. The Anglicans after the English Civil War kept the extra books that were excluded by the Westminster Confession of Faith, but only for private study and for reading in churches, while Lutherans kept them for private study, gathered in an appendix as Biblical Apocrypha.

Ultimately, it is the value of books to promote and develop faith within a community which is the benchmark for acceptance into the canon.

The canon grew from the bottom up and not from the top down. The canon is not so much the result of decrees filtering down from a hierarchy to the people of faith but rather the case of various hierarchies ratifying as canonical the books that the people had long found useful.

Prof K. Aland, Institute for New Testament Textual Research, Munster, Germany

This is a surprisingly Darwinian statement: the survival and reproduction of the books most useful in the life of the community.

Periods of crisis in the life of the communities of faith have proved most determinative for the development of a canon.

A canon is in one sense the product of human decisions, not only in terms of writing the books which are included but in terms of which books are recognised as scripture. Various communities of faith in the past have held up before later communities the authority or inspiration that has been recognised in the various books of the community's canon.

So, on the one hand Scripture gives rise to the community of faith. That is, the Church comes into being because the people sense they are being called by God within certain books. Those books are canonised as Scripture for that community. On the other hand, Scripture arises out of the community of faith, out of its experiences, its reflection and its decisions. People within the community write the books that will later be canonised as Scripture, again by the community itself.

Scripture gives rise to the community of faith at the same time that Scripture arises out of the community of faith. Both together capture something of the mystery of Scripture, of the mystery of God's address to God's people.

Howard Wallace, lectionary resources

The people who wrote the books in the Bible did not think they were writing *The Word of God*. They wrote because they needed to write, and at a later time the divine inspiration of their writings was recognised. When we read *The Word of God* we do so within a faith community, as an act of faith, respecting the written word, opening ourselves to God who speaks to us in this way, and interpreting it into our own very different world.

We now know that the first five books of the Bible, called the Torah or the Books of Moses, were not written by Moses or by any other single person. They are a compilation of at least four strands of Jewish writing that were composed over a period of some 500 years.

The first strand was the Yahwist document, written in the 10th century BCE, and reflects the national history of the southern kingdom of Judah. It uses the term *Yahweh* or *Jehovah* where we would usually say *God*.

The second strand was the Elohist document, written in the 9th century BCE, which reflects the national history of the northern kingdom of Israel. It uses the term *Elohim* where we would usually say *God*.

After the fall of the northern kingdom to the Assyrians in 721 BCE, these two national stories were woven together into a single narrative. The third document was the product of someone known as the Deuteronomist writer, and was composed in the late 7th century BCE. It consists of the book of Deuteronomy and a general editing of the newly merged national Jewish story.

The fourth source of the Torah was not a document, but was an editorial commentary applied to the whole faith story by those called the Priestly Writers and written during the Babylonian Exile somewhere between 586 and 450 BCE. There is evidence that the conquerors required the captives to provide evidence of being a stable society with well-established rules before any return to homelands would be allowed.

There are places where the weaving together of these stories can be seen quite clearly, producing reversals of the sequence of events and other conflicting details in the Torah itself. The Sabbath day law, for example, developed during the Exile, and is read back into the manna in the wilderness story to make sure that the miraculous food was not gathered on the seventh day in violation of the Sabbath. The ritualistic laws governing sacrifices were used to alter the Noah story so that, during the 150 days on the ark, Noah could offer the proper sacrifices without destroying that species.

Further weaving and editing can be seen in the three versions of the Ten Commandments. The oldest one, from the Yahwist document, is found in Exodus 34. The version with which most of us are familiar, found in Exodus 20, comes from the Elohist document but was significantly altered by the Priestly Writers. The third version is in Deuteronomy 5 and though close to Exodus 20 has some revealing differences. The Deuteronomist version of the 4th Commandment gives a different reason for rest on the Sabbath: it was not that God rested from the work of creation and thus hallowed that day, but that the Jews should remember that they were once slaves and that even slaves need a day of rest.

The seven-day creation story in Genesis, with which the Bible now opens, was written by the Priestly writers well after the Deuteronomist document had been completed.

The idea that the Bible came into being in some sort of miraculous way and is either the literal dictation of God or even the "inspired message of God" is simply not supportable. The Bible is a human document; a flawed, tribal history, writes William Loader.

A young earth creationist's response to this last statement is likely to be as follows.

God's word is clear. He created the earth in six 24 hour days in October 4004 BCE. Adam and Eve were the first humans. They disobeyed God's instructions and were banished from the Garden of Eden. Part of the punishment on mankind is enmity with snakes, weeds in the garden, the pain of childbirth, and Original Sin. Adam and Eve's children multiplied but fell into wicked ways. God was angry with them and swept them all away in a worldwide flood which lasted 371 days. The only survivors were Noah and his family and the animals which they had gathered onto the Ark. God promised never to flood the world again, and the rainbow reminds him of that promise.

Creationists say that these traditional ideas are the plain teaching of Scripture, and that attempts to avoid these plain teachings arose because of a desire to modify biblical teaching so that it more closely matched modern science.

That this literalist / creationist view is simplistic and recent becomes clear when we consider the views of Augustine (354 – 430 CE), the church's greatest theologian between (St) Paul and Thomas Aquinas (13th century CE). Many Protestants consider Augustine to be the father of the Reformation because of his teaching on salvation and divine grace.

In referring to Augustine's *The Literal Meaning of Genesis*, which was written sixteen hundred years ago, Davis Young ¹⁴ notes that

- Augustine claims that the interpretation of Genesis I is not obvious and is fraught with difficulties.
- Augustine claims that we ought to be willing to change our minds about the interpretation of Genesis 1-3, particularly as new information comes to light.
- Augustine is particularly emphatic that we ought not to make absurd statements about what the Bible says when such statements flatly contradict what people already know from other reliable sources. The following quote is very relevant, particularly for Creationists. Augustine says:

Usually, even a non-Christian knows something about the earth, the heavens, and the other elements of this world, about the motion and orbit of the stars and even their size and relative positions, about the predictable eclipses of the sun and moon, the cycles of the years and seasons, about the kinds of animals, shrubs, stones, and so forth, and this knowledge he holds to as being certain from reason and experience. Now, it is a disgraceful and dangerous thing for an infidel to hear a Christian, presumably giving the meaning of Holy Scripture, talking nonsense on these topics; and we should take all means to prevent such an embarrassing situation, in which people show up vast ignorance in a Christian and laugh it to scorn. The shame is not so much that an ignorant individual is derided, but that people outside the household of the faith think our sacred writers held such opinions, and, to the great loss of those for whose salvation we toil, the writers of our Scripture are criticised and rejected as unlearned men.... Reckless and incompetent expounders of Holy Scripture bring untold trouble and sorrow on their wiser brethren when they are caught in one of their mischievous false opinions and are taken to task by these who are not bound by the authority of our sacred books. For then, to defend their utterly foolish and obviously untrue statements, they will try to call upon Holy Scripture for proof and even recite from memory many passages which they think support their position, although they understand neither what they say nor the things about which they make assertion. (pp. 42-43)

Some of the young-earth, flood geology proponents of this century exemplify those whom Augustine had in mind. One can only guess at the damage done among scientists by the persistent claims of some Christians that the Bible teaches a young earth and a global deluge.

- Augustine does not envision The Fall (the sin of Adam and Eve) as causing fundamental structural changes in the cosmos, or the introduction of death.
- He suggests that the bodies of Adam and Eve were created mortal, and raises the interesting question: why would Adam and Eve have to eat if they were created immortal? He says: *It is difficult to explain how man was created immortal and at the same time in company with the other living creatures was given for food the seed-bearing plant, the fruit tree, and the green crops. If it was by sin that he was made mortal, surely before sinning he did not need such food since his body could not corrupt for lack of it.* Augustine's solution is that Adam and Eve were created with mortal bodies.

It is historically inaccurate to maintain that modern science alone forced the church to come up with ideas about Genesis 1-3 that differ from the Creationist views. Many of Augustine's interpretations plainly differ from those of Creationists.

What can we now say about the origin and meaning of chapters one and two of Genesis?

The first creation story in the Bible, Genesis 1:1 – 2:4, was written between about 538 and 500 BCE, bringing together earlier drafts. In it the name for God is Elohim. Its writers worked in Jerusalem and Babylon after the Babylonian exile ended in 538 BCE, and they sought to define and redefine what it meant to be an Israelite.

In this first creation story there is the description of chaos before God commenced the act of creation. It is described in watery terms, as *the deep* and *waters*. In Genesis 1 God speaks and brings order to a watery chaos. It draws on the creation myths of Mesopotamia, but says that there is one God, not many gods. The roles of the gods of the sun and moon are snubbed by not even naming the sun and moon in the creation story, referring to them only as the greater and lesser lights.

The message is that God is in control, not only of heaven and earth, but of the deep, of evil itself. Nothing can resist God who brings order out of chaos. God overcomes evil and brings order, stability and peace to the earth and its inhabitants. This was the message to the remaining children of Israel who had lost their king, their land and their temple, and had become scattered.

It will be alright in the long run, is the message of Genesis chapter 1, *God brought order out of chaos when he created the world, and he will act again in this chaos. So, cheer up, go out and raise your families with confidence.* (My paraphrase)

The message of Genesis chapter 1 comes to us in the form of a story with many parts. The question is not *How did it happen?* but *What does it mean?* Stories in the Bible are attempts on the part of many different authors to make sense of their experiences by telling stories about them. It encourages us to ask: *What is our story?*

The Gospel of Genesis is the Good News before there ever was a Jesus of Nazareth, the news of what God was doing in the very beginning of things. It is the deep mystery that God wills and will have a faithful loving relationship with all things. That is the mystery you and I are meant to celebrate: that everything and everyone is now bound in a relationship with God. The binding is irreversible. Everything was made out of love and flows toward love.

Rev Barry Robinson of *Keeping the Faith in Babylon*

The Genesis stories were written to a disheartened, forlorn, depressed group of exiles living in Babylon. The story of creation was written to help them to stand apart from the cultural and political story of their captors. The exiled people of God needed an alternative story to the feeling that the forces of oppression and destruction ruled the universe. The people of Israel had watched their lives disintegrate, and the prevailing story seemed to be saying that this was the way things were meant to be: human beings continually at odds with one another.

The Genesis story of creation challenged this with the claim that creation was good, and that people and things are meant to be attracted to each other, not repelled.

Father Thomas Berry, in *The Dream of the Earth*, has written: *It is all a question of story. We are in trouble just now because we do not have a good story. We are in between stories. The old story, the account of how the world came to be and how we fit into it, is no longer effective.*

Suddenly Genesis becomes meaningful in a new way. We too, like the exiled Jews/Israelites, live in a world which seems determined to pull things apart, a world which is dominated by the idea of living in alienation from one another. From the earliest pages of the Bible through to the end of it the essential message is that life in peace with each other is good.

The book of Genesis was not written to make a scientific claim about how the world was made. Genesis makes a confession of faith about why the world was made. Its authors were saying that a wind from God, or the spirit of God, swept over the surface of the waters. They use a word which in English is best translated as *to brood*, the way a mother bird broods over her nest until new life begins to stir.

It is a powerful image. What it means is that there is no chaos, no darkness in which you or anybody else finds themselves, out of which God cannot still bring forth life. It was the only question about life that mattered to those who were exiled; and it is the only question that really matters in the end to any one of us.

Chaos is a theme again in the story of Noah and the flood (Genesis 6–9), in which the wickedness of humanity threatened to return it to the chaos of the deep. For more on this, see chapter 8: Noah: a story misunderstood by Creationists.

Genesis Chapter 2 continued

4 This is the account of the heavens and the earth when they were created, when the LORD God made the earth and the heavens.

Now no shrub had yet appeared on the earth and no plant had yet sprung up, for the LORD God had not sent rain on the earth and there was no one to work the ground, but streams came up from the earth and watered the whole surface of the ground. Then the LORD God formed a man from the dust of the ground

and breathed into his nostrils the breath of life, and the man became a living being.

Now the LORD God had planted a garden in the east, in Eden; and there he put the man he had formed. The LORD God made all kinds of trees grow out of the ground—trees that were pleasing to the eye and good for food. In the middle of the garden were the tree of life and the tree of the knowledge of good and evil.

A river watering the garden flowed from Eden; from there it was separated into four headwaters. The name of the first is the Pishon; it winds through the entire land of Havilah, where there is gold. (The gold of that land is good; aromatic resin and onyx are also there.) The name of the second river is the Gihon; it winds through the entire land of Cush. The name of the third river is the Tigris; it runs along the east side of Ashur. And the fourth river is the Euphrates.

The LORD God took the man and put him in the Garden of Eden to work it and take care of it. And the LORD God commanded the man, "You are free to eat from any tree in the garden; but you must not eat from the tree of the knowledge of good and evil, for when you eat from it you will certainly die."

The LORD God said, "It is not good for the man to be alone. I will make a helper suitable for him."

Now the LORD God had formed out of the ground all the wild animals and all the birds in the sky. He brought them to the man to see what he would name them; and whatever the man called each living creature, that was its name. So the man gave names to all the livestock, the birds in the sky and all the wild animals.

*But for Adam no suitable helper was found. So the LORD God caused the man to fall into a deep sleep; and while he was sleeping, he took one of the man's ribs and then closed up the place with flesh. Then the LORD God made a woman from the rib he had taken out of the man, and he brought her to the man. **23** The man said, "This is now bone of my bones and flesh of my flesh; she shall be called 'woman,' for she was taken out of man." That is why a man leaves his father and mother and is united to his wife, and they become one flesh.*

Adam and his wife were both naked, and they felt no shame.

The second creation story was written at about the same time as the final form of the first creation story, about five hundred years before the birth of Jesus. It uses the name Yahweh, the personal God of Israel. It also assumes the existence of dry land in verses 5 and 6, and is focused on the conditions of human existence rather than the creation of the cosmos as a whole. Verse 15 shows that work was there as a part of life, and sexuality was a good thing, as seen in verse 24.

Although the people had lost their sense of identity in the destruction of the temple and deportations into slavery, the priests in Jerusalem formed a group to sustain the exiles. They developed the idea of the synagogue, or assembly, to allow people to be more involved in worship through prayer and meditation. The Sabbath was meant to be a time for sanctification, and Circumcision (of males) was a sign of belonging.

In the second creation story the names Adam and Eve are used. As soon as you know that *ground* is translated from the Hebrew word *adamah* then verse 7 becomes *The Lord God formed Adam from the adamah*. Of the 556 places in which the word *adam* is used in the Bible, 24 times it appears in the second creation story, 7 times elsewhere in the Bible referring to the creation story, twice to a place near the Jordan River, 522 times to people in general, and once to a person possibly named Arba.

The ancient Hebrews rarely, if ever, used the word *adam* to refer to a particular person. If they wanted to refer to a particular person, they used a word such as *ish* (man) or *ishshah* (woman). *Adam* was used to refer to *everyone* or *anyone* or people in general. The name *Eve* means *life*.

The LORD God took the man and put him in the Garden of Eden to work it and take care of it. And the LORD God commanded the man, "You are free to eat from any tree in the garden; but you must not eat from the tree of the knowledge of good and evil, for when you eat from it you will certainly die."

Genesis 2:15

The paradise being described was a place for God or the gods, with permanent water and trees which offer wisdom. Into this place God had invited Adam and Eve (humankind, us). Paradise was not intended to be the permanent home of them (humankind), and this can be seen in the comment: *And the Lord God said: Now that the man has become like one of us, knowing good and evil, he must not be allowed to stretch out his hand and take also from the tree of life and eat, and live forever* (Gen 3:22).

Also, having a snake which speaks and reasons reminds us of fairytales and myths. The descriptions of paradise in Genesis 2 and 3 do not refer to any part of our physical world.

The tree of the knowledge of good and evil uses a figure of speech common at the time. By pairing opposites, it was the writer's way of saying *knowledge of everything*. This means that by *eating of the tree of the knowledge of good and evil* an attempt was being made to become like God, and therefore going beyond what was good for the persons involved. It was also disobedience to a law which God has just given them, and so was a sin, upsetting the applecart in Paradise. By the way, the fruit of the tree was not necessarily an apple. It may be that because the Latin word for *apple* is *malus* and the Latin for *sin* is *malum*, that there was the opportunity for a Latin pun, and in so doing provided an agreed object for the artists draw.

All that God asked humankind (Adam) to do was just care for things and keep them. There was only one thing God asked humankind (Adam) not to do. God wanted respect of the fact that human life has a boundary. There was a limit to what humankind (Adam) could do.

In the words of Walter Brueggemann: *There are secrets about the human heart and the human community which must be honoured, bowed before, and not exposed. That is because the gift of life in the human heart and in the human community is a mystery retained by God for himself. It has not been put at the disposal of human ingenuity and human imagination.* ²⁴

There are boundaries before which humankind (Adam) must bow. But humankind (Adam and others) wanted a short cut to greatness. Humankind (Adam and others) wanted more. As a result, we have experienced a loss of innocence, fear and separation or estrangement from each other, from the world and from God.

Genesis shows that living beyond our limits means living a life of constant anxiety. But the God of humankind (Adam) and life (Eve) will never leave us, just as he didn't leave them (Adam and Eve). He continued to watch over them in their new life together in a hostile world. Too late they learned the shady side of wisdom.

Just as God walked with them in the experience of the world beyond Eden, God is with us, walking with us, as the nurturing adviser whose creation we enjoy. It is one of the deepest and most intriguing stories in the Bible.

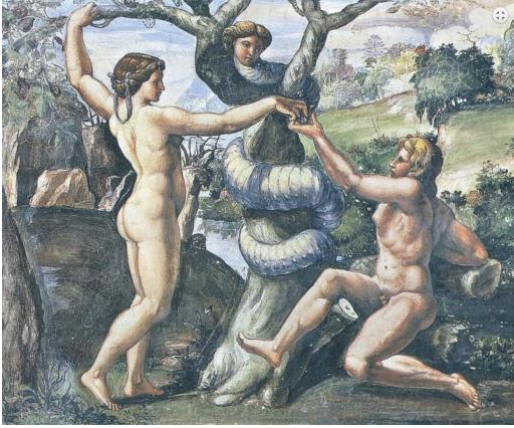
The early chapters of Genesis are myth, in the deeper meaning of the word. It is a sacred narrative explaining how the world came to be in its present form. It is ideology written as a story.

The irony of the intellectual revolution started by the publication of Darwin's *On the Origin of Species* is that God was again seen as a part of his world rather than some vengeful Being out there somewhere, counting our sins.

7: Original sin: a human artefact

Of course it's not an artefact. Original Sin is soundly Bible based. Adam sinned, he was the male from whom all other people have come, and so his sin is our sin. Paul mentions it in Romans 5:12: *Wherefore, as by one man sin entered into the world, and death by sin; and so death passed upon all men, for that all have sinned.* Authorised, or King James, version

Well then; it was through one man that sin came into the world, and through sin death, and thus death has spread through the whole human race because everyone has sinned. New Jerusalem Bible version



A couple of niggling questions arise however. Wasn't Eve the one who started it? Shouldn't this be regarded as Eve's sin? And how can one person make another person sinful simply through being a descendent?

Around 1100 CE, Peter Abelard posed a question, "the most breathtaking question in theology": *Why did not God just forgive Adam? Why couldn't God just forgive Eve and Adam?*

In the previous chapter we saw that one man called Adam was not the single male ancestor of everyone. *Adam* actually means *humankind*. Does this mean that humankind sinned in the past and continues to sin?

Perhaps Original Sin needs some further investigation.

Original Sin has become an integral part of an internally consistent world view and theology for some people. It is interesting to note that the term Original Sin is not Biblical, but is a doctrine, or dogma, which can be traced from the second century on. Original Sin is accepted by many Roman Catholics and Protestants, and is official dogma of the Roman Catholic Church. It is not accepted by Eastern Orthodox churches, or by Jews or by Muslims. Surprisingly it appears to be accepted by atheists such as Richard Dawkins who assume that it is a part of normal Christian belief.

Before looking at the development of the doctrine of Original Sin it could be helpful to consider the danger of imposing a faulty but consistent worldview throughout society.

Bertrand Russell in 1952 wrote:

If I were to suggest that between the Earth and Mars there is a china teapot revolving about the sun in an elliptical orbit, nobody would be able to disprove my assertion provided I were careful to add that the teapot is too small to be revealed even by our most powerful telescopes. But if I were to go on to say that, since my assertion cannot be disproved, it is intolerable presumption on the part of human reason to doubt it, I should rightly be thought to be talking nonsense. If, however, the existence of such a teapot were affirmed in ancient books, taught as the sacred truth every Sunday, and instilled into the minds of children at school, hesitation to believe in its existence would become a mark of eccentricity and entitle the doubter to the attentions of the psychiatrist in an enlightened age or of the Inquisitor in an earlier time.

Against Russell's teapotism, philosopher Gary Gutting points out that numerous sensible, competent people appeal to personal experience and arguments in support of God's existence, and to simply reject the existence of God seems unjustified.

The literary critic James Wood says that belief in God "is a good deal more reasonable than belief in a teapot" because God is a "grand and big idea" which is not disproved by reference to celestial teapots, which lack the necessary bigness and grandeur. Also, God cannot be turned into a mere thing.

Christians believe in Jesus and Jesus' worldview for reasons deeper than Bertrand Russell's teapot analogy. But a person's view of the world usually makes more sense when it is a part of a group's worldview, be it Christianity or Scientology or Freemasonry.

As an example, in lighter vein, in 2005 Bobby Henderson, a physics graduate, sent an open letter regarding the Flying Spaghetti Monster to the Kansas State Board of Education requesting equal time in science classrooms across the country, and eventually the world; one third time for Intelligent Design, one third time for Flying Spaghetti Monsterism, and one third time for logical conjecture based on overwhelming observable evidence (evolution by natural selection).

Henderson explained: *I don't have a problem with religion. What I have a problem with is religion posing as science. If there is a god and he's intelligent, then I would guess he has a sense of humour.*

Henderson's Pastafarians claim the world was created by the Flying Spaghetti Monster, but, because the monster was inebriated at the time, it was a flawed design. Pastafarianism is consistent, if whacky, and it has many followers. There are Pastafarian books, conventions and charities.

More seriously though, many people have thought deeply about their place in the world and the nature of human existence. *Cogito ergo sum* (*I think, therefore I am*) is a philosophical statement proposed by René Descartes (1596 – 1650), founder of modern philosophy (*philosophy* means *love of wisdom*). Descartes also founded analytical geometry which led to calculus, he was a major figure in the scientific revolution, and Cartesian Coordinates in graphs are named after him. In his theology he insisted on the absolute freedom of God's act of creation. (See also Ch 16: A personal viewpoint.)

According to Descartes *I think, therefore I am* means that the simple act of someone wondering whether or not he or she exists is proof that something, that person, exists in order to do the thinking. Even the act of doubting your own existence serves to prove the reality of your existence, or at least your thoughts.

Later philosophers such as Søren Kierkegaard, Jean-Paul Sartre and Friedrich Nietzsche, who were existentialists, maintained that philosophical thinking begins with the human person doing the thinking. This is not just the thinking part of the person, but the acting, feeling, living human individual.

Søren Kierkegaard was a philosopher and Lutheran theologian. He said: *This age is afraid of the silence which reveals the emptiness of talkativeness*. He used stories to great effect, and they are worth reading. In an illuminating essay called *The Present Age* he despairs at the lack of passion of his times (around 1846). In part, he writes:

Formerly it was agreed that a man stood or fell by his actions: nowadays, on the contrary, every one idles about and comes off brilliantly with the help of a little reflection, knowing perfectly well what ought to be done.

If a jewel which everyone desired to possess lay far out on a frozen lake where the ice was very thin, watched over by the danger of death, while closer in the ice was perfectly safe then in a passionate age the crowd would applaud the courage of the man who ventured out. They would tremble for him and with him in the danger of his decisive action. They would grieve over him if he drowned. They would make a god of him if he secured the prize.

But in an age without passion, in a reflective age, it would be otherwise. People would think each other clever in agreeing that it was unreasonable and not even worthwhile to venture so far out and, in this way, it would transform daring and enthusiasm into a feat of skill. The crowd would go out to watch from a safe place as the accomplished skater moves almost to the very edge, where the ice is still safe, and then swiftly turns back, and intelligence turns prudence and skill into an unreal trick, and reality into a play ... and so, stimulated by a gush of admiration, they are all comfortably agreed that they might just as well admire themselves. ²⁵

Existentialists, such as Kierkegaard, on reading the Bible recognise that they are persons studying the Bible's words as recollections of possible events which are then capable of guiding them from inside.

For existentialists, the Bible is not an authority in an individual's life until that individual authorises the Bible to become that authority. Preaching requires a decoding of the ideas, messages and cries of the heart which are encoded in scripture. Good preaching, according to existentialists, can lead people to accept the Bible's authority and then revere the God of whom it speaks.

People's backgrounds, current perceptions, and desire for explanations affect what is written (encoded into language), transmitted, and read (decoded). Translation into another language requires additional encoding and decoding steps.

Existentialism is just one example of the search for meaning in life, a search which can involve the investigation of many alternatives. Christianity is one of these alternatives, and Christians believe Christianity is more than just one philosophy among many: it is the brightest light of many lights.

There are also strongly held but probably unhelpful philosophies such as Scientology or Homeopathy.

And there are people for whom the daily fight for existence, for even one meal, is all that they can manage, and are very happy to leave philosophical debates for others to pursue.

Conflicting philosophies can affect the everyday matters of life. We experience this personally on a daily basis, quite apart from the conflicts on which the mass media feed. Within families and neighbourhoods, the continuing agreements and disagreements are related to different views of the world, different philosophies of life and its purpose. A frivolous example, relevant to the subject of this book, follows.

The cheese-mites asked how the cheese got there,
And warmly debated the matter;
The Orthodox said that it came from the air,
And the Heretics said from the platter.
They argued it long and they argued it strong,
And I hear they are arguing now;
But of all the choice spirits who lived in the cheese,
Not one of them thought of a cow.

Sir Arthur Conan Doyle (1859 – 1930), author of Sherlock Holmes

The purpose of this little foray into philosophy has been to start freeing up the way in which we look at the world. In a religious sense there are three main views of the world: agnostic, atheist and theist.

An agnostic is someone who neither believes nor disbelieves in the existence of a deity (a god) or deities. An atheist and a theist disbelieve and believe, respectively, in the existence of a deity or deities. In the strict sense, however, agnosticism is the view that human reason is incapable of providing sufficient rational grounds to justify the belief that deities either do or do not exist. Therefore, there are agnostic atheists (who do not believe any deity exists, but do not deny it as a possibility) and agnostic theists (who believe a deity exists but do not claim it as personal knowledge).

Idealism is another worldview or philosophy. The Idealist asserts that reality, or at least reality as we know it, is a mental construct, something we have invented. Some idealists would say that everything is composed of mind or spirit. Idealists understand the world as it might be or should be, in contrast to Pragmatists who look at the world as it exists at the moment.

Sir James Jeans (1877 – 1946) was an English physicist, astronomer and mathematician. He was also an Idealist. He said: *I incline to the idealistic theory that consciousness is fundamental, and that the material universe is derivative from consciousness, not consciousness from the material universe... In general, the universe seems to me to be nearer to a great thought than to a great machine. It may well be, it seems to me, that each individual consciousness ought to be compared to a brain-cell in a universal mind.*

He also said our world is a *finite picture whose dimensions are a certain amount of space and a certain amount of time; the protons and electrons are the streaks of paint which define the picture against its space-time background. Travelling as far back in time as we can, brings us not to the creation of the picture, but to its edge; the creation of the picture lies as much outside the picture as the artist is outside his canvas. On this view, discussing the creation of the universe in terms of time and space is like trying to discover the artist and the action of painting, by going to the edge of the canvas. This brings us very near to those philosophical systems which regard the universe as a thought in the mind of its Creator, thereby reducing all discussion of material creation to futility.* ¹⁵

James Jean's ideas carry a message which is similar to that of the following well known song, which is sung by children and adults:

Row, row, row your boat, gently down the stream.
Merrily, merrily, merrily, merrily; life is but a dream.

Werner Heisenberg (1901-1976), the German theoretical physicist of the Heisenberg Uncertainty Principle and Nobel Prize winner *for the Creation of Quantum Mechanics*, was a devout Lutheran Christian. As a teenager he read Plato's *Timaeus*, perhaps because his father was a Professor of Greek

studies. He had philosophical conversations with his fellow students and teachers about understanding the atom while receiving his scientific training.

Later, Heisenberg stated: *My mind was formed by studying philosophy, Plato and that sort of thing. Modern physics has definitely decided in favour of Plato. In fact, the smallest units of matter are not physical objects in the ordinary sense; they are forms, ideas which can be expressed unambiguously only in mathematical language.*

Describing life as a great thought, or a painting on a canvas, or a dream, or a mathematical idea, hints at questions about the nature of God (assuming that God exists), and how that God relates to humans and their world. Descartes and others ponder whether something exists only because we see it. When we are not watching, does it exist?

George Berkeley (1685 – 1753), a priest of The Church of Ireland, and a British empiricist, wrote about idealism (the claim that everything that exists is either a mind or depends on a mind for its existence) and immaterialism (the claim that matter does not exist). His view that all physical objects are composed of ideas is contained in his motto *esse est percipi* (to be is to be perceived).

On this topic, here is another outburst of poetry. It is a light-hearted attack on Berkeley and idealism. The *quad* referred to is a quadrangle or central lawned area surrounded by buildings.

There once was a man who said: 'God
Must think it exceedingly odd
If he finds that this tree
Continues to be,
When there's no-one about in the Quad.'

Ronald Knox, priest, 1888 – 1957

One response has been by 'Anonymous' but probably by Ronald Knox also:

Dear Sir, Your astonishment's odd:
I am always about in the Quad.
And that's why the tree
Will continue to be,
Since observed by Yours faithfully, God

As the Christian faith developed, great minds steeped in the philosophies of the time sought to either integrate the Christian faith or keep it separate. The lively and earnest debates in the early church, as recorded in the New Testament letters, were followed by centuries and then millennia of debates about what it meant to be a Christian. It even took at least three centuries to establish some agreement about the divinity and humanity of Jesus.

At times there were breakouts of new ideas and new theologies. New discoveries of ancient texts caused many of the debates and teachings to be discussed again.

Each theology involves a worldview, a philosophy about life. Some earlier theologies were the building blocks of a wide variety of newer theologies. In some cases, the foundational building blocks of earlier theologies proved to be in error, causing the later theologies added onto them to fail. The SS Warrimoo event, mentioned earlier in chapter 1, is a modern example of a great story built on a foundation which was not fully true.

Creationists start from a seemingly straightforward point, that the Bible is God's Word, and therefore that the Bible must be literally true. This has been explored in chapter 2: Creationism and its Origins. This claim is maintained even though the Bible, in its various forms, does not make this claim for itself.

Original Sin is simply another case of a well-developed theology built on a faulty foundation or starting point. To see how this has happened, we need a little more history of the Christian Church.

Early debates inside and outside the Church included consideration of the nature of Jesus. Was Jesus fully man or fully God or could he be both? Ignatius, Irenaeus, Tertullian, Arius and Athanasius were

some of the major players in the debates up to when the final version of the Nicene Creed was agreed in 325 and 381 CE⁽⁴⁾. Their contributions to the debate are worth reading.

Shortly after the final approval of the Nicene Creed, a man called Augustine became a Christian, in 387 CE, and the consequences of this conversion transformed both himself and the world. Now known as Augustine of Hippo (354 – 430 CE), or St Augustine, he was a Latin philosopher and theologian from Roman Africa. He was a prolific author. Some view him as the last classical scholar and the first medieval man.

Augustine developed and spread his own philosophy and theology. He believed that human freedom was utterly dependent upon the grace of Christ. Grace is that aspect of God's action which makes us complete. He also defined the doctrines of Original Sin and the Just War (war which is necessary for peace to prevail).

While the Roman Empire was disintegrating Augustine wrote *The City of God*. The sacking of Rome itself took place in 410 CE. He sought to console Christians by writing that, even if the earthly rule of the Empire was crumbling, it was the City of God that would ultimately triumph: that Christianity's message was spiritual rather than political.

The concept of Original Sin first appears in the second century in the writings of Irenaeus, Bishop of Lyons. As a well-considered dogma, however, Original Sin is a creation of Augustine's theology. Unfortunately, his writings on Original Sin are based on a mistranslation. That this was a mistranslation may have been known to Augustine.

Prof Neil Ormerod, of the Australian Catholic University, notes in *Grace and Disgrace*⁽⁸⁾ that Augustine, while a towering figure as a theologian and Church Father, did not read Greek well. Augustine instead used the Latin translations of Jerome and others.

The mistranslation problem was known much later by Thomas Aquinas (1225 – 1274 CE), an immensely influential Roman Catholic priest, philosopher and theologian. Even so, he continued to develop the doctrine of Original Sin.

The doctrine of Original Sin is based on chapter 3 of Genesis which is then referred to in Paul's letter to the Christians in Rome. As a result, Romans 5:12ff becomes: *Through one man sin entered the world and through sin death, and thus death has passed to all men, in whom (Adam) all have sinned.* (emphasis added).

Ormerod shows that Augustine was working from a misinterpretation of an ambiguous translation, and that Augustine could be giving an importance to this text that Paul never intended. Ormerod shows that this problem continued and it *found its way, as a proof text, in the canons of Carthage (418), Orange (529) and Trent (1546). These Councils provide the classical sources for (Roman) Catholic dogmatic teaching of original sin* (p111).

On further reading we find that Augustine's creation of the doctrine of Original Sin was based only partly on this mistranslation problem. It was also based in part on his theology around the purpose of baptism of infants. Augustine understood baptism as causing rebirth or regeneration, and therefore infants must have some original fault or sin from which they needed to be saved, to avoid damnation. Augustine's rather severe view of the need for baptism of infants was always balanced against his understanding of the bountiful grace of God. Augustine's proposition about Original Sin should never be separated from his understanding of, and experience of, the grace of God.

Paul's comments about Adam in Romans 5:12 are to help us to focus on Jesus. Whatever it is that Adam (humankind) does, Jesus saves us from it. We see this in 1 Timothy 2:4 *God wants all people to be saved.* This statement about universal salvation only makes sense if there is universal sin from which we need to be saved. But we are sinful people all by ourselves, and do not need Eve or Adam to blame it on.

Augustine and Aquinas saw Adam as the male from whom all humans have come, and that it was

through Adam's semen that Original Sin was transmitted. Until the late nineteenth century, the general understanding of human reproduction was that the male produced 'seed' which contained the tiny child, who was then grown in the garden or womb of the woman. *Sperm* is an abbreviation of *Spermatazoon* which literally means *seed animal*.

The modern view of reproduction raises additional problems with Augustine's and Aquinas' view of the transmission of Original Sin: it could also be Eve's sin which is transmitted to us. Each of them was a sinner, as is each of us. Each of them was a child of God, as is each of us.

Such equality sits comfortably with Jesus' attitude to women. Jesus did not see women as subservient to men. He allowed women to become disciples, he had radical and supportive views on marriage and divorce, and after his resurrection the first persons he spoke to were women. Clearly, sexism is a sin.

Original Sin is a created dogma, and does not have the scriptural authority earlier given to it. This view is supported by noting that the same Genesis text is used by Jews and Muslims, and they have no theology of Original Sin. Jews and Muslims cannot see how one person's sin can condemn another person.

This rejection of the dogma of Original Sin is shared also by Christian churches of the Orthodox tradition, including Greek Orthodox, Russian Orthodox, Serbian Orthodox and others. Their Orthodox theology is not as harsh as western (Roman) Catholic theology. Orthodox believe that death is not a punishment for sin but a divine deliverance from the opportunity to sin. Orthodox theology has no reference to Original Sin by name or by function. Eastern Orthodox do not accept Augustine's notions of original sin and hereditary guilt. The Western Church has concentrated on the consequences of sin while the Eastern Church has seen a way through the darkness of sin towards the light.

It is interesting to note that this is remarkably close to the thesis of Ernest Becker's very influential book *The Denial of Death* ⁽¹⁶⁾. *This, he concludes, is the meaning of faith. Faith is the belief that despite one's insignificance, weakness, death, one's existence has meaning in some ultimate sense because it exists within an eternal and infinite scheme of things brought about and maintained to some kind of design by some creative force.*

Then we hear the words of Jesus: *I have told you these things, so that in me you may have peace. In this world you will have trouble. But take heart! I have overcome the world.* John 16:33

Original Sin as proposed and developed by Augustine and Aquinas and others, and adopted by the Western Church, is a response to the deep-seated feeling that there is something wrong with being human. The life, death and resurrection of Jesus saves us from this. The very existence of Jesus is an expression of God's confidence in the human condition. Being human is OK.

In contrast to the mechanistic view of the doctrine of Original Sin is the good news of Jesus: the Gospel message. This message is about life overflowing with love and acceptance. It is the message which people need to hear, particularly young adults who have drifted away from traditional churches, and yet wish to talk about who Jesus was, and faith matters in general.

People are relieved and happy to hear an alternative message to damnation from original sin, and a vindictive God who needs blood to be shed to satisfy his anger. That alternative is *God is love* (1 John chapter 4), and the doctrine of the atonement (the at-one-ment), described in this book in chapter 4: The Jesus Approach.

Footnote: There is confusion about the relationship between Original Sin and the Roman Catholic dogma of the Immaculate Conception of Mary, the mother of Jesus. The Immaculate Conception, according to Pope Pius IX when proclaiming this dogma in 1853, says that Mary was preserved from any *stain* (in Latin, *macula*) of original sin. The Church also holds that Mary was also sinless personally, that she was *free from all sin, original or personal*. The doctrine of the immaculate conception (Mary being conceived free from original sin) is not to be confused with the doctrine of her virginal conception of Jesus. This misunderstanding of the term *immaculate conception* is frequently met in the mass media. The Catholic Church teaches that Mary was not the product of a virginal conception herself and was the daughter of a human father and mother.

8. Noah: a story misunderstood by Creationists

It simply didn't happen. At no stage in the life of humans on earth has there been a worldwide flood covering the tallest mountains by 7 metres (Genesis 7:20). So why is there a Noah story? What is the point of the Noah story? Does the Noah story as told to children do the story justice? Does such a rendition do God, or the children, justice?

Was the purpose of the story to say that God wanted to punish evildoers with violence and so sent a flood? Was it a story written about the selection of a remnant of people who were faithful? If the Noah flood drowned everyone in the world, except Noah's family and a few animals, because of their evil behaviour why did all the other air breathing animals in the world have to die too? What was their sin? Or was the story an attempt to read a spiritual message into the common deep-seated fear of floods in each of us, and Israelites in particular.

Which came first: the flood needing an explanation, or a story which used a fear of floods to make its point?

In overview, the purpose of Genesis 3 is to place evil and its consequences into the beginning of human history. This is followed by examples of the erring nature of humankind. Chapters 3 to 11 of Genesis record murder (Cain and Abel), mindless violence (Genesis 4), and a general descent into a moral abyss.

Out of this explosion of evil God takes action, washing away the evil and chaos. He saved a few chosen people, and this led later to the call of Abraham and the covenant with his chosen people.

A myth is a story which carries fundamental truths, and an example is the Noah myth. There are several flood myths and it is interesting to compare the Babylonian and Noah flood stories.

The *Chaldean Flood Tablets: The Epic of Gilgamesh* from the city of Ur in what is now Southern Iraq dates from well over one thousand years BCE. The story goes back to as far as 2700 BCE. It describes how the Babylonian god Enlil had been bothered by the incessant noise generated by humans. He convinced the other gods to completely exterminate every person on Earth as well as land animals and birds with a great flood. One of the gods, Ea, went against the decision of the rest of the gods, and told Ut-Napishtim to build an ark to save a few humans, and some animals.

This flood story from *The Epic of Gilgamesh* and the Hebrew story in Genesis are very similar with about 20 major points in common. Their texts are obviously linked in some way. Perhaps the Genesis story was copied from an earlier Babylonian story, or the Gilgamesh story was copied from an earlier Hebrew story, or both were copied from a common source that predates them both. It is clear however that flood myths have a long history, and speak in a fundamental way to our human condition.

Genesis 1 speaks of the bringing of order to a watery chaos. The Priestly writers responsible for Gen 1:1-2:3 assert that God is in control, not only of heaven and earth, but of the deep, of evil itself. Nothing stands against the sovereignty of this God who brings order out of chaos. This is a God who overcomes evil to bring order, stability and peace to the earth and its inhabitants. As noted earlier in chapter 6, about the origin and meaning of Genesis, this was the message to the children of Israel, less than 500 years before Jesus. They had lost their king, their land and their temple, and had become scattered.

It will be alright in the long run, says Genesis chapter 1, God brought order out of chaos when he created the world, and he will act again in this chaos. So, cheer up, go out and raise your families with confidence.
(My paraphrase)

Chaos is a theme again in the myth of Noah and the flood (Genesis 6-9), in which the wickedness of humanity threatens a return to the chaos of the deep.

Creationists, however, are dependent upon a literal use of the Bible. As noted in chapter 2 of this book,

Creationists believe that the Bible *is divinely inspired and inerrant throughout. ... The great Flood of Genesis was an actual historic event, worldwide (global) in its extent and effect. ... The Noachian Flood was a significant geological event and much (but not all) fossiliferous sediment originated at that time. The Seven C's of History provide a framework for understanding the true history of the universe as presented in the Bible. Although there are many other important biblical events, these ideas are often attacked by skeptics who believe the earth and universe are billions of years old. The first 11 chapters of Genesis provide the foundation for the Christian faith—if Genesis cannot be trusted then the rest of the Bible has no basis. These seven critical events in history are depicted on the timeline with a picture, description, and historical events—Creation, Corruption, Catastrophe, Confusion, Christ, Cross and Consummation. A great evangelistic and teaching tool for home-schools and Sunday school classrooms!*
(From the Answers in Genesis website, advertising their flawed timeline)

There are some obvious concerns about a literal use of the Noah's ark story.

Creationists claim that there was sufficient time (about 6000 years) for a few 'kinds' on the Ark to diversify to become all that we see now, and also those which became extinct. If this is the case then what is the problem with natural selection operating over much larger periods of time to produce the enormous diversity of organisms we see today?

Many other questions arise when the Creationists' claims are considered. What happened to all the grass seeds submerged for 150 days or more: did they rot? Earthworms would have died if they were under water for 150 days. Also, how did earthworms or koalas travel from Mt Ararat to Australia, how long would that take, and how would they have crossed the remaining oceans? What about the weight and volume and food requirements of all the animals in the ark?

For a much fuller treatment of this, read Prof Ian Plimer's *Telling Lies for God* ⁽⁹⁾. He calculates that the four male members of Noah's family would have had, on average, less than six seconds in total per animal over the course of the whole voyage (not six seconds per day) to deal with the food, water and other matters for the animals during their 371 days on the Ark.

What scientific facts can we bring to the Noah story?

Scientists are dependent upon observation, data collection, and hypothesis testing through repeated and repeatable experiments. What is known is that the earth is not flat, nor is it a part of a Biblical three-tiered universe. Instead, the universe is very old, estimated in 2018 at 13.79 billion years, plus or minus 0.02 billion years, and the earth is about 4.54 billion years old, plus or minus 0.05 billion years.

Our earth is towards the edge of a spiral galaxy of hundreds of billions of stars. When we look at the Milky Way, we are looking through a part of the spinning disc of stars which form our galaxy. For every star in our galaxy that you can see with the unaided eye, there are 20 million that you can't see. There are hundreds of billions of galaxies in the universe.

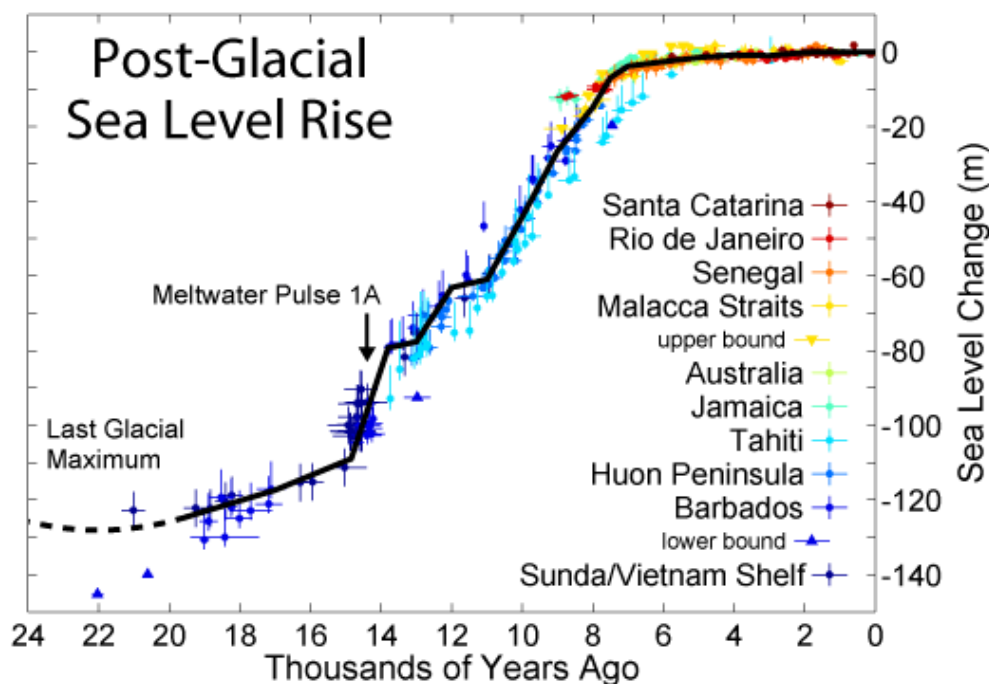
Our earth has had a violent life as it has formed and cooled. The bulk of the earth is still molten, but ice has been a part of the earth's life for millions of years. The most recent ice age finished only 15 000 years ago. At that time the ocean levels were about 110 metres below current levels.

Consider the possible link between the Biblical Noah story and the flooding of vast areas of the earth following the last ice age. At its peak about 22 000 years ago the sea level was 130 metres below its current level. From 15 000 to 7 000 years ago the waters rose rapidly, about 100 metres, flooding vast areas and isolating communities and countries. Quite apart from local floodings, this rapid sea level rise occurred during the time that Jericho and Damascus were settled, from about 11 000 years ago.

The influence of these events on oral history, and on memory which became instinctual, would have been significant. It would have led to a search for meaning, possibly culminating in early versions of the story of Noah, and similar stories in surrounding tribes.

In the words of John and Mary Gribbin, we are *Children of the Ice* ⁽¹⁷⁾. We are the brainy bipeds who

have been able to adapt very quickly to the rapidly changing shorelines, plains and forests. Part of the context of the Biblical writings was the inherited story of such past times.



from: <http://wattsupwiththat.com/2010/12/01/sea-level-rise-jumpy-after-last-ice-age/>

In the latter part of the Flood story in Genesis, identified mostly as Priestly writing, we read that God then caused the flood to recede and re-established creation again from all that was preserved within the ark. Plants, animals, humans and even time were re-established (Genesis chapter 9).

The covenant as recorded in the Noah story is eternal: not just with Noah but with the whole of creation. Noah was merely the point of contact. Quite anthropomorphic, this covenant involved the rainbow reminding an apparently forgetful God never to flood the earth again (Gen. 9:12-16). Nothing in the covenant was required from the human side. The implication however was that Noah should go on being the good man that he had been when he was chosen to be kept alive rather than be drowned.

The reasons given for the flood vary slightly between the two sources which were used, although essentially the same point is made in each one. *In the P (Priestly) source the earth was corrupt in God's sight, and the earth was filled with violence (Gen. 6:11). God decided to destroy the earth with all its inhabitants because it was filled with human violence. In the other source, the J (Jehovist or Yahwist) source, we are told that the wickedness of humankind on the earth was great and that every inclination of the thought of their hearts was only evil all the time (Gen. 6:5). While the J source is concerned specifically with the condition of the human mind and heart, the P source describes the whole earth as evil: that human sin corrupts everything around it.*

Similarly, in the resolution of the flood, J is concerned with the ongoing condition of the human heart (8:21). The human heart in general has not changed but in response to the worship of one faithful human and his family God has now determined in his heart never again to curse the earth because of humans (8:22). It is as if God determines to initiate another means of resolution, one which does not involve almost complete destruction.

Howard Wallace lectionary commentary

Creationists are not prepared to see God and his world in this way. But when they step out of the Creationist straightjacket they can see that God's action, this topping up and repair work by God, is available to each of us to make us complete.

This grace of God, this involvement of God in our lives, almost always comes to us through others. It is mediated grace, and the Hebrew Bible records many times in which the grace of God has been exercised for the benefit of his people. At times it was delivered directly to a group, but usually it was through individuals who had been set aside, anointed, chosen (sometimes unwillingly) to be the

mouthpieces of God.

The reality of the grace of God is the point being made by the writer of the Noah story. It is a myth, a story which identifies and speaks to a deep truth of human existence. That deep and simple truth is that we are wilful people, and that through even the biggest calamity imaginable God will save his people.

To take the Noah story literally is to miss its point, and yet that is where Creationists would take us. Ken Ham and others of the *Answers in Genesis* viewpoint simply do not understand.

Bishop John Shelby Spong was a bishop of the American Episcopal (Anglican) Church. On 20th January 2011, in an article *Biblical Ignorance in Public Life* he wrote:

Governor Beshear of Kentucky recently announced his support for a plan that will provide three hundred and twenty five million dollars in tax abatement to a private group in Kentucky to enable them to build a theme park based on the biblical story of Noah's Ark.

The purpose of this theme park is to combat those who might suggest that the biblical story of Noah and his ark is not literal history.

This bias becomes obvious when one learns that a major partner in this plan is a "private group" that previously created another theme park, 40 miles away, but still in Kentucky, dedicated to countering evolution in the name of "Creation Science".

That organisation called "Answers in Genesis" is headed by a man named Ken Ham. Both theme parks are part of this man's agenda, which is to demonstrate the literal accuracy of the book of Genesis. That is a point of view that no recognised biblical scholar in the world would support. That seems not to matter to these self-styled "defenders of the literal truth of the Bible".

While I am neither a "secular scientist" nor a "secular historian", I am a practising Christian who has been educated in reputable centres of Christian learning and I find these theories offered by Mr. Ham and endorsed by the Governor of Kentucky to be profoundly ignorant and, more importantly, to be insulting to the Christian faith itself.

The kind of biblical literalism that this organisation espouses has been relegated to the dustbins of history for the last two hundred years.

I am not opposed to an individual's private ignorance, nor would I deny anyone's right to interpret their religion in any way they wished, but when they seek public funds to peddle their biblical ignorance to the world in a money making-scheme I do object.

Even more, I resent their ignorance that reduces the Christian faith that I deeply believe in to a caricature of itself and subjects it to the constant ridicule of the late-night comedians who know a good source of comedy when they see it.

Worth reading is 29+ Evidences for Macroevolution: www.talkorigins.org/faqs/comdesc/section1

One unique feature of Christianity is the inclusion in its story of the bad, the mistakes and the grief of human existence. It can make a person ask: *If God is all wise and all powerful, how could he/she have been so wrong about humankind?*

The story of the Flood is one of the darkest stories in the Bible. It is a story of God's terrible despair over what he saw happening to the human race. God is portrayed as a troubled parent who grieves over what has gone wrong. But the good news in the story is that God cannot quite give up on us. We read that God changes, when he decides to continue working with his tragic creation and to leave enough of us to start all over again.

When God finally says: *Never again!* it is not because of any change that the flood has brought about in the world. It is not because the terrible devastation has forced him to take pity on us. It is not even for the sake of one good man named Noah and all his family. It is because God has decided to act in a new way toward us.

For this is like the days of Noah to me: as I swore that the waters of Noah should no more go over the earth, so I have sworn that I will not be angry with you and will not rebuke you. For the mountains may depart and the hills be removed, but my steadfast love shall not depart from you, and my covenant of peace shall not be removed.

Isaiah 54.9-10

We need to remember that the story of Noah and the great flood was written at about the same time these words from Isaiah were also written, less than 500 years before Jesus. This was a time of exile and a feeling of abandonment for the people of Israel. It was a time when the world was filled with violence and hatred and little love, and it seemed to mirror the darkness in the heart of God.

When we read the Noah story, we can get excited about mechanisms and attempted proofs. Or we can feel the darkness in the heart / mind of God and feel encouraged that, in spite of all the problems in his human creation, that a remnant was worth saving – that God will not abandon his creation, that God will not abandon you or me.

Jesus spoke in parables which were stories which had a deeper spiritual meaning. These stories were easily remembered, and many of them have entered the languages of many societies, including our own. Each story, when it is remembered, can remind us of the deeper meaning which is perhaps not so easily remembered or described.

In a similar way, the well-known story of Noah carries a deep spiritual truth. The basic story is easily remembered by even the youngest person. The deeper truth is what is often overlooked, especially by those who take the story literally as a historical event and go looking for the Ark.

God provided Noah with the recognition of the chaos around him and its threat to overwhelm him. He was given the insight to see these things and the drive to use what was available to him to lift what was important to him above the chaos and create a new world. This creation of the new order was urgent and necessary.

The Noah story encourages us to see that God can provide you and me with recognition of the chaos around us and its threat to overwhelm us. We can be given the insight to see these things and the drive to use what is available to us to lift up what is important to us above the chaos and create a new world. This creation of the new order is urgent and necessary.

This can sound like a call to be separate, like the pathetic ‘doomsday preppers’ with their stores and ammo and deranged social attitudes. What happened at Jonestown, South America, in 1978 has happened at many other times in history. But the Noah story is different. It is not a story of building a fort and defending it against people who want to kill us.

The call to Noah is positive. No defence arrangement is necessary. All Noah and his family had to do was to go down a path which had its limits, and leave those on the alternative path to face God as best they could. Noah and his family were being given the opportunity to rise above the chaotic society of their times and the chance to build a new one.

You and I and our families are encouraged to do the same. In that rebuilding, you and I are guided and supported, and, whenever we see that rainbow, it reminds us that such a new creation is here to stay.

9: Other misunderstood stories: Jonah and Ruth

Please sing with me: *Goliath of Gath*.

The tune can be *Hanover*, which is also used for *O worship the King*

*Goliath of Gath, with his helmet of brass,
Was seated one day upon the green grass,
When up slipped young David, the servant of Saul,
Who said, “I will smite thee, although I am small.”*

*Slim David slipped down to the side of the brook,
And from its still waters six small stones took.*

*He skilfully slung one, it flew through the sky,
And struck the old sinner right over the eye.*

*Goliath fell down in a swoon on the sword.
Young David slipped up and swiped his great sword.
He lifted his helmet and chopped off his head,
And Israel shouted, "Goliath is Dead!"*

The reason for this song being remembered is that it is singable (or recitable) and it is an entertaining way of telling part of the David and Goliath story.

I learned this song from *Wahoo*, the student songbook of the University of Western Australia. For some students of that time it is the only version of David and Goliath which they became familiar with. For younger persons it may be the only version of the story which they have ever heard.

But this song misses the point of the David and Goliath encounter. Many young people I meet do not know that there really was a David, or a Goliath. They also do not know anything about Daniel, or Ruth or Jonah. Noah, for them, had a big ship which had two of every kind of animal on it, but any meaning of the Noah story is absent.

Using the Goliath of Gath song as a trivial example, it is easy to see the way in which stories which are amusing or easy to tell are able to survive and compete with versions which are deeper in meaning. It becomes easier to see how simplistic and trivialised versions of stories about Noah, Jonah and Ruth survive.

Literalism, the foundation on which Creationism is built, has numerous disturbing consequences beyond debates about evolution and natural selection. An example of this is the book of Jonah. To take Jonah literally is to miss the point it is seeking to make.

Jonah is one of the books which reconstructs historical events to some degree, but tells the story for purposes of religious instruction and inspiration. It uses the kind of drama which was valued in Jewish oral tradition.

The story is set in the eighth century BCE, but was written down hundreds of years later during the time of the prophets Ezra and Nehemiah. When we read Ezra 9:1 - 10:5 and Nehemiah 13:23-27 the book of Jonah becomes a response in the serious clash of ideologies at that time. This was a clash of opinions on the nature of the faithful community and of the purity of the people of God.

The background of this clash helps us to understand the text. It says that, in about 1250 BCE when Moses and the people of the Exodus arrived in the Promised Land after escaping from slavery in Egypt, they were a group of tribes, not a unified nation. Some of the tribes had not even come from Egypt.

At first the faith of the people of Israel was very inclusive. The laws of Moses sought to build a caring society out of hardened people, most of whom had been slaves. These new laws required Israelites to guarantee the welfare of the poor, the widows and the aliens.

Over the following eight or nine centuries, which included the reigns of David and Solomon, there were debates and actions which polarized society. Racial purity was seen by some as being a demonstration of what it was to be God's people. Others saw the acceptance of outsiders as being a demonstration of what it was to be God's people. Calamities such as the split between Israel (northern tribes) and Judah (southern tribes), and the overrunning of Israel in 722 BCE and Judah in 597 and 582 BCE intensified the debate. This debate has been described in more detail in chapter 1: Why do we have to choose: Creationism or The Way of Jesus?

The book called Jonah was written in the fourth century BCE. It was a reaction to the narrow, exclusive racialism which had arisen in the Jewish nation after returning from exile. They had asked themselves: *Why did God let such bad things happen to his chosen people?* The response by some of the spiritual leaders was that the nation had lost its focus on God's laws, and that only by becoming more strict and

exclusive could they earn God's favour and avoid problems in the future.

The essence of the story of Jonah is its opposition to such a view: it opposes the rejection of Gentiles (non-Jews). It is a clever pleading for Jews to see that God loves all people and that Gentiles can participate in the worship of the God of Israel. This story predates by several centuries Peter's vision that the God of the Jews is also the God of the Gentiles. In that vision, recorded in Acts chapter 10, Peter is shown that he has to accept Gentile believers as full members of the Christian Church, and that God has made all animals clean, and therefore available for food.

There is no historical basis for the story's claim of the conversion of Ninevah to Judaism, except that a prophet named Jonah did exist several hundred years before the book of Jonah was written. Also, the city of Ninevah which Jonah describes is several times bigger than the largest city which ever existed in those times.

Then note the practical jokes in the story: the sudden storm, the choice of Jonah by lottery, the great fish with no digestive juices, and the plant growing and withering in an hour. We notice that all the non-Jewish characters are likeable and quickly confess belief in the God of the Jews. The only problem person is the only Jew, and he is a prophet. Jonah even complains to God when his mission has been successful.

The point of the story is that God is merciful to everyone, even rebellious Jonah. The lesson of humility and sincere repentance comes to God's chosen people from their bitter foes. The story of Jonah is a cleverly written satire. It is also comic, in that even the animals are to put on sackcloth and ashes in repentance and worship (v.8).

The Book of Jonah celebrates the willingness and joy of others to hear God's call. Jonah speaks his message in only five words in Hebrew (Jon 3:4). And yet, in spite of the enormous size of the city, and Jonah's lack of mention of God in his short speech, the people of Nineveh, even their king, hear his proclamation and repent.

This is one book in the Bible at which we are supposed to laugh. Jews do: it is self-deprecating Jewish humour. Behind the gracious gift of God to his creation, including Nineveh and Jonah, is a joy for life.

One of the ways we are able to see our own faults and our need of repentance, is to see them parodied in the ridiculous behaviour of an idiot like Jonah. Howard Wallace: lectionary resources

He continues: *All the way through the story Jonah, the reluctant prophet, leaves behind him repentant and worshipping foreigners who, in spite of his actions, have perceived the presence of God in the world. Jonah cannot accept the magnanimity of God in his grace toward all peoples. Jonah cannot accept that God can be forgiving toward the Ninevites. The story of Jonah is a satire of a kind of discipleship that is neither open, nor really understanding of the nature and breadth of God's gracious desire to forgive.*

A jester in an ancient court was a source of comedy but in the comedy was a message. If he was careful, a jester could criticise even the actions of the king. Like all serious comedy, Jonah brings laughter into a world where serious voices would tell us that we need to exclude foreigners, others different from us, even neighbours.

The early church faced the problem of how exclusive it should be, and whether talking to non-believers would contaminate the church.

The message from Jonah is that God's message of love and acceptance is for all people, and that there are people out there who are willing to hear it. The biggest barriers are the barriers that we have put up.

The message from the book of Ruth is similar, but is carried in a different style of story. It also ends with a surprising challenge for the reader. The challenge is: Should we be racially pure as required by Deuteronomy and prophets such as Ezra and Nehemiah? If so, then King David, a great-grandson of Ruth, a Moabitess, is not legitimate and we have lost our hero King and a major pillar of our identity.

According to Beyer, in the American Journal of Semitic Languages (XIX 143 ff), the Book of Ruth was written after the exile because we see that the days of the Judges are referred to as a time past (Ruth 1:1), and the law of Deuteronomy 25:5 ff is referred to as a custom which is now obsolete (Ruth 4:7). Also, the language of the book contains several expressions which are found in Aramaic, such as in 1:4, 1:13 and 4:7, and the interest in the genealogy of David (4:20 ff) is thought to indicate a date when David had become the ideal of the nation.

The interest of the author of Ruth in the marriage of an Israelite to a Moabite was in contrast to the law of Deuteronomy 23:3 ff as well as the statements we find in Ezra (9:10) and Nehemiah (13:23 ff). This indicates that the author of the book of Ruth was a contemporary of Ezra and Nehemiah, and that the book was written to expose the consequences of their opposition to foreign marriages.

When the book of Ruth was written, the official policy, led by Ezra the high priest, called for ethnic purity, even to the point of requiring men married to foreigners to divorce their wives and reject the children born to them (Ezra 10).

In the story of Ruth, a faithful Jewish family, in which Naomi was the mother, was driven by famine from Judah to the non-Jewish land of Moab, to the east, across the Dead Sea. The parents had two sons, whose names were: *Mahlon* (*sickness* in Hebrew) and *Chilion* (*wasting*). These sons married Moabites (foreigners).

When Naomi's husband and sons died, Jewish Naomi and her foreign daughters-in-law had no male relatives to support them, so Naomi allowed her foreign daughters to leave. But Ruth, who by now was poor, a widow and an alien in the eyes of Jews, would not forsake her Jewish mother-in-law, and went with Naomi to Naomi's home country of Judah.

Back in Judah, under the custom of Levirate marriage Ruth, with no sons, was required to marry the nearest male relative. The first born of that union would then count as the child of her dead husband.

After some discussion it was decided that Boaz was the man for Ruth to marry. Naomi then encouraged Ruth to lie down next to Boaz when he had eaten and become drunk after the harvesting and winnowing of his crops. To *uncover the feet* was a euphemism in those times for uncovering the genitals. The intention of this action was to make Boaz believe that he had taken sexual advantage of Ruth. They married.

Some time later, Ruth and Boaz had a son, Obed, who became the father of Jesse, who became the father of David. It was King David, the great King of Israel, who united the tribes and established the religious, military and political basis for Israel's nationhood. He was also an ancestor of Jesus. To claim that Ruth was a proselyte Jew is not a way out of this problem. Ruth was denied marriage to a closer relative than Boaz simply because she was a Moabite and she would have contaminated his family's purity.

Security ultimately came through faith in God and through the loyal commitment of people to others. That applied not only to the one who entered the new society (Ruth), but to those to whom they became attached (such as Naomi) and those who responded to the plight of the newcomer (such as Boaz).

Unlike the books of Ezra and Nehemiah which demanded that Jews divorce foreign wives, the book of Ruth showed that outsiders who are prepared to profess faith in Israel's God can be fully assimilated into Jewish society.

Not only could a foreigner be completely assimilated, but he or she might be God's instrument for some higher good. The Book of Ruth seeks to make a case for the inclusion of all people, Jew and non-Jew, to be seen as God's people.

For Christians, the Book of Ruth represents an early sign that the Messiah, a leader sent from God, would liberate all of humankind, not solely the Jews. Jesus' lineage was from David's family, in both

blood through his mother Mary, and legal kinship through Joseph. This made him credible among his followers as being the promised Messiah who would liberate the Jews.

The Jonah story, Genesis chapter 12 and the book of Ruth prepare us for the Gospel preached by Jesus. God's love and acceptance is for all people, not just those who think they are his chosen ones.

10: Sex and Sexuality

Sex is great. It has helped to produce the great variety of life forms which we see around us, it has a moderating role by controlling how much variation occurs, and it puts a sparkle into life. For humans it can also be profoundly emotional, bringing out the best and the worst in us.

When Creationists and literalists speak on sex, they quickly demonstrate their ignorance of the Bible and their lack of understanding of it. This shallowness should not be ignored, for it has damaged many people's lives, and has trivialized sex and sexuality. Some examples follow.

Example A: Error by Creationists. God made two persons, Adam and Eve, and all humans have come from them.

Comment. This is blind to the purpose of the early chapters of Genesis. See chapter 6: The origin and meaning of Genesis chapters 1 and 2.

When teaching science at a high school, I heard young people being told in religious education classes by a minister that Eve was made from Adam's rib, and that is why women and men have different numbers of ribs! He then said: *Go and check with your doctor.* Clearly, that minister had not done his own homework.

Of far more concern is the Creationist view that we are created either male or female. This is more than just untrue, it is profoundly damaging to people who are neither male nor female. Approximately 1% of births differ from standard male or female, and can be described as intersex or transgender or orchid (Alice Dreger *Ambiguous Sex or Ambiguous Medicine*, Hastings Center Report 1998). This is quite distinct from homosexuality, which will be considered shortly. The concern at the moment is about our fellow humans who are born with no identifiable gender, whose delayed hormonal identity does not match the physical appearance, or whose sex chromosomes are not XX or XY but are often XXY (Klinefelter's syndrome).

There are other chromosome variations as well, and they occur in 1 of 2000 live births, depending on what definitions are being used.

Pause for a moment and consider the day-by-day situation of someone who is intersex. They have to pretend to be male or female when they buy clothes, or apply for a driver's licence, or use a public toilet. Should they be referred to as brother or sister; uncle or aunt?

Creationists deny the existence of these people. Jesus, however, invites us to accept everyone, each person, as fellow humans made in the image of God.

Example B: Error by Creationists. The man is the head of the house, based on Genesis 3:16 in which Eve is told: *Your yearning shall be for your husband, yet he will lord it over you.*

Comment. To claim this on Biblical grounds is to misunderstand and misuse scripture. It assumes that Adam and Eve existed as persons, and that every person is either male or female. It also says that the most insightful, spiritual, capable woman should submit to the male she is married to simply because she is female and he is male.

The other Biblical passages used to support these views are almost exclusively written by Paul, a legalistic male writing to communities which were male dominated. Paul's Jewish background and training are apparent. The Good News, the Gospel, is that Jesus raised the status of women and foreigners and children. We are equal in the sight of God and towards each other. The comments in the Gospels to this effect carry even more weight when it is remembered that the Gospels were written well after Paul's writings, and in knowledge of such writings, and still maintain equality for all people including women.

Example C: Error by Creationists. Homosexuals are not natural; homosexuality is a disease of

choice.

Comment. This is another saddening case of limited understanding of the Bible and human sexuality, and the consequences can be disastrous. As each of us is formed in our mother's womb, we call on our genetic code to determine whether we will have male or female appearance. There is clear evidence that other parts of our genetic code, and our mother's external environment (her living conditions, including stress), determine the extent to which our maleness and our femaleness are expressed. In some persons the ratios of the male and female chemical hormones become disrupted, and act in an opposing fashion to the apparent sex of the embryo or foetus. The consequences of this chemical confusion can lead to a spectrum of expressions of human sexuality. As a result, a person may become very male or very female. But between these types are effeminate males, masculine females, and a lot of persons whose body chemistry does not match their physical appearance. For some people gender reassignment is at least a partial solution.

Creationists deny the existence of lesbian, gay, bisexual, transgender, and intersex and other people. Jesus calls us to accept all people as fellow humans made in the image of God.

Example D: Error by Creationists. Homosexuality is a disease which can be cured.

Comment. Medically this statement is false. Rigorous studies have shown that hormonal factors are major drivers of sexuality and sexual preference. To claim that *all homosexuals can be cured of their disease* is fraudulent and can be profoundly damaging.

It is possible that some persons claim to be LGBTQI because of social pressure to behave in a certain way, or because they desire to rebel against whatever happens to be their current group's social norms.

Biblically the Creationist position on homosexuality is doubtful, partly because Jesus did not specifically criticise it. Biochemically the Creationist position is indefensible. Our bodies use hormones as chemical messengers. They target particular parts of the body, and have longer lasting effects than messages carried by nerves. Hormones affect our growth rates, our pulse rates and our sexuality. Homosexuality can be a consequence of complex mixed hormonal messages. Homosexuals however are our fellow humans, some of whom are fellow Christians.

Creationists claim any persons who are LGBTQI are suffering from a disease.

Jesus invites us to accept all persons, LGBTQI or otherwise, as fellow humans made in the image of God.

Some general comments on sex and sexuality

Homosexuality is a very live issue in the church and in society generally, and deserves some closer attention from a Biblical perspective. I am indebted to Rev Emeritus Professor William Loader and to Emeritus Professor Walter Wink for their writings on this topic and from which the following insights are drawn.

William Loader was awarded a five-year Australian Research Council Professorial Fellowship Project (2005-2010) on *Attitudes towards Sexuality in Judaism and Christianity in the Hellenistic Greco-Roman Era*. He is the world authority on these matters, and is a Minister of the Uniting Church in Australia. In an article well worth reading, he notes that:

the Bible roundly condemns homosexuality and homosexual activity Its writers deplore homosexual acts as a deliberate perversion of human nature, a flouting of God's intention in creation.

On the basis of these facts about the Bible and the Church's commitment to the witness of the scriptures one might wonder why the issue of homosexuality should ever be raised. The trouble is that there have been a number of mature and respected people, including many deeply committed Christians, who have been telling us that they are homosexual and that the last thing on their minds has been to pervert God's will. When we turn back to the Bible, we must ask the question: Were the writers of the Bible aware of such people? The answer is fairly clearly: no. Right at the heart of its message is God's compassion and love. If, for these (homosexual) people, being homosexual is not a perversion, but simply the way some people are, then to discriminate against them or condemn them on that basis is to contradict the heart of the gospel message. In other words, if we are not careful, we can end up using the Bible in ways that contradict the heart of its message.

But, we might ask, surely some forms of homosexual activity, even with the purest of intention and mutual love, are contrary to nature?

We now recognise that reproduction of the species is only one aspect of sexual activity. There is much more to it. Why try to exclude people with homosexual orientation from this aspect of their humanity?

....

The Church must not chase the fashions; it must look to Jesus and to the heart of the gospel. But this means airing the issues critically and asking: what does it mean to be faithful to the scriptures in more than a superficial sense?

Homosexual people will tell us they are not the people that the biblical writers were talking about, deliberate perverters of God's order. They are a genuine minority of human beings with a natural orientation towards people of the same sex who should be afforded the respect, tolerance and opportunities which all minorities deserve. In compassion for them we need to listen to all that the Spirit is saying to the churches through the witness of the scripture in the face of new questions we cannot avoid.

William Loader: *What does the Bible say on Homosexuality?*

Walter Wink of the Auburn Theological Seminary, New York, states the following, after which is my summary of his detailed contribution to the website shown below. I encourage you to read the full text.

Homosexuality was regarded as an "abomination" for several reasons. The Hebrew prescientific understanding was that male semen contained the whole of nascent life. With no knowledge of eggs and ovulation, it was assumed that the woman provided only the incubating space. Hence the spilling of semen for any nonprocreative purpose, as in coitus interruptus (Gen. 38:1-11), male homosexual acts, or male masturbation, was considered tantamount to abortion or murder. Female homosexual acts were consequently not so seriously regarded, and are not mentioned at all in the Old Testament (but see Rom. 1:26).

In addition, when a man acted like a woman sexually, male dignity was compromised. It was a degradation, not only in regard to himself, but for every other male. It was also considered un-Jewish. No similar command was written to ban homosexual acts between females.

The Hebrew Bible / Old Testament makes it clear that males committing homosexual acts are to be executed. Anyone who wishes to base his or her beliefs on the witness of the Old Testament must therefore demand the death penalty for everyone who performs homosexual acts.

Hebrew Bible / Old Testament texts have to be weighed against the New Testament. Paul's unambiguous condemnation of homosexual behaviour in Rom. 1:26-27 is well known. *For this reason, God gave them up to degrading passions. Their women exchanged natural intercourse for unnatural, and in the same way also the men, giving up natural intercourse with women, were consumed with passion for one another. Men committed shameless acts with men and received in their own persons the due penalty for their error.*

Paul really thought that those whose behaviour he condemned were straight, and that they were behaving in ways that were unnatural to them. Similarly, the relationships Paul describes are heavy with lust; they are not relationships between consenting adults who are committed to each other as faithfully and with as much integrity as any heterosexual couple. Paul believes that homosexual behaviour is contrary to nature, whereas we now know that it is seen in a wide variety of species.

There are problems with using the Bible literally without understanding the culture within which it is placed. I invite you to consider the consequences of applying the following Biblical commands literally.

1. Old Testament law strictly forbids sexual intercourse during the seven days of the menstrual period (Lev. 15:19-24; 18:19), and anyone in violation is to be cut off from their people.

2. The punishment for adultery is death by stoning for both the man and the woman (Deut. 22:22), but here adultery is defined by the marital status of the woman. According to the Old Testament, a man cannot commit adultery against his own wife; he can only commit adultery against another man by sexually using the other's wife. And a bride who is found not to be a virgin is to be stoned to death (Deut. 22:13-21), but male virginity at marriage is never even mentioned.

3. Nudity, one characteristic of paradise, or near nudity is regarded in Judaism as reprehensible (2 Sam. 6:20; 10:4; Isa. 20:2-4; 47:3). When one of Noah's sons saw his father naked, he was cursed (Gen. 9:20-27).

4. Polygamy (many wives) and concubinage (a woman living with a man to whom she is not married) were regularly practised in Old Testament times. Neither of these practices is condemned by the New Testament (with the questionable exceptions of 1 Tim. 3:2,12 and Titus 1:6).

5. A form of polygamy is the levirate marriage. In Old Testament times, when a married man in Israel died childless, his widow was to have intercourse with each of his brothers in turn until she bore him a male heir. That child would be considered to be the child of the dead man. Jesus mentions this custom without criticism (Mark 12:18-27).

6. Nowhere does the Old Testament explicitly prohibit sexual relations between unmarried consenting heterosexual adults, as long as the woman's economic value (bride price) is not compromised. That is, as long as she is not a virgin.

7. Social regulations regarding adultery, incest, rape and prostitution are, from an Old Testament viewpoint, determined largely by considerations of male property rights over women. Prostitution is considered quite natural and necessary as a safeguard of the virginity of the unmarried and the property rights of husbands (Gen. 38:12-19; Josh. 2:1-7). A man is not guilty of sin for visiting a prostitute, though the prostitute herself is regarded as a sinner.

8. Jews are supposed to practise endogamy: marriage within the twelve tribes of Israel.

9. The law of Moses allows for divorce (Deut. 24:1-4). Jesus categorically forbids it (Mark 10:1-12), though Matt. 19:9 softens his severity.

10. The Old Testament regards celibacy as abnormal, and 1 Tim. 4:1-3 calls compulsory celibacy a heresy. Yet in 1022 and 1074 CE the Roman Catholic Church made it mandatory for priests and nuns.

11. In many other ways we have developed different norms from those explicitly laid down by the Bible. For example: *If men get into a fight with one another, and the wife of one intervenes to rescue her husband from the grip of his opponent by reaching out and seizing his genitals, you shall cut off her hand; show no pity* (Deut. 25:11,12). We, on the contrary, might very well applaud her for trying to save her husband's life.

But in Genesis 24:1-4 and Genesis 47:29 contact with the genitals by a male was acceptable to make an oath inviolable.

12. The Old and New Testaments both regard slavery as normal and nowhere categorically condemn it. Part of that heritage is the use of female slaves, concubines and captives as sexual toys, breeding machines, or involuntary wives by their male owners, which 2 Sam. 5:13, Judges 21:19-21 and Num. 31:18 permits.

Virtually everyone would agree with the Bible in rejecting incest, rape, adultery, and intercourse with animals. But we disagree with the Bible on most other sexual mores.

The Bible condemns the following behaviours which society generally allows: celibacy, exogamy (marriage with non-Jews), naming sexual organs, nudity, masturbation, and birth control.

Conversely, the Bible permits behaviours that society today generally condemns: prostitution, polygamy, levirate marriage, sex with slaves, concubinage, treatment of women as property, and very early marriage (for the girl, age 11-13). And while the Old Testament accepts divorce, Jesus forbade it. (Note comment 9, above)

Of the sexual mores mentioned here, we generally agree with the Bible on only four of them, and disagree with it on up to sixteen.

There is no Biblical sex ethic. Instead, the Bible exhibits a variety of sexual mores or customs, some of which have changed over the thousand-year span of biblical history. Many of the practices that the Bible prohibits, we allow, and many that it allows, we prohibit.

Sexual mores or customs must be tested against the love ethic exemplified by Jesus. Such a love ethic is not complicated. It does not exploit or dominate. It is responsible, mutual, caring, and loving. Augustine's inspired phrase is *Love God, and do as you please*.

Christian morality is not a means for repressing urges, but a way of expressing the integrity of our relationship with God.

In a frequently overlooked statement, Jesus said: *Why do you not judge for yourselves what is right?* (Luke 12:57). This freedom is unsettling for many Christians: they would rather be under law and be told what is right. Yet Paul himself echoes Jesus' sentiment when he says, *Do you not know that we are to judge angels? How much more the things of this life!* (1 Cor. 6:3).

In the slavery debate the churches were finally driven to see and adopt Jesus' identification with and inclusion of outsiders: the harlots, tax collectors, diseased, maimed, outcast and poor. God sides with the powerless: God liberates the oppressed. God earnestly desires the reconciliation of all things. We need to understand that the gospel's call is to love and care for all people including LGBTIQI, and to walk with them, especially when they experience rejection and isolation.

We have not reached a consensus about who is right on the issue of homosexuality. But what is utterly clear is that we are commanded to love one another. We need to love not just our gay sisters and brothers who are often sitting beside us, unacknowledged, in church, but all who are involved in this debate.

See the full text at godweb.org/wink.htm

Some confusion concerning relationships is caused when people look at the Bible as if Genesis was the first book written, which it wasn't. Some of the confusion is caused by the statement that man and woman become one flesh (Genesis 2:24), and yet in the following chapters and books of the Bible it is very clear that man was frequently joined to more than one woman, as wives and concubines and slaves. To dismiss the activities of Abraham, Isaac, Jacob/Israel through to King David and King Solomon as simply examples of 'backsliding' or sinful oversight is no answer.

The answer is more complex than that, but clear. As described earlier in chapter 6, the beginning of Genesis was written following the overrunning of the nation in 587 BCE, and it includes the references to a man and a woman becoming one flesh. This was written after the times of Abraham, David, Solomon and others and their multiple wives and concubines and slaves.

It was a part of the progressive change seen in God's people, from nomads and primitive herders to slaves to desert wanderers to settled people. In parallel, their concepts of God changed, from vengeful creator of the universe, to personal relationship with a particular nation and its prophets, to personal relationship with individual members of that nation. See Psalm 16: the writer is even looking beyond death, mentioned in verse 10. The relationships between men and women changed too, from dominant males each having many women and other possessions, to dominant male with few women, to dominant male with one woman (Genesis 2), to equality between one man and one woman as promoted by Jesus.

This still leaves a problem unresolved: what should our attitude be to gay marriage or same gender marriage.

On the one hand there is the proposition that any two people who are committed to each other in the long term should be allowed to enjoy the rights and privileges and terminology of marriage, as an application of the principle of equality.

One of the opposing propositions is that marriage is between one man and one woman, and that people in a same gender relationship should be treated equally before the law in all ways except for the use of the word *marriage*. That is, there is a difference between the terms *equal* and *identical*.

What is clear is that the decision on these propositions is for each of us to make, and is with the results of that decision that each of us has to live, day by day.

Another lively debate among Christians, and in society in general, is prostitution.

Why does the Bible call Tamar righteous after deceiving Judah, her father-in-law, by posing as a prostitute (Genesis 38:13-26; Ruth 4:12), and giving birth to two sons as a result? Tamar and her two sons are listed in the genealogy of King David and Jesus (Matthew 1:3). Why does the Bible list Rahab the harlot as a woman of faith, even though there is no indication in the Bible that she repented of her profession (Joshua 2 and 6:17; Hebrews 11:31)? Why does the Bible refer to Jesus as a friend of prostitutes? Why does Jesus say that many prostitutes are entering the Kingdom of Heaven, while many so-called righteous men will be cast out? Why were Augustine and Aquinas opposed to laws that would make prostitution illegal?

When Jesus was addressing the chief religious leaders of his day, he said:

I tell you the truth, the tax collectors and the prostitutes are entering the kingdom of God ahead of you (Matthew 21:31). Note the verb which is used about tax collectors and prostitutes: *they are entering*. This tells us that it is happening now, and that the kingdom of heaven is now and within touching distance, as we see in Luke 17:21: *The kingdom of God is not coming with signs to be observed – it is within you, in your midst*.

Many of us would prefer to say: *Of course prostitutes can enter the kingdom of God if they repent*. Perhaps many modern-day prostitutes do need to repent. But so do we. And perhaps our need of repentance is even greater than that of a prostitute because of our delusions of self-righteousness.

Is it possible for a prostitute to repent of her sins, while continuing to work as one? Remember that Jesus said that the tax collectors and the prostitutes “are” entering the kingdom of God. He did not say that the prostitutes “will be” entering the kingdom of God “if they stop being a prostitute”.

We need to recognise the difference between the culture of Jesus’ day and the culture of our day. These days if a prostitute wishes to change her profession, there are plenty of other vocations readily available. But in Jesus’ day, there were basically two professions: wife or prostitute. Once a woman became a prostitute in Jesus’ day, it would have been virtually impossible to get married. It would have been extremely difficult for an ex-prostitute to support herself. It seems that the advice Jesus would have given to a prostitute would have been to keep doing what she was doing, but do it in a way that shows love and care for all concerned.

Part of the problem is that the Bible recognises two types of prostitution. In addition to secular prostitution there was cult prostitution in which having sex with a cult prostitute was believed to represent having sex with the deity or god. In the Bible, cult prostitution is strictly forbidden.

Sex causes problems for Muslims and Jews as well, but that is a subject well beyond the scope and purpose of this book. One concern is their entrenched view of male dominance.

We should note, however, that for many Muslims the abusive and illegal practice of female genital mutilation (also called circumcision) is defended as a religious practice, in spite of a 2007 ruling by the Al-Azhar Supreme Council of Islamic Research in Cairo that it has no basis in Islamic Law. Also, is there a difference between prostitution and a common Muslim practice of Mutah marriage (short-term marriage) then divorce after a few days or less?

Concerning sexuality in Judaism and Christianity, I refer you again to William Loader’s excellent books and articles shown on his website. See also my list of references and recommended reading.

Jews, Christians and Muslims can benefit from listening again to the writers of the beginning of Genesis. We see that the story about the creation of Adam and Eve is not about who came first, but who is missing. On seeing Eve, the man’s emotional cry is: *This at last is bones of my bones and flesh of my flesh* (Genesis 2:23). His deep longing is satisfied. He knows that he has found the one without whom he cannot feel fully human. It is a story of human sexual need and recognition which reminds us of our own yearnings.

In the words of Barry Robinson, of *Keeping the Faith in Babylon: My wife is my woman, but not in some possessive sense. Nobody owns anybody. They just think they do. She is my woman for one reason and one reason only: because she has been entrusted to me by a gracious God, a God who knows me all too well, who knows I am a dead duck without my woman. To find in the arms of another human being that opposite missing part of oneself is what it means to find your man or your woman.*

The law of love, the genuine heart-felt concern and action for another, is paramount. Laws can help at times to shorten the path to a solution in relationships, but the law of love is the ultimate test, according to Jesus.

Sex is great, and the fulfilment of human sexuality is a gift of God. There is inherent in our sexuality a deep and powerful longing for our sexual companion. For most people it is for their sexual opposite. The purpose of that longing is also clear: that the two shall become one flesh.

But, as with other major aspects of our lives together as communities, the controls or limits on acceptable and unacceptable behaviour are not clearcut, and vary from society to society and from age to age.

We have already seen that the Bible's views regarding sex are not as clear cut as we might wish, they are contradictory in places, and frequently they are in opposition to what is considered to be good Christian practice today.

The final words are those of Jesus, who said that marriage is not an issue for people in heaven, since everyone will be like the angels there, and *they neither marry nor are given in marriage* (Mark 12:25). Marriage is not for angels: it is for imperfect people who are serious about being in a lifelong marriage relationship.

What we are left with is Jesus' continuing call to love as God loves, to accept all people just as they are, and to seek to build a new creation – a new society – based on love.

We see once again that Creationism trivialises the deeper meaning of the Bible. The effects of literalism and creationism on sex and sexuality have been and are significant. The consequences of this distortion on individuals, families and society can and should be avoided. Let the Bible speak, and let us listen.

Then let us respectfully enjoy this gift from God. In the words of Martin Luther, of the Reformation five hundred years ago, who by this stage was no longer a priest and was married:
To consider the transcendental when in one's wife's arms shows, to put it mildly, lack of taste, and is not what God expects of us.

11. Christology: Jesus then and now

Christology is the study of the nature and person of Jesus Christ as recorded in the Gospels and the letters of the New Testament. It considers the relationship of Jesus' nature and person with the nature and person of God. It also considers Jesus' ministry, his acts and his teachings.

Some things about Jesus can be determined with confidence: *his Galilee was conservative Jewish (stone jars for purity, immersion pools, and no pig bones), poor, but not destitute, networked with the Jerusalem temple, but distant, and probably characterised by the seemingly eternal and eternally warranted sense that people at the centre "don't really understand us"* ⁽²¹⁾. William Loader

It is helpful to remember that the Gospels are theologies about Jesus rather than what a Western mind would call factual biographies. These Gospels – Matthew, Mark, Luke and John – were written at particular times and places for particular audiences, and this is seen in the way in which they use words and images.

The gospel attributed to Matthew seems to reflect a largely Jewish setting where mainly Jewish Christians have competed unsuccessfully for synagogue leadership and find themselves alienated.

John's gospel is not so different in setting but very different in its response, reflecting a highly imaginative and creative account in which Jesus' engagement in dialogue has him speaking the language of Christian faith rather than that of the Galilean Jew.

Luke is different again, concerned with unity and continuity with Israel and across the Jewish and non-Jewish churches of his day, and adding a second volume to his work (Acts of the Apostles), which brings together old traditions from the church's formative years within an idealising framework.

Mark is seen by most for good reason as the earliest, reflecting values of non-Jewish Christianity of a kind that traced its origins to Paul's mission, and writing around 70 CE, some 10 to 15 years before Matthew and Luke, who made his work the basis for their own. ⁽²¹⁾ William Loader

As we have seen so far in this book, each person in each generation can read the Bible literally, and accept, for example, two persons Adam and Eve; the Noah flood; Jonah and the fish; women not being allowed to speak in church; and the virgin birth of Jesus. Many people make this choice and, by doing so, limit their vision of God and his world.

Other people say that belief in the Bible as being literally true is a relic from a past age, and is only of comfort to non-religious classical scholars or to members of closed communities using their beliefs as a fortress.

A third alternative is to believe that the Bible contains God's word within a text which also carries information about the persons who have physically written it. By disentangling these strands, more can be seen of the nature of God and his message than if we say that the whole Bible is literally true.

This third alternative I find to be more than exciting and challenging: it speaks to my inner being in a way which is profoundly deep and meaningful.

A fourth alternative is to throw away any belief system and lead a hedonistic or bohemian lifestyle. The philosopher Alain de Botton in *Status Anxiety* ⁽¹⁸⁾ seriously suggests the bohemian lifestyle as a possible cure for the *Status Anxiety* experienced by so many people in the Western world today.

And then Alain, who is an atheist, also recommends Christianity as a cure for *Status Anxiety*. He notes that this Jesus continues to have an impact two thousand years after his execution, and says that *to encourage fellow-feeling, Jesus urged us to look at grown-ups as we look at children. There is no such thing as a stranger, a Christian would insist, there can only be an impression of strangeness born out of failure to acknowledge that others share in our own needs and weaknesses. Nothing could be more noble, or more fully human, than to perceive that we are indeed fundamentally, where it matters, just like everyone else.* ⁽¹⁸⁾

For Christians the nature of the status anxiety can be different in content and emphasis. The normal and expected pleasures and pressures of daily life are partly of our own making and partly a reflection of our environment. There is an added dimension acknowledged to varying extents by Christians, and perhaps subliminally by non-Christians.

This added dimension concerns the Jesus of history. Did he really ever exist, and to what extent was he really a male human being? And how could he also be God? The discussions of this apparent paradox have continued in various ways for the past two thousand years.

There is no significant doubt that a man called Jesus of Nazareth was born about 4 BCE, was an itinerant religious reformer with a large following and was executed by the state in about 30 CE. His physical humanity is attested by the Gospel writers in that he ate, drank, slept, wept, and died.

This humanity became the focus of the Ebionites, a development of Judaistic Christianity: that Jesus was the natural son of Mary and Joseph and was the adopted son of God. The Ebionites denied the divinity of Jesus.

Other groups such as the Docetists (Illusionists) claimed that Jesus only appeared to be human, and point to texts such as *the Word became flesh* in John's Gospel. Two types of Docetists were widely known. In one version, Christ was so divine he could not have been human, since God lacked a material body. Therefore, Jesus could not physically suffer. That is, Jesus only appeared to be a flesh-and-blood man; his body was an illusion, a phantasm. Other Docetists held that Jesus was a man in the flesh, but Christ was a separate entity, who entered Jesus' body in the form of a dove at his baptism, empowered him to perform miracles, and abandoned him on his death on the cross.

Over the past three centuries there have been waves of scholarship focused on the quest for the historical Jesus. Albert Schweitzer (1875-1965) in *The Quest for the Historical Jesus*, reviewed former works on the historical Jesus. He showed that the image of Jesus had changed with the times and outlooks of the various authors, and he gave his own synopsis and interpretation of the previous century's findings. He maintained that the life of Jesus must be interpreted in the light of Jesus' own convictions.

Karl Barth (1886-1968) was a major contributor to the next wave in Christology. He drew attention back to Jesus' place in the Trinity, and that revelation in the Bible means God unveiling himself to humanity – a revelation that cannot be discovered by humanity simply through its own intuition. Through his massive 13 volume *Church Dogmatics*, one of the most important theological works ever written, Barth developed his systematic theology around the themes of Revelation, God, Creation and Atonement.

Rudolph Bultmann (1884-1976) contended that only faith in the kerygma, or proclamation, of the New Testament was necessary for Christian faith, not any particular facts regarding the historical Jesus.

More recently The Jesus Seminar, founded by Robert Funk in 1985, used 150 scholars to treat the gospels as fallible historical artefacts, containing both authentic and inauthentic material. John Dominic Crossan and Marcus Borg were Christians and major members of the seminar: their writings are worth reading.

The seminar's reconstruction of the historical Jesus portrays him as an itinerant Hellenistic Jewish sage and faith healer who, through startling parables, preached a gospel of liberation from injustice. Jesus preached about the Kingdom of God as being already present but unseen; depicted God as a loving father; fraternised with outsiders; and criticised insiders. According to The Jesus Seminar, Jesus was a mortal man born of two human parents, he did not perform nature miracles, nor die as a substitute for sinners, nor rise bodily from the dead.

In contrast, there are many scholars who would disagree strongly with the contributors, methods and findings of The Jesus Seminar. And for millions of Christians living today Jesus is alive and continually present with them, sharing their joys and sorrows, helping them to be carriers of love to those around them, and helping them to make sense of life.

For CS Lewis the claims of new life in Christ made no sense. Then in part through his friend JRR Tolkien, a Christian who wrote *Lord of the Rings*, Lewis changed from being an outspoken atheist to a prolific and respected Christian writer, producing *The Chronicles of Narnia* and his lesser known *Screwtape Letters*. In those letters, from a senior devil to a junior devil on how to guide 'the Patient' away from 'The Enemy' (God), the senior devil advises to keep clear of physicists 'because we don't have much luck with physicists'. He said that with good reason.

Read again the comments by James Jeans and Werner Heisenberg in Chapter 7: Original Sin. Heavy physics of the Einstein Relativity type and some forms of mysticism do not have a lot to distinguish them from each other. For each group, time and existence are elusive and cannot be contained.

We talk of past, present and future as if they are distinguishable. Jesus said that he was Alpha and Omega, the beginning and the end, a single existence, a continuity of being. When heavy physicists talk of the space-time continuum they easily go beyond an $E=mc^2$ relationship to talk of time itself being a form of energy. In that sense they are shaking hands with many mystics. Discussing this after church

one day could be interesting, but probably not a good idea.

Lively debate in the church is not new, however. We know from the New Testament that the debates which took place in the early church were noted for their rigour and vigour. Topics included the Jesus paradox (whether Jesus was divine or human or both), and whether Gentile converts to Christianity had to first be circumcised as Jews, and whether the food laws of Judaism applied to Christians.

Today we debate homosexuality (see chapter 10), whether the Bible is literally true throughout (see chapter 3), the virgin birth of Jesus (see below), and the coming together of Christianity and evolutionary theory (see chapter 16).

In each of these debates, literalism and Creationism state their case loudly, often supported with impressive media presentations. But can literalism and Creationism distort our understanding of who Jesus was and what he did?

Let's take a closer look at the doctrine of the virgin birth of Jesus. It could be enlightening, and bring us into a better understanding of God's continuing presence. Only in Matthew 1:22, 23, and Luke 1:27 do we read of the "virgin birth" of Jesus, and yet it has found its way into the creeds of the church and many Christmas carols.

All this took place to fulfil what the Lord had said through the prophet: "The virgin will be with child and will give birth to a son, and they will call him Immanuel" - which means, "God with us." Matt 1:22,23
In the sixth month, God sent the angel Gabriel to Nazareth, a town in Galilee, to a virgin pledged to be married to a man named Joseph, a descendant of David. The virgin's name was Mary. Luke 1:27

These texts are linked to just one verse in the Old Testament, in Isaiah 7:10-17:

*Again the Lord spoke to Ahaz, saying, Ask a sign of the Lord your God; let it be deep as Sheol or high as heaven. But Ahaz said, I will not ask, and I will not put the Lord to the test. Then Isaiah said: "Hear then, O house of David! Is it too little for you to weary mortals, that you weary my God also? Therefore, the Lord himself will give you a sign. **Look, the young woman is with child and shall bear a son, and shall name him Immanuel.** He shall eat curds and honey by the time he knows how to refuse the evil and choose the good. For before the child knows how to refuse the evil and choose the good, the land before whose two kings you are in dread will be deserted.*

The Lord will bring on you, and on your people and on your ancestral house such days as have not come since the day that Ephraim departed from Judah - the king of Assyria. (NRSV: My emphasis added)

The first 39 chapters of Isaiah were written by Isaiah, and possibly his disciples, more than 700 years before the birth of Jesus. Two centuries later at the time of the exile another prophet added chapters 40 to 55. After the exile another person added chapters 56 to 66.

Leading up to chapter 7 in Isaiah we read that King Ahaz was King of the two southern tribes of Judah / Benjamin, and known as the Judahs / Jews. Ahaz is portrayed as being evil, and was acting more as an independent earthly ruler, rather than fulfilling the special 'king as servant' role, an intermediary between God and his people. He was only 20 years old, and had been worried that the nation would suffer from the combined opposition of the ten tribes to the north (Israel) and Damascus (Syria). So he called on Assyria to assist, even sacrificing his son to the false gods of Assyria (2 Kings 16:3). By this act he had turned his back on God, and on God's promise to be actively present with King David and his successors.

We read that the prophet Isaiah's message to King Ahaz however was that God would still keep his promise of his continuing presence, that a young woman was pregnant, and that God's presence, *Immanuel* or *God-with-us*, would be confirmed in that child. That child Hezekiah became the fourteenth King of Judah and the *son of God* (Is. 9).

But was the young woman a virgin? The Hebrew word *almah* does not indicate sexual experience. *Almah* in the Greek translation of the Old Testament (the Septuagint) is *parthenos* and in the Latin translation is *virgo*. Neither of these means *virgin* as we use the term in English, but the writer of Matthew chose to interpret *almah* as *virgin*. No-one before Matthew had used Isaiah 7:14 that way.

The Isaiah passage shows very little interest in the woman or by whom she becomes pregnant. It is interested in the child as a sign. Matthew's Gospel, on the other hand, cites Isaiah 7:14 as a prophecy about Christ seen against the Hellenistic (Greek) idea of a divine pregnancy which, without the presence of a human father, points to the child as a divine gift. It is in this context that the virginity of Mary is emphasized.

Howard Wallace: lectionary resources

The writers of the gospels had a story to tell, but not as biographies. The gospels were theologies whose purpose was to convince the reader of the cosmic significance of Jesus. He was a gift from God. Jesus was the Living Word of God. See John 20:31 and 1 John 5:13.

We can understand this better when we realize that in Jewish story telling there is a distinction between the unquestionable essence of the story (Midrash Halakha: legalities and legal statements, as in parts of Deuteronomy) and the means by which the nation's story is updated and made more understandable for the audience (Midrash Aggadah: non-legal homilies, as in Ruth and Jonah).

The Midrash Aggadah of the gospel birth stories is that Jesus' mother Mary was a pure, sexually inexperienced young woman whose pregnancy resulted from a God-human encounter. Her sexual inexperience also guaranteed that Jesus was the first born, and to Jews in particular this linked to their understanding of the first born being given to God. For Jews, Samuel the prophet would have come to mind.

The verses around Isaiah 7:14 were one of many expressions of hope that God would rescue his people. During the following 700 years up to the birth of Jesus there were invasions, deportations, destruction of the temple, and slavery. But God's promise of a Messiah sustained them. The gospel stories confirmed that Jesus was that Messiah. He was the one who brought good news to the poor, proclaimed liberty to captives, and gave sight to the blind.

Once again, we have a choice. On the one hand we can say: *Jesus was born of a virgin: two Gospels say so*. On the other hand, we can be open to the context and depth of meaning available to us in these texts: and discover a much richer understanding of *God with us*. We will find that there is more to these texts than simple prediction and fulfilment. King Ahaz had turned away from God, but God's continuing presence with him was confirmed by Isaiah. This helps us to remember that in our own times of doubt and rejection God is still with us.

The Gospels and Revelation were probably the last parts of the New Testament to be written. At that time, as shown in the timeline, Appendix 1, all of Paul's letters had been written, and copies were circulating. Waves of civil unrest had led to the destruction of the Temple in 70 CE, the Christian Church had become increasingly identifiable in its own right rather than as a sect of Judaism, and the Christian message of hope and salvation was beginning to be heard by an increasing number of Gentiles and Jews.

Whether Gentile or Jew, the nature of commerce and trade had led to an increasing awareness of the beliefs and practices of other cultures. In particular, the infant church became aware of the deeply ingrained beliefs - the cultural myths - of the Greeks. A common component of Greek mythology explored the origins and nature of life through stories of sexual encounters between various gods, and also between gods and humans.

Into this environment the Gospel writers told the story of Jesus, their hero, a man who was God-like in his nature. Because Hebrew has few adjectives, the term that the writers used for Jesus was *Son of God*. This did not necessarily mean it was a *God who biologically fathers a son* relationship. It meant *having the qualities of God*. This is why Jesus even refers to himself as *Son of Man* (Matt 8:20, 11:19, 26:46, 26:64 and others). The Old Testament prophet Ezekiel is called *son of man* 39 times to remind him of his humanity (one of them being Ezek 2:1), and James and John are called *sons of thunder* in Mark 3:17. Adam is called *son of God* in Luke 3:38. Barnabas is called *the son of consolation* in Acts 4:36. A *son of peace* is one who we would call a peacemaker, or who has an aptitude for peace.

To add weight to their information about Jesus, and to link the Christian story back into the history of the Jews, reference was made to Isaiah 7:14. This gave the story of Jesus some additional historical

depth.

Because ancient Jewish and Greek understandings are no longer significant in our society, the essential relevance of Jesus' birth being of a virgin is diminished. Perhaps we should be focussing less on the Gospels' claims of the virgin birth of Jesus, and look more to whether he was the Messiah, Immanuel, God-with-us.

Perhaps we should be asking: *Has Jesus made the blind, including spiritually blind, see? Has Jesus announced and demonstrated the presence of the Kingdom of God among us?* This is Jesus, Immanuel, God-with-us. But what does *Immanuel, God-with-us* really mean? Who is this Jesus and what does he mean for our lives today?

To help us in our own quest, let us digress for moment.

I must confess that I don't believe in atoms. This may seem surprising at first, coming from a person whose science major at university was organic chemistry. But I am in good company.

JJ Thomson (1856-1940) was awarded the Nobel prize in 1906 for proving that electrons are particles. His son, George Thomson (1892-1975), was awarded the Nobel prize in 1937 for proving that electrons are waves. And each one is supported by the observable facts. Each of these ways of looking at matter is useful and helpful in certain circumstances, but neither way is the complete truth. Each way is a means of helping us to look at reality and to understand it. It is not whether JJ Thomson or his son *believed* in atoms or electrons, nor whether I *believe* in them. They are useful constructs for us to discuss the world we live in. The world around us can be described as particles or as waves, and each of these ways of looking at the world is valid and useful in certain circumstances.

What has this to do with Jesus, Immanuel, God-with-us?

Occasionally I hear songs like *Are you washed in the blood of the Lamb*. Songs like these reflect a particular view of the relationship between us and God. They describe Jesus as the sinless sacrificial lamb who died in our place, and that his death was a debt paid to God who is angry about our sin. This approach helps us to examine what sin is, and to consider our own continuing sinfulness. This is the approach in many of Paul's letters which were written to people from a Jewish background.

After the early church was established, Paul had become a new convert, and he wrote the church's theology as he saw it: legalistic and focusing on the sacrificial death of Jesus. Jewish members of his audience understood a lot about sacrifices, and as such this portrayal was useful for them. Paul led people from what they knew and understood into a more complete understanding of the law and its fulfilment in Jesus.

But this was not the understanding through which the early church grew. There was another and earlier way of looking at Jesus. We read in the first chapters of Acts that, in the early church, Christ was preached as the risen Lord. His victory over death was a triumph of good over evil, a triumph of light over darkness.

In Acts chapter 2, Peter quotes parts of Psalm 16 and Psalm 110 and then encourages people to be baptised for the forgiveness of their sins. There is no mention of Christ's sacrificial death.

The author of Acts wrote both it and the Gospel of Luke probably 20 or 30 years after Paul's death. That writer of Acts describes Paul's life and activities, and yet appears to be unmoved by Paul's writings about Jesus being the sacrificial lamb.

So which one is right? Which one should we believe: *Washed in the blood of the Lamb* or *God giving again to Jesus the life which he had so willingly given up?*

I said that I don't believe in atoms. We may never know what is the truth about matter, but some aspects of matter can be understood by seeing matter as waves, and sometimes it is better to think of matter as particles. If we want to understand the energy of the universe then waves are probably more

helpful in describing it, but if we want to explain why water makes paper fall apart, or why you can go further on a litre of diesel than a litre of petrol then seeing matter as particles can be more helpful.

In a similar way it is helpful at times to see Jesus as the sacrificial lamb. At other times our relationship to God and to other people is helped more by seeing Jesus as the Godly man who died and whose life lives on in us as the mediated grace of God. At different times of our lives, even within any one day, these and other understandings are more useful or less useful. At all times however we can be encouraged and guided by understanding Jesus as Immanuel, God-with-us.

But do not be distressed if some confusion remains. According to Carl Jung (1875 – 1961) Swiss psychotherapist and psychiatrist: *The greatest and most important problems of life are fundamentally unsolvable. They can never be solved. They are only outgrown.*

Or again, in an article titled *Psychotherapists or the Clergy: We Protestants must sooner or later face this question: Are we to understand “the imitation of Christ” in the sense that we should copy his life and, if I may use the expression, ape his stigmata; or in the deeper sense that we are to live our own proper lives as truly as he lived his in all its implications? It is no easy matter to live a life that is modelled on Christ’s, but it is unspeakably harder to live one’s own life as truly as Christ lived his.* ⁽¹⁹⁾

Sebastian Moore (1917-2014), in *The Crucified Jesus is no Stranger*, uses insights and terms from Jungian psychology, and sees *Jesus as the true Self, who is crucified by the ego. Healing comes from the realization that this Jesus is in fact our true self, and in making this true self the centre of our lives, rather than our ego.* ⁽²⁰⁾ These thoughts remind us of the sixth Beatitude: the bliss of the pure in heart. The death of ego brings life.

To help us in our growing, consider the words of Meister Eckhart (hugely influential Christian mystic theologian, 1260 -1327) who said that the virgin birth is something that happens within us. Christ is born in us through the union of the Spirit of God and our flesh. Eckhart saw the virgin birth of Jesus as not just a past event but a continuing event or phenomenon within us, the everlasting present.

John Sanford, a Jungian analyst and Episcopal (USA Anglican) priest, wrote in *Dreams: God’s Forgotten Language* ⁽³⁷⁾ that dreams are powerful compensations for our conscious egos. He maintained that, at the level of the dream, psychology and religion are inseparable.

It is high time the churches talked less about conscious commitment to ideals and creeds, and more about what to do with the living reality, our shadow. And it would be good if we clergy spent less time as Ivory Tower theologians and more as doctors of the soul. Perhaps God doesn’t know he was supposed to have stopped talking with people when they closed the Canon of the New Testament. He may never have been informed that his revelation is ended, and so he is still speaking to us in our dreams today. (p26)

The source of our religion is far deeper than either the superficial theories of many psychological schools or the lamentable intellectualism of many of our contemporary theologians. Small wonder academic theologians have preferred to ignore their nightly dreams: the voice of God can be extremely disturbing.

He notes that in his training to be a priest *there was not one single word spoken to me about the dream, in biblical commentaries there is scarcely thought given to the significance of the dream to religious experience - in spite of the great number of dreams in the Bible, and the high regard in which they were held by the early church. And as for preaching on a dream from the pulpit, it is virtually unheard of. The traditional ecclesiastical concept of the perfect person is one free from sin, dark thoughts, or any contamination with evil. We might point to the puritan ideal and Calvin’s attempt to found the city of God in Geneva. But there is another concept of perfection also: it exists where things are whole, complete, in order and harmony as their creator intended them to be. In this case there might be darkness involved in the pattern, but it would be part of its order, functioning with the other elements in a harmonious way. We might better describe this perfection as “completeness”.* (p53)

Richard Rohr, Franciscan priest and author of *Everything Belongs*, can be heard cheering.

If that sounds too radical, remember what we noted earlier, near the end of chapter 4. John records that Jesus said: *On that day you will realize that I am in my Father, and you are in me, and I am in you.*

(John 14:20). Jesus and the Father will take up residence in us. And in Luke 17:21, Jesus said: *The kingdom of God is not coming with signs to be observed – it is within you, in your midst.*

Or, in the words of William Loader, *I think it is better to be uncomfortable, to let Jesus be a first century Galilean Jew, living in a world of demons, on a flat earth, with a big bang eschatology, and doubtless much more belonging to his culture than I would find strange. I don't have to have a Jesus who matches my theology. It is OK to live with his otherness, to let it be, and then to take responsibility for how I then appropriate and respond to the tradition he generated, while acknowledging that what inspires me about him, his radical understanding of God's compassion, is more than enough to keep me going.* ⁽²¹⁾

12. Creationists: Modern Day Pharisees

To refer to Creationists as modern-day Pharisees is to link the creationist movement with a sect of Judaism which has a long and proud history.

After the destruction of the Second Temple in 70 CE Pharisaic beliefs became the basis for Rabbinic Judaism, which ultimately produced the normative traditional Judaism which is the basis for most contemporary forms of Judaism.

The Jewish Virtual Library

This shows that, around the time of Jesus, the Pharisees were well established as a sect of Judaism.

After the exile, in the fifth century BCE, Israel's monarchical form of government became a thing of the past. In its place the Jews created a community which was half State, half 'Church'.

When Hellenism (Greek culture) threatened Judaism with destruction, the more zealous among the Jews drew apart as Pharisees, meaning those who separated themselves from the heathen. They came into existence as a class in society about the third century BCE, and insisted on personal and national purity. Intermarriage with non-Jews was strictly forbidden and many such marriages previously contracted were dissolved. *And now make confession to the Lord the God of your fathers, and do his pleasure, and separate yourselves from the people of the land, and from your strange wives.* Ezra 10:11

Although the Pharisees were not of the exclusive Priestly class, they found their main function in teaching and preaching. This included teaching children, and missionary efforts among non-Jews. The Pharisees became the most rigid defenders of the Jewish religion and its traditions.

Their heroic devotedness increased their influence over the people, and in the course of time they, instead of the priests, became the sources of authority. The Pharisees became the spiritual fathers of modern Judaism, including their promotion of individual prayer and assembly in synagogues.

This prestige naturally produced arrogance and conceit in many of them, and led to an undermining of their ideals and the respect people had for them. In many passages of the Gospels we read of Jesus warning people about the Pharisees in scathing terms.

Phariseism, describing a type of behaviour, is recognizable beyond the bounds of Judaism, and beyond the time of Jesus. It has come to mean strict formal observance of a law, even to the point of hypocrisy. Phariseism can be seen throughout history in the noble and mighty movements which have then become devalued, and even destroyed, through excessively rigid defence of hard won political or religious battles.

An example which is relevant to the Creationism phenomenon is to see what happened to religious freedom in the early years of the United States of America, the land of the free. Some background or context is necessary. It will help us to understand the turmoil in Europe of the past five hundred years, the desire for tens of thousands of people to escape to *the land of the free*, and then what happened to that freedom.

In a claim which is now contested, Columbus discovered the New World, including what we now call the USA, in 1492. This was only 25 years before the Roman Catholic priest Martin Luther nailed his 95 theses, or propositions, to the church door in 1517 in Wittenburg, Germany. Luther's protests were significant initiators in what has become known as the Protestant Reformation, protesting against many practices in the Roman Catholic Church of the time, and forming alternative ways of being Christian.

Over the next few hundred years in the New World there was exploration of new lands and there was freedom to try new ways of living in community. In Europe however there was widespread civil unrest fed by concerns about plague, secular warfare and religious warfare.

In France the carnage and devastation of war ran from 1560 to 1629 in an attempt by Roman Catholicism to exterminate the Calvinistic (Protestant) Huguenots. The Huguenots were about a tenth of the population of France. In the St Bartholomew's Day massacre of 1572 some 50 000 Huguenots were massacred. Survivors were given fifteen days to become Roman Catholics or leave France.

The Thirty Years' War (1618 – 1648) was a much wider conflict and the worst of this period, becoming the longest continuous war in modern history. (The Hundred Years War, 1337-1453, was longer but has been described more accurately as 120 years of terror inflicted on France by English gangs aided by the King of England.) The origins of the conflict and goals of the participants were complex. It was a part of a major contest by many nations to have control of Europe.

When it started, the war was fought largely as a religious conflict between Protestants and Catholics in the 'Holy Roman Empire', which some have described as being not Holy or Roman or an Empire. Disputes over the internal politics and balance of power within that Empire played a significant part. The conflict rapidly widened to include most of Europe. An example of the confusion of alliances can be seen in that Catholic France joined the Protestant Union, which included powerful Sweden, in order to counter the Catholic Austrian Habsburgs and their Catholic ally, Spain.

Most of the war was fought on German soil, reducing Germany from being the most prosperous state in 1550 to one which took until the latter part of the nineteenth century to recover. More than half the population and two thirds of the removable property was swept away, and even cannibalism was practised. Most of the participating countries were bankrupted.

During this time there were four ministers in Eilenberg, Saxony. One left, two died of plague and the remaining one, Martin Rinkart, conducted up to 50 funerals a day. Yet living in a world dominated by death, including the death of his wife, Martin Rinkart wrote a prayer for his children to offer to the Lord. We sing these words now as the hymn *Now thank we all our God, with hearts and hands and voices*.

Although the Peace of Westphalia (1648) was a significant achievement, the carnage, mistrust and hatred of the previous century had taken its toll on those fortunate enough to survive.

It is against this background of religious persecution that thousands of people migrated to America in search of religious freedom. For the four decades from 1630 the population of Massachusetts was 1 300, 14 000, 18 000, and 25 000. In Virginia it was 3 000, 8 000, 17 000 and 33 000.

There was a vibrancy present in these colonies, and it was based on the need for learning based upon the scriptures. In Massachusetts in 1647 a law was enacted which was not matched by England until its Education Act of 1870. The Massachusetts General School Law of 1647 said, in part:

It being one chief project of that old deluder, Satan, to keep men from the knowledge of the Scriptures, as in former times by keeping them in an unknown tongue, so in these latter times by persuading from the use of tongues, that so that at least the true sense and meaning of the original might be clouded and corrupted with love and false glosses of saint-seeming deceivers; and to the end that learning may not be buried in the grave of our forefathers, in church and commonwealth, the Lord assisting our endeavors

.....

This law required each town of more than 50 householders to provide at once a teacher of reading and writing, and each town of one hundred householders to provide a grammar school to fit youths for the university. As a means for opening young minds to the love of learning this law was unprecedented, and paid significant dividends in later years.

But there was also a cost. The freedom of religion had been so hard to win, and so much hardship had been endured, that there developed in the American colonies a fear of losing this freedom. Freedom became defined to protect it. But such protection could also be used as a weapon against those who sought to challenge the Church's and State's interpretations of freedom.

It is ironic that to escape persecution many thousands fled from Europe to America. Yet within two or three generations many of these people had become as obsessive as Europe was about strict observance of their particular version of freedom and holiness. Persecution was widely practised, including even death by mob or by trial. These persecutors, enforcers of a particular viewpoint, could be called the Pharisees of their day.

The Creationist movement as we know it today gets its financial and emotional backing from churches and individuals who have links back to the thoughts and practices of those early and fragile conservative days. The mindset is one of fortress Christianity against the attacks of Satan.

The gospels show that this was not what Jesus lived or preached. The chapters on Creationism (Ch.2) and The Jesus Approach (Ch. 4) show how Creationism has led people away from Jesus' teaching.

Creationists, indeed all of us, should welcome the opportunity to change in the face of new evidence. Examples of such opportunities include the debates on abortion, gene technology, global sustainability, homosexuality and evolution.

To be labelled as a Pharisee on an issue is neither good nor bad. It does however carry a hint that the person so labelled is more concerned with the outward appearance than the inner condition. In this sense, the followers of the Creationist movement can rightly be considered to be modern day Pharisees.

Creationists are required to follow their long, prescriptive list of rules. They are not followers of the Way of Jesus, which was a journey beyond the Judaism of his time. Christians looking at the accounts of Jesus' Baptism (Matthew 3) and the Transfiguration (Matthew 17) see him in touch with a power beyond himself and yet also something deeply personal and from inside. The importance and the reality of this inner life were major drivers of his life and teaching. But for Creationists, the inner world is secondary and easily overlooked.

Jesus sought to include the inner journey as a necessary and legitimate part of being a complete person. When he said: *The kingdom of heaven is close at hand* (Matt 4:17, 10:7) and, to Nicodemus: *Except a man be born again, he cannot see the kingdom of God* (John 3:3), he was saying that the kingdom is a present reality which is accessible and can be experienced now. It is a new birth, a starting again.

In *The Lord's Prayer* there is the prayer for the kingdom to happen now. Then there is the prayer for daily spiritual feeding: *Give us this day our daily bread*. Jesus offers himself to all people as living, daily bread.

In Chapter 4 I mentioned that phagocytosis is a great word to drop on your visitors, and is based on the Greek word *phagein* (to devour). Amoebae and our white blood cells feed this way, surrounding and engulfing the target materials. *Phagein*, or devouring for nourishment, is one Greek translation of Jesus' words. Jesus said he was the bread of life: our only source of nourishment - by engulfing, partaking, consuming him and the meaning of his life. Another translation uses the word *trogein* which refers to animals audibly gnawing on bones. Jesus is something for us to chew over, to think about, to work on. This is inner work, not rules.

Jesus also showed that people were now able to relate directly with God. Jesus even said: *the kingdom*

of God is within you (Luke 17:21). Some translations can't handle the possibility that there is anything worthwhile in us and translate it as *among you*. In the early church, however, this statement was always translated into the Latin equivalent of the English word *within*.

We now have a deeper understanding of: *For I tell you, if your virtue goes no deeper than that of the Scribes and Pharisees, you will never get into the kingdom of heaven* (Matt 5:20). This was not an attempt to challenge or overthrow the Law. The invitation is for each person to rise above the Law through an inner and external completeness, a wholeness through acknowledgement and inclusion of their inner life and its shadow side.

It must have been deeply painful for Pharisees to hear Jesus say: *I tell you solemnly, tax collectors and prostitutes are making their way into the kingdom of God before you* (Matt 21:31). The problem was that, although the Pharisees were most careful about keeping the Law, their success had convinced them of their own righteousness and prevented them seeing their shadow side. They did not confront their inner condition. The tax-collector and the prostitute however were constantly confronted by their shadow side and their spiritual need, and so were able to become more complete.

We can look at the parable of the Prodigal Son / Loving Father (Luke 15:11-32) as a story about the two sides of one whole person. Each of us has within us a pharisaic elder brother and a wayward prodigal son. Only when we recognise these aspects of ourselves can we move into the grounds of the kingdom of God.

Another way in which Jesus put it is that we should become like little children (Matthew 18:3,4). Children put feeling and appearance and physical reality into the one basket and seem to have no problem with that. Father Christmas is real but he can still fly through the air, until adults teach them otherwise, teach them how to 'live in the real world', how to deny their inner self.

These reminders of the reality of the inner life, and their importance to Jesus and his message, are not considered to be important to Creationists. Such matters are seen as distractions from their basic message, as described in chapter 2, where they say:

The first 11 chapters of Genesis provide the foundation for the Christian faith — if Genesis cannot be trusted then the rest of the Bible has no basis.

The seven critical events in history are Creation, Corruption, Catastrophe, Confusion, Christ, Cross and Consummation.

I trust Genesis for what it is trying to say to us, but too often its message is drowned out by Creationism's simplistic and error-ridden calls to behave like twenty-first century Pharisees: *Believe our way or no way*.

At a deeper level, however, there may be darker forces at work. These forces may be manipulating the Creationist movement and its supporters.

When we see the vast amounts of time and money devoted to Creationism in its various forms, including its lies, a question arises about what the driving force is. Undeniably one driving force is the ability of Creationism and its cult status to generate large cash flows for printers, publishers, authors, film makers, and booksellers. This may be called a cynical view, but there is evidence it is true. This is however only a part of the story.

M Scott Peck, Christian psychiatrist, in his illuminating book *People of the Lie* ⁽²²⁾ says that all of us are, to varying extents, *People of the Lie*, driven by our fears, self-interest and actions which exclude others. Out of his clinical work Peck states his conviction that Satan exists, and gives some proof. He then says that as well as being *The Father of Lies*, Satan may be said to be a spirit of mental illness, located in the conscious mind.

Satan cannot do evil except through a human body, says Peck. *It must use human beings to do its devilry. In fact, the only power that Satan has is through its lies*. During an exorcism he describes, the five or six people assisting with the exorcism heard Satan say things such as *We don't hate Jesus, we just test him*,

and, *Love is a thought that has no objective reality*, and, *Science is whatever one chooses to call science*.

Satan, this spirit of mental illness (to use Peck's terminology), seeks to isolate us from the inclusive love of God and each other by means of lies, half-truths and diversions. It may be worth considering the possibility that Creationism and its associated busy people and commercial achievements are being used by Satan, the father of lies, to distract people from the simple message of Jesus.

If these words seem harsh, look at the evidence.

How often do Creationist printed and visual media consider the life and teachings of Jesus?

Instead, the purpose of Jesus' life is portrayed rather as the ultimate sacrificial lamb to be killed to satisfy God's anger at us.

Where do we hear of the 'Prodigal Son' story being about God's searching, outgoing, accepting love of the lost?

Where are the Beatitudes explained?

Where is the kingdom of heaven explained as a current emerging reality? (Luke 9:9-11)

If you read again Chapter 4: The Jesus Approach, you may ask:

Is this the same Gospel story and the same God promoted by Creationists?

and

Where do Creationists promote the humble, active, serving love to which Jesus calls us?

Jesus calls us to be the *salt of the earth* and *a light on a hill*. This is not a call to high status, or to form an exclusive religious club. In Matthew's gospel this call follows the Beatitudes, which call us to internalise and live the spirit of the law, rather than formalise it. Only when we do that, only when we are transformed, do we become the *salt of the earth* and *a light on a hill*. Then we are not Pharisees, we are just valued and visible proof of God's new creation.

13: Darwinism in Your Bible

Poor old Charlie Darwin. He has been blamed for a lot of things over the years, for all manner of evil including the breakdown of society and the current scourge of godlessness. Admittedly some of the controversy was self-inflicted and could have been avoided: he and those who championed his ideas were at times abrasive rather than explanatory. But even Darwin's detractors need to concede that his impact has been enormous in biological science, and in the way in which people view the world.

In essence, he and Edmund Wallace proposed a theory to explain the relational links they had observed between different types of organisms. Theirs was a huge leap forward for their times. Yet, in hindsight, the principles Darwin enunciated are really obvious, would have been discovered by others, and are possibly more widely applicable than in biology.

As described in chapter 5: The common Evolution / Natural Selection position, Darwin's principles are several observations and inferences.

1. All populations of organisms overproduce.
2. Populations (except human populations) remain relatively constant from year to year.
3. Members of populations exhibit variation in many factors.
4. The high death rate in populations is not random.
5. The genetic basis of these successful characteristics is passed on to the offspring.

Over millions of years the natural environment has selected which organisms will survive to reproductive age and successfully produce the next generation. This is not planned development by the environment or the organisms. The environment presents each new generation with circumstances in which not all can survive. What survives is simply the variety of that animal or plant which produces the greatest number of fertile competitive offspring in that year's conditions.

Many beautiful organisms have lost the competition for survival, and many ugly ones too. The common factor in their demise has simply been that other organisms have been more successful in survival and reproduction.

Perhaps these principles apply elsewhere.

It has already been noted in Chapter 4 that, hundreds of years before the Origin of Species hysteria of the mid nineteenth century, the debate about Creationism vs Evolution would have fizzled out. From a Biblical-theological viewpoint there were evolutionary approaches evident in the writings of Origen, Augustine and Chrysostom a few hundred years after Jesus, and these were received without adverse reaction.

Also noted in Chapter 4, Van Helmont (1580–1644), who carried out excellent early work on photosynthesis in the seventeenth century, amazingly published a recipe for mice, consisting of wheat and a sweaty shirt in a box for three weeks. There was no reaction at the time to Van Helmont saying that wheat *became* mice, because the idea of non-living things becoming living organisms was widely accepted at the time. Other beliefs even now in some tribal forest communities include mud *becoming* frogs, and the underground nests of leaf cutting ants *becoming* wild pigs.

From the sixteenth century on, the Protestant Reformation and the Roman Catholic Counter Reformation produced an increasing *We believe the Bible more literally than you* attitude by the opposing sides. Literalism became more entrenched.

By the nineteenth century there was significant support amongst Protestant and Catholic Christians for a more literalist approach to the Bible. One consequence of this was that Teilhard de Chardin (1881–1955), a leading palaeontologist and Jesuit priest working in China and elsewhere, was persecuted by the Roman Catholic Church for his evolutionary writings. We should note however that since Vatican II, 1962 to 1965, he has been more acceptable to the Roman Catholic hierarchy.

One interesting aspect of the Creationism - Evolution debate is that the Creationism principles being appealed to in the Bible are probably there as a result of Darwinian processes in the first place. Evolution is the observable result of natural selection processes, and natural selection principles are evident in the development of the Bible.

Of the many Christian writings of the first three centuries CE (overproduction), many were discarded and have been lost (death rate) because the people found that some writings were less helpful than others in expressing in a meaningful way the mind of God and his actions towards us and for us. People chose to read, reread and copy the writings which helped them the most. These writings expressed God's love, and described Jesus who had come among them, and walked with them, and promised an eternal life of love starting now. This copying and distribution of texts corresponds to reproduction. The narratives which were discarded over the years by people (the selection agents) could have been narratives of monsters, or passages of excessive claims of the miracles of Jesus, or could have been writings by Paul or others which were even more critical or prescriptive than those letters which we now have. Or the discarded writings could have been so bland that they were not considered to be worth keeping. Others could simply have been lost. We know that two of the letters by Paul to the Corinthians are no longer available. For details of the missing letters see Chapter 3.

Soon after the time of their writing, the four Gospels, Acts and Paul's letters to individuals and churches were accepted as Scripture. There was resistance to the acceptance of 2 Peter, 2 and 3 John, James, Jude and Revelation. This selection process occurred in churches small and large across many countries. The councils of the church were not involved in the selection process until the Council of Laodicea (363 CE) approved a list of books which is identical to our New Testament. The Council at Carthage (397) CE agreed with this list, except that it omitted Revelation.

This late bureaucratic involvement coincided with and was possibly driven by the Romanisation of the Christian faith. It needed a codified faith to be defended by the Emperor Constantine the Great who had become a Christian. Constantine was Emperor from 306 – 337 CE.

Christians believe that, over three centuries, the people selecting what was to be in the Christian Bible, and what was to be discarded, were not acting independently but were acting under God's guidance. Such claims can be seen in the confident statements from the councils at Laodicea and Carthage: they felt that they were called by God to carry out this task. Whether by men alone or by men responding to the guidance of God, the formation of the New Testament is Darwinian in its process, in that it involves overproduction, variety, and selection (or not) for survival for further reproduction (printing).

The Hebrew Bible / Old Testament, also experienced the same selection pressures. For many centuries before the birth of Jesus there had been a filtering of what was considered to be the word of God. The canon (list of approved writings) to be included in the Hebrew Bible was not finalised until about the same time as Paul's letters and the Gospels of the Christian Bible were being written. The order and the content were altered by Christians during the first few centuries. See Chapter 6 for details.

It is interesting to note that the different values and understandings in the groups which selected the Hebrew Bible and the Christian Bible produced different aspects of the same God who had inspired both sets of writings. The writings which were selected for inclusion reflected their times and understandings. As an example, a more dominant male perspective is noticeable in the Hebrew Bible than is apparent in the sayings and teachings of Jesus as recorded in the Gospels.

Following the establishment of the Hebrew and Christian canons however, these scriptures have become definitions of what behaviours are approved, and what are not. As a result, these scriptures now determine which people are believers: and these believers can no longer act as selection agents because the canon has now been closed (established). In other words, the canon, selected Darwin-style, now came to affect and define the flock of the faithful, replacing the earlier process in which the flock determined the canon. Those who could not see God in the established canon simply went somewhere else, in self-imposed exile, instead of changing the canon. This is a major challenge to Christians today.

Sixteen centuries have passed since the Bible was assembled, and there are now many other writings which could deserve consideration as Holy Writ. Has the time come for a reassessment of what we consider as scripture? What ten or twenty Christian writings of the twentieth century could be selected, but by whom, and on what basis?

The way in which words are used also deserves consideration. In addition to the books which I have bought over the years, people have given me boxes of theological books - some fairly light in their content, others a lot heavier. As I weed the collection, trying to assess which ones I will keep, which I should pass on to others, and which should be dumped, I am aware of being a Darwinian type of selection agent. Although I am not of the calibre of those who write these volumes, I can see that I am determining which of these (overproduction) are to be allowed to stay in circulation and pass their ideas on to others (successful reproduction). What survives, then, are not the books which are most filled with spiritual truth, or the best theological analyses of texts. What survives are those which, in a fairly quick skim by me, seem to be useful for my purposes, speaking to my needs and situation. What survives really says as much about the selection process (me) as it does about the absolute purity or truth of what has been written.

Such a weeding process develops a skewing of the expressions of the faith, the analysis of faith is less than it could be, and the next generation receives a more limited expression of the faith. That is problematic at the family level, but such weeding at a denominational or library level has enormous consequences.

Where does all this leave us? Reconstructing the world starts and ends with the certainty of our own lives and the inner conviction that God is the source and sustainer of our lives. This conviction comes from various sources, some clearer and more reliable than others.

Our feelings are possibly the least reliable source of that inner conviction, if only because our feelings are so changeable. This can be seen clearly in the lives of John Bunyan and Dietrich Bonhoeffer whose

life patterns were opposite at the beginning of their lives, and opposite at the end of their lives, each having radically changed his viewpoint and behaviour in the meantime. See the note at the end of this chapter.

More reliable are the words and actions of Christians around us, and the influence of past Christians whose prayers, hymns and writings have survived the test of many Christians who were seeking to discern the mind of God through the written word.

More reliable again is the Holy Bible, consisting of the New Testament and the Hebrew Bible. Each of the 66 books (or more than 66 if the Apocrypha is included) has been tested by countless Christians and Jews and found by many, including the Councils of Laodicea and Carthage in the fourth century, to be expressions of the mind of God.

Amongst this certainty there is room however for a realistic appraisal of the origins of Christian prayers, hymns and writings, and the Bible. These are the surviving expressions of faith. They may not be as good as some expressions which never left the minds which created them, or which were discarded by others soon after their creation, or were discarded several hundred years later. But these writings have at least been selected at some time for having some validity, and for being worth preserving and passing on. They are also the edited and rewritten result of the expressions of faith of many people, as opposed to the single-person writings of some belief systems. They are not necessarily the best or ultimate truth: they are simply the survivors of the testing process of many people seeking to know God better. For an ability to see our Bible, hymnbooks and other faith statements in this way we should surely thank Darwin and Wallace.

What survives is a survivor, whether it is an animal, a hymnbook, a denomination or even the Bible. I earnestly hope and pray that what we sing, belong to, and read brings us closer to God who is our creator, sustainer and eternal parent.

**John Bunyan and Dietrich Bonhoeffer
teach us to be patient with Christians who are different from us**

John Bunyan was a soldier who lived a long time before Bonhoeffer. He grew weary of the killing and senselessness of it, became a pacifist, a Christian, and worked selflessly for others. He wrote a parable on the Christian life *Pilgrim's Progress*, as well as many hymns. One night in 1688, on visiting a person who was ill, he caught pneumonia and died.

Dietrich Bonhoeffer was a pacifist and theologian in Germany. He opposed Hitler, his State-sponsored church, his abuse of people who were different, and cruel domination. The pacifist became a man of war, for the best of reasons, and was caught trying to assassinate Hitler. On Hitler's express orders, in 1945, Bonhoeffer was executed by hanging.

If they had met each other at the beginnings of their lives each would have said, *Brother, you are going the wrong way*. And if they then met again at the ends of their lives, each would have said, *Brother, you are going the wrong way*. But, in the meantime, each had changed sides. We need to be tolerant of each other's perception of faith and its practice.

14: Reassembling the pieces: Evolutionary Christianity

This is the least precise part of the book. It can be nothing else. Evolutionary Christianity is itself evolving. The process involves massive overproduction of a wide range of writings and other material from which the environment (we humans) selects those ideas and publications which will survive and reproduce (be republished).

In many ways this continuing change should not be surprising. Earlier we saw that the development of the canon of scripture was a lengthy process which involved selecting those writings which were considered to be inspired by God. As time went by, people's view of God changed. The God we see in

the early part of the Bible appears to be more hidden, remote and exclusive than the God of Jesus and his followers. This change influenced the selection of writings considered to be inspired. God's guidance was doubtless sought in these selection processes, but at all times the result had been filtered and interpreted by fallible humans capable of change.

So, what should we do? If we feel daunted by the magnitude of the task of sifting the material currently available, if we feel uncomfortable about challenging some of the theology and doctrines of past ages, then a retreat into Creationism may be the solution. But in that retreat, in the acceptance of beliefs and a way of life controlled by literalism and Creationism, I suggest that you can't claim Biblical support for your actions.

Jesus told the truth as he saw it: truth in relationships with God, with others and with self. Christianity should be about living that truth in God's world. Evolutionary Christianity simply acknowledges, faces the fact, that our understanding of God's world includes facts, observations and understandings which were not known by people two thousand years ago. Not even Jesus knew them. Jesus appears to have been a Flat Earth Creationist. But his timeless inspired revelations of God and his creation, including us, need some reinterpreting for today's world.

Two thousand years ago Jesus would have had great difficulty understanding some of the things which we now know: that the air which we breathe has molecules colliding ten thousand million times per second, or that there are many earth-like planets, or that our Sun is not unique, or that the density in the centre of a neutron star can be 340 million tonnes per cubic centimetre.

In this chapter I simply ask you to allow our greatly expanded understanding of God's world to be a factor in our statements of faith and in our behaviour.

The following picture is a fact.



The interpretations of this image, this fact, are however influenced by the interpreter's expectations and past experiences.

Here are some interpretations from different viewpoints:

- Photographer: it is a photo taken on the 1st June 2005 by someone who allowed something, such as a part of a hand, to intrude on the bottom right of the image.
- Christian: this is a placard on a building reminding us that Hell is a part of God's expedition, an expedition led by Jesus.
- Norwegian: this is a photograph taken on the railway station at Hell, population 1400, in Norway. For Norwegians the sign refers to cargo handling, *godsekspedisjon*, or the expediting of goods from this building.

- My wife and myself: this reminds us of a part of a very memorable tour of Scandinavia.

In their own ways each of these interpretations can be considered to be true for that interpreter.

But one problem in the so-called *Creationism / Evolution debate* is that even the clear factual evidence is debated, rejected and manipulated. Examples of such activities are given in the third part of this book: *Scientifically Speaking*.

Once again, the choice is yours: choose the misuse of the Bible and the house of cards theology of Creationism, or choose the liberating, unsettling, life-giving world of evolutionary Christianity.

If you have chosen to continue reading, it can be helpful to remember that what Jesus said and did two thousand years ago was also liberating, unsettling and life-giving. We are in good company, and you won't go to hell for exploring the options. So, join hands with me and with many others as we start exploring God's world with new spectacles.

Suddenly we see that there are many other people with us, people who we never thought had a deeply spiritual undercurrent in their lives. Some of these people have even been condemned and expelled by conventional churches for their desire to continue their spiritual quests.

Meister Eckhart (c 1260 – c 1327) was a German theologian, philosopher and mystic. He was tried as a heretic by the (Roman Catholic) Church for his views on the way in which God's love exceeds our needs and is expressed in the birth of the Son, the Word, in each one of us. His views were profoundly upsetting to what he referred to as *all the current Masters*, including the Pope, and some of his writings are very close to Buddhist belief and practice. Carl Jung (1875–1961), the founder of analytical psychology, says Eckhart provided him with the key to opening up the unconscious. Eckhart also profoundly influenced Karl Marx (1818-1883), author of *The Communist Manifesto*; George Fox (1624–1691), founder of the *Religious Society of Friends* or *Quakers*; and DT Suzuki (1870–1966), major Buddhist author.

As noted earlier, a more recent heretic was Teilhard de Chardin (188 –1955): Jesuit priest, philosopher, palaeontologist and geologist. He was involved with the Peking Man discoveries in China in the 1930s. His non-traditional views on the cosmos and our place in it, described in books such as *The Phenomenon of Man*, placed him in serious conflict with the Roman Catholic Church. His books were banned, and it is only recently that he has started to become acceptable to that church. He did not accept the literal view of creation as described in Genesis, and this raised concerns about what to do with the doctrine of Original Sin. He wrote about a flaw in the way the modern world saw things: *Its mistake is one which causes it to aim in exactly the wrong direction. It is to confuse individuality with personality..... If we are to be fully ourselves, we must advance in the opposite direction, towards a convergence with all other beings.* ⁽²⁶⁾

So, we are in fine company as we step back a little and try to see our lives and all of Creation from a Christian Evolutionary standpoint.



Over the past hundreds of millions of years many, many varieties of organisms have been produced. If success is measured in length of time that they are in existence, then the most successful organisms include bacteria, ants, cockroaches, mosses and sharks. Even the dinosaur group was spectacularly successful, living for more than 100 million years. There have also been some beautiful organisms such as the Walliserops, shown here, which died out about three hundred million years ago.

But beauty does not guarantee your success in the contest for survival as a species. Nor does beautiful theology guarantee success

as an institutional church.

What forms Christianity will take in the future is of course unknown and unknowable. It is likely that the long-standing division between groups which **include** the outsiders and those which **exclude** the

outsiders will continue. That is, we may see churches such as the Uniting Church in Australia have within its life some who are of inclusive persuasion and some who are of exclusive persuasion when facing choices about LGBTIQI, or people of other faith traditions.

We will probably continue to see literalist exclusive forms of Christianity which deny the equality of women (Continuing Presbyterian Church in Australia, many Baptist churches, Roman Catholic Church, Non Denominational Church of Christ) or deny the equality of people of colour (until 1986 the Dutch Reformed Church in South Africa and, until 1978, the Mormon Church).

Increasing access to and use of social media has given everyone a market for their views. Competing voices now have an equality of believability to begin with. Because there is no longer any generally accepted arbiter of what is right or wrong (such as the church), and because there is no longer a high level of investigative journalism to assess claims and counter claims, each person's ideas are equally available to be believed or not. Too often the glib one-liners or outrageous statements get attention that they do not deserve, and this is seen in politics, protest movements and various institutions including churches and other faith traditions.

For Christians and others, the pressure exists in modern society for decision making which is rapid rather than considered. Church shopping, the checking out of various churches and committing to none, has been an increasing phenomenon. Denominational loyalty has decreased.

As a result, predicting the outcome of evolutionary Christianity becomes impossible. The church of the thirteenth century could not foresee the earth-shaking events of the Reformation, nor the centuries of destructive wars which had their own impact on the nature of the Christian church then and now.

We should not be dismayed however if we cannot see the future with clarity. It is reminiscent of Biblical prophecy. The prophets were able to explain to people how God's hand could be seen in their history, and occasionally in the present. Very rarely was Biblical prophecy about the future.

A visual image of Biblical prophecy is that it is like travelling in a car and facing the rear. You can see where you have been and how things relate to each other. You can occasionally look sideways and understand what is happening at the moment. But only rarely can you twist yourself around to look into the future, which, when you get there, will look different because of increased experiences in the meantime and the viewing of that future from literally a different viewpoint.

What matters in natural selection is the nature of the variations being tested, the number of variations being tested, and the environment in which the selection process is being carried out.

As the future unfolds, the characteristics of biological evolution will also apply to Christian evolution. There will be overproduction of types of Christian expression, many of which will die out. What forms of Christianity remain may be because they are intrinsically better, or they have simply survived and reproduced for social or other reasons. Or you may believe that in some way God will not allow Christ's body, the Church, to disappear – but radical surgery may be necessary.

Currently, some of the more strident forms of Pentecostal Christianity are surviving and expanding. This may be because of their marketing and their consistent minimalist theology, or their emphasis on emotion rather than study, or because of their fortress mentality of *us vs them*, or because they are actually being more faithful carriers of the Gospel.

Successful Pentecostal churches may see their success as God blessing them more than he / she blesses other forms of Christianity. A word of caution however is that in the past many other forms of Christianity have flourished for a while and then declined.

There are many types of modern theology which are informing and promoting evolutionary Christianity. Some of these ascribe to what is called *The Death of God*.

Friedrich Nietzsche popularized the term in a number of articles, including *The Madman*:

God is dead. God remains dead. And we have killed him. Yet his shadow still looms. How shall we comfort ourselves, the murderers of all murderers? What was holiest and mightiest of all that the world has yet owned has bled to death under our knives: who will wipe this blood off us? What water is there for us to clean ourselves? What festivals of atonement, what sacred games shall we have to invent? Is not the greatness of this deed too great for us? Must we ourselves not become gods simply to appear worthy of it? (27)

The horrors of the first and second world wars also contributed to the *Death of God* movement. To believe in an interventionist God who finds parking spaces for our cars but cannot intervene in the slaughter of millions of people is a problem for me and for many people. This leads to a belief in the Death of (that sort of) God.

What follows are some examples of writers who subscribe to the *God is Dead* proposal.

In 1961, Gabriel Vahanian's book *The Death of God* was published. Vahanian argues that modern secular culture has lost all sense of the sacred, lacks any sacramental meaning, and has no transcendental purpose or sense of providence. He concludes that for the modern mind *God is dead*. In Vahanian's vision a transformed post-Christian and post-modern culture is needed to create a renewed experience of deity.

Thomas JJ Altizer conceives of theology as a form of poetry in which the immanence (presence) of God can be encountered in faith communities. However, he no longer accepts the possibility of affirming belief in a transcendent God. Altizer concludes that God had incarnated in Christ an imparted spirit which remained in the world even though Jesus was dead. Unlike Nietzsche, Altizer believes that God truly died. He is considered to be a leading exponent of the Death of God movement.

Rabbi Richard L Rubenstein represents radical Jewish thought which is working through the impact of the Holocaust, arguing that, for modern Jewish culture, the death of God occurred in Auschwitz. Although the literal death of God did not occur at this point, Rubenstein says that this was the moment in time in which humanity was awakened to the idea that a theistic God may not exist. In Rubenstein's work, it is no longer possible to believe in a traditional theistic God of the Abrahamic covenant; rather, God is a historical process.

There are many voices in evolutionary Christianity. A few examples follow.

Rev. Michael Dowd, a young-earth creationist while serving in the United States Army but now a bestselling author and evolutionary evangelist, writes, in *Thank God for Evolution: The New Atheists and scriptural literalists are not the only games in town. In contrast to Richard Dawkins' God-less universe, tens of millions of us in the middle celebrate both Jesus and Darwin. For us, religious faith is strengthened by what God is revealing through science. There's more than one way to be an evolutionary Christian, but what we all share are deep-time eyes and a global heart.*

Dowd believes that now is the time to help fellow Christians relate to their faith within the context of a universe that he exclaims is *far more glorious and inspiring than anyone living thousands of years ago could have possibly imagined—even the prophets!*

Thank God for Evolution: How the Marriage of Science and Religion Will Transform Your Life and Our World was endorsed by six Nobel-Prize-winning scientists and by religious leaders across the spectrum.

Rev Bruce Sanguin, a minister at Canadian Memorial United Church, Vancouver, is the author of *Darwin, Divinity, and the Dance of the Cosmos*. His book *If Darwin Prayed* synthesizes science, scripture, and poetry into 21st century prayers for congregational worship and personal devotion.

Realizing that I was not separate from the universe — that I was in fact the process of evolution become conscious of itself — gave me a reason to be in ministry again. I regained the passion, the conviction. ... Until this sacred evolutionary worldview gets liturgical legs, and the language of our hymns and prayers starts to shift, it's not going to gain the traction that it needs to transform the church and our world.

He commences one of his articles with the comment:

I agree with Professor John Haught that evolution is Darwin's greatest gift to theology. ⁽²⁸⁾

Denis Lamoureux, associate professor of science and religion at St. Joseph's College, holds earned doctorates in dentistry, biology, and theology, and write:

When I was in graduate school studying evolutionary biology, two things became apparent. First, all evolutionists at universities are not a bunch of raging atheists trying to destroy people's faith. I also eventually realized that in trying to keep coming up with counter-arguments to evolution, I was like the little boy at the dike. I could plug this leak with an argument and that leak with another, till finally after three and half years I put my hands up in the air, and I said, "You know, when they talk about the evidence for evolution being overwhelming, it is mind-blowingly overwhelming!"... If our tradition doesn't come to terms with this, we're going to lose an entire generation of kids simply because we have not done our homework — both in the science and, in particular, in the scripture. ⁽²⁹⁾

Jim Burklo, Associate Dean of Religious and Spiritual Life at the University of Southern California says: *One of the several elephants in the room in Christianity is the whole topic of the miraculous and the supernatural. I really believe that as long as Christianity is unable to shake itself loose from the shackles of supernaturalism, we're going to have problems. We're going to have trouble integrating our spirituality with what we know from science. We're going to have problems with exceptionalism: the whole idea that Christianity is the only way. Those problems are just going to keep coming up again and again until we realize that the real miracle in this world is the fact of existence itself. That's the jaw-dropping miracle! To hang our faith on whether or not Jesus walked on water or physically rose from the dead is not only going to lead us down a blind alley in faith. It's also going to contribute to a misunderstanding of our relationship to the natural world. So I think that's an important area for theologically progressive Christians to work on — to come up with a language of faith and a reinterpretation of Christianity that really makes that distinction clear. We progressive Christians take the Bible very, very seriously — in fact, even more seriously — because we do not take it literally when it comes to matters of history and science.* ⁽³⁰⁾

John Shelby Spong, the author of best-selling books including *Rescuing the Bible from Fundamentalism*, *A New Christianity for a New World*, and *Why Christianity Must Change or Die*. He wrote:

One of the great weaknesses of religion is that it tries to act as if there is such a thing as unchanging truth. We live on the other side of people like Copernicus, Kepler, and Galileo. So we have to look at the universe in a way that we had never looked at it religiously before. We've got to look at the world on the other side of Isaac Newton, as well, who took away the concept of miracle and magic — with which the Christian story is deeply compromised, I would say. And we have to look on the other side of Charles Darwin. ... There is no inerrant bible; there is no infallible pope. There is no one, true religion; there is no one, true church. We're all pilgrims walking into the mystery and wonder of it all. ⁽³¹⁾

Kenneth R. Miller, professor of biology at Brown University in his book *Finding Darwin's God: A Scientist's Search for Common Ground Between God and Evolution*, addresses evolutionary theory and its relationship to religious views of nature. He also wrote *Only a Theory: Evolution and the Battle for America's Soul*, which chronicled his role as a lead witness in the 2005 Dover 'intelligent design' trial. *I think the first duty of any Christian is to the truth. So the first question that any person should have about evolution is not, "Does it contradict what my preacher told me on Sunday?" or "Does it contradict my understanding of the book of Genesis?", or something along those lines. The first question that any person should have of evolution is really pretty simple and that is "Is it true?" That is the question that really ought to matter to Christians. A hundred and fifty years of scientific research and spirited attempts to show that evolution was wrong have resulted in evolutionary theory being on a firmer footing than anyone could have possibly imagined, even Charles Darwin himself.* ⁽³²⁾

Michael Morwood resigned from religious life after his book *Tomorrow's Catholic* was banned from schools and churches by the Catholic Archbishop of Melbourne, George Pell. He had been a member of Missionaries of the Sacred Heart.

Let us embrace this new story of the universe. Let us embrace this story of evolutionary development and, rather than talk about it as a God outside directing it, let's go into our tradition and say, "Here's a story of a God who is everywhere — in all and with all and operating in all." And let us go back into the story of Jesus — not as someone who's a unique pathway to a God who lives somewhere else, but as someone who in the gospel clearly says to people, "Open your eyes. The kingdom, the reality of God, the presence

of God: it's here in your own living and loving". ⁽³³⁾

Richard Rohr entered the Franciscans in 1961 and was ordained into the priesthood in 1970. He founded the New Jerusalem Community and the Center for Action and Contemplation. He is a contributor to *Sojourners* and the *National Catholic Reporter*, and has a widely followed ministry in various media, including books such as *Everything Belongs*, *Falling Upward* and *The Naked Now* (concerning mysticism).

What's happening is inherent, and all things blossom from within and at their depths. Grace is not something you invite into the world as if it's not already there. This is why a Christian should never have the least trouble with evolution. People only have trouble with it because they believe grace is extrinsic to the universe. Too many evangelical Protestants and conservative Catholics did not learn from Franciscanism. For them, God is doing everything from outside and God's love is not organic to creation. It is from the depths and the inside that life is generated, as all DNA, every seed, nuclear fusion, and all things born make very clear. ⁽³⁴⁾

John Polkinghorne was a mathematical physicist at Cambridge and Anglican priest. Knighted in 1997, he was the founding president of the International Society for Science and Religion and a founder of the Society of Ordained Scientists. He was the author of five books on physics and 26 books on the relationship between science and religion, including *Belief in God in an Age of Science*, *The Faith of a Physicist*, *Quantum Physics and Theology*, and *Science & Theology*, and wrote:

I also think we need to maintain distinctions - the doctrine of creation is different from a scientific cosmology, and we should resist the temptation, which sometimes scientists give in to, to try to assimilate the concepts of theology to the concepts of science. ⁽³⁵⁾

See www.youtube.com/watch?v=it9eBgWfUR0 for an excellent lecture on *Christianity in Evolution* by Prof Jack Mahoney. Original sin is discussed from the fifteenth minute, as is Peter Abelard's question: *Why did not God just forgive Adam?*

Bruce Sanguin, a minister of the United Church of Canada, writes in *Christmas Eve: The Preacher's Nightmare and Greatest Opportunity*, December 23, 2012:

I'd tell them exactly where I'm at with the story at this point in my life. I'd tell them that human beings possess an endlessly, rich, interior life that is filled with Mystery, ancient archetypes, and a burning longing for the future. The problem is that it's invisible to us and mostly outside our awareness. The only way to actually see it is to see it outside of ourselves first. Let me explain.

Every once in a while, someone like a Jesus of Nazareth comes along and wakes us up.

He embodies this dimension of wisdom, consciousness, compassion, and the future that is within us all, but couldn't access. Something in us recognizes the truth. That's it! Those first New Testament editors said to themselves: He is the Good News! And then they created wonderful, glorious stories about his birth, his life, his death, and how even death couldn't destroy all the creativity and love he represented.

And it's not that they created these stories arbitrarily. It's not a question of just "making it up". Sure, the New Testament writers mined their own scriptures for details of the narrative. No surprise there. They threw in some angels, because who hasn't been touched by an angel, in our dreams or in some inexplicable coincident that put our life back on track? They brought in stars because they knew that what was going on in this guy was cosmic in scope and represented some kind of harmonious convergence of the heavens. Enter the bad guy, Herod, because there's always a bad guy, embodying a bad system, intent on taking out his rage on the most vulnerable. This Christmas Eve, this guy will be on everybody's mind. Who knows where sacred symbols and story lines that compose our myths come from? It's a mystery, but my hunch is that it's from the same storehouse of wisdom that brought forth a universe, latent within each one of us cosmic human beings. Good myths never happened, and yet they are always happening.

Then, once we had these foundational stories in place, like Jesus' birth story, we spent the next two thousand years allowing this catalytic attractor of a man pull the best theology (the worst would be exposed) and the deepest questions of our soul out into the open. All that latent interiority, the stuff that was invisible, but the most real part of us, comes rushing out as it is projected on to a man like Jesus. Thank God for humans like Jesus who have the courage to be the presence of what's coming and pull this stuff out of us.

I believe that every story the church has ever told about Jesus, and every theological riff on him, from the Council of Nicaea and Chalcedon until this moment, has been a projection of our own interior life.

Cultural philosopher, Jean Gebser, was one of the first to see that it's much easier to recognize new facets of reality (that are dormant in what he called the Ever Present Origin), if they first appear as external and objective facts. Only later in evolution is their source recognized to be within ourselves, says Allan Coombs in The Radiance of Being. The moment that we are able to see clearly the projection, we can be sure of the advent of a new structure of consciousness.

When I say that we've projected it all on to Jesus, I don't mean that it's a mere fancy, the product of over-active imaginations. The soul of a Jesus actually awakens this dormant wisdom. At first we create the legends, then we literally believe them. This enables us to make what was subjective and invisible, objective and visible. Then, one day we have an epiphany. Good grief, this question about how Jesus could be fully human and fully divine? It's actually about me. About us!

One with the Father/Mother essentially, and yet distinct? Yep. We're talking about the mystery of our own essential unitive nature. Jesus as Saviour? It's a little new agey, but c'mon, it's true. We're the ones we've been waiting for. The forgiveness of sins? You guessed it. That power is given to us. And then when you read the gospels with this in mind, you get the sneaking suspicion that Jesus was trying to get this through the disciples' thick skulls at every opportunity. Given that we still don't get it 2000 years later, perhaps we can give the disciples a little slack.

So, if I was the preacher, I'd tell the good folks that the Word was made flesh 2000 years ago, and then again on Christmas Eve in them. I'd tell them that they are the light that no darkness can overcome, that they are the love they've been looking for all their lives. I'd send them out to redeem the world in their little neck of the woods—to be the presence of peace when we are all reeling from recent images of unthinkable violence. I'd tell them that if they leave the place without realizing that the Christ is wanting to be born in them, then they'd have let themselves off the hook too easily. And that we're at a time in history when we can't afford to let ourselves off the hook. I'd hope as well that we'd have fallen on our knees before Jesus who poured his life and is still pouring his heart out to wake us up to our glorious destiny. ⁽³⁶⁾

We now see that we are not alone in our experiences while we search and find. The wide world, the universe, invites us to explore it at many levels: as mystics, as servants of others, as teachers, as Bible students and as scientists. It is through Darwin and other scientists, and the protests which followed, that there has been intense interest in the Bible's storyline and its view of the world. Discoveries have resulted which have enriched our understanding of both the Bible and the world in which we live.

And the discoveries continue. There is an exciting report of research on the transfer of learning between mice, not in a social context but only by genetic transfer.

Acetophenone has a smell similar to cherry blossom. Researchers at Emory University School of Medicine trained mice to be fearful of the smell of acetophenone. Their offspring were also fearful of it, twice as sensitive as the control group, and genetic changes were evident in the next generation as well.

This was not a result of nurture: even when IVF was used for the breeding of the mice the fear of acetophenone was transferred. Cross fostering of offspring by a control group also showed that the fear response was as a result of genetic changes, not social learning. The changes were identified not in the DNA but in the epigenetic factors, those chemicals which affect the expression of genes.

This has far-reaching implications for studies in how learning affects genetic changes in organisms, and the transfer of phobias and skills between human generations. It speaks of the continually changing nature of our world as it responds to change. More fundamentally it starts to open a window of understanding of the chemical links between response to a stimulus, memory of that response, and how a population changes in response to its environment.

In a faith sense it makes us wonder whether spiritual sensitivity (or not) and love for others (or not) are also genetically transferable. Perhaps the search for the 'altruistic gene', which can be tweaked along the way, is getting some traction.

Darwin wrote that there is grandeur in an evolutionary view of life, a grandeur that is there for all to see,

regardless of their philosophical views on the meaning and purpose of life.

I do not believe, even for an instant, that Darwin's vision has weakened or diminished the sense of wonder and awe that one should feel in confronting the magnificence and diversity of the living world. Rather, to a person of faith it should enhance their sense of the Creator's majesty and wisdom.

Against such a backdrop, the struggles of the intelligent design movement are best understood as clamorous and disappointing double failures – rejected by science because they do not fit the facts, and having failed religion because they think too little of God.

From Ken Miller, Brown University, USA in
The Flagellum Unspun at millerandlevine.com/km/evol/design2/article.html

15. Einstein, Heisenberg, Bohr and others

Niels Bohr, the great Danish physicist, said that anybody who isn't shocked by quantum mechanics hasn't understood it. But that doesn't stop us looking and learning. Einstein was one of the originators of the quantum theory. In 1905 he used Max Planck's idea of photons of light to explain the photoelectric effect, and later came to hate the quantum theory which arose from it. Its implications for him and for others were mind-bending, frightening and sleep-depriving.

Quantum physics in some way seems to involve the observer. In classical physics the observer is simply there to watch what is happening. Often your observation could change what was being observed but only in a minor way. But in quantum physics the nature or extent of the influence of the observer cannot be predicted or allowed for. Quantum phenomena and the observer become entangled in a way which cannot be disentangled.

This is bordering on the deeply spiritual life, in which the world and the faithful become entangled in a way which cannot be disentangled. As mentioned in chapter 11, CS Lewis was aware of this as he wrote *The Screwtape Letters*, the senior devil warning the younger devil that they didn't have much luck with physicists.

Perhaps we should just step back a little, and slow down a little, and enjoy the ride. As someone said: *Time is just God's way of stopping everything happening at once.*

The Genesis chapter 1 account of creation uses the science and stories of much earlier times than now. It was starting to be written down perhaps ten centuries before Jesus and two or three centuries after Moses, and was then subject to substantial editing and addition, and the amalgamation of writings from different authors. It also reacted to the creation stories of the surrounding peoples at the time of the Exile around 597 BCE.

What would happen if we rewrote the Genesis 1 creation story using our current understanding of the world around us? The loss of the traditional language of creation might be acceptable, simply because the traditional stories are no longer well known, but could the intent of Genesis 1 be maintained? Are we alone in seeking this update, this reinterpretation? What aspects of the modern understanding of our world would be relevant?

The tombstone of Isaac Newton (1642 – 1727), liberal Anglican Christian and possibly the greatest physicist ever, describes Newton as: *Diligent, sagacious and faithful, in his expositions of nature, antiquity and the holy Scriptures, he vindicated by his philosophy the majesty of God mighty and good, and expressed the simplicity of the Gospel in his manners.*

Leaping forward to the twentieth century, Werner Heisenberg (1901 – 1976), theoretical physicist and a key pioneer of quantum mechanics, was a Lutheran Christian, publishing and giving several talks reconciling science with his faith. In *Scientific and Religious Truth* (1974) while accepting the Romano Guardini Prize, Heisenberg said: *In the history of science, ever since the famous trial of Galileo, it has repeatedly been claimed that scientific truth cannot be reconciled with the religious interpretation of the world. Although I am now convinced that scientific truth is unassailable in its own field, I have*

never found it possible to dismiss the content of religious thinking as simply part of an outmoded phase in the consciousness of mankind, a part we shall have to give up from now on. Thus, in the course of my life I have repeatedly been compelled to ponder on the relationship of these two regions of thought, for I have never been able to doubt the reality of that to which they point.

And also ... Where no guiding ideals are left to point the way, the scale of values disappears and with it the meaning of our deeds and sufferings, and at the end can lie only negation and despair. Religion is therefore the foundation of ethics, and ethics the presupposition of life.

A desire to update our creation story is not new. In chapter 6 we saw that Augustine in the fourth century was particularly emphatic that we should not make absurd statements about what the Bible says when such statements flatly contradict what people already know from other reliable sources, and included: *For then, to defend their utterly foolish and obviously untrue statements, they will try to call upon Holy Scripture for proof and even recite from memory many passages which they think support their position, although they understand neither what they say nor the things about which they make assertion.*

If we were to write a creation story, using our current understandings, what fundamentals of the world that we see around us should be included? Are light and matter fundamental?

The nature of light was debated by Isaac Newton (1642 – 1727) and Christiaan Huygens (1629 – 1695) and many others over the intervening years. Does light consist of waves or particles? Much later, Max Born (1882 – 1970) proposed that matter, like light, is composed of real particles having mass-energy, and that they move in a manner which is described by Schrodinger's wave equation.

Louis de Broglie (1892 – 1987) said that the world can be seen in a particulate sense (in which light and electrons are understood as being particles) and also in a wave sense (in which light and electrons are understood as being waves): *Just as electromagnetic waves can be described as particles, so particles of matter such as electrons can be described as waves. Everything has a dual wave-particle existence.*

We noted in chapter 11 that JJ Thompson was awarded the Nobel Prize in 1906 for proving that electrons are particles, and his son George was awarded the Nobel Prize in 1937 for proving that electrons are waves.

If both are right, what descriptors of our world should we use: waves or particles? At university, in the 1960s, I had trouble understanding wave mechanics because I tried to meld it with the Bohr particulate atomic theory, instead of understanding the theories as being distinct, alternative ways of looking at the world.

According to Heisenberg, waves rule the world: the Heisenberg Uncertainty (Indeterminacy) Principle is a fundamental principle in our universe. For a photon:

$$\begin{array}{ll} E=h \nu & \text{(Energy = Planck's constant x the frequency of the photon)} \\ \text{and } E=p c & \text{(Energy = momentum of the photon x the velocity of light)} \\ \text{So } h \nu = p c & \\ \text{but } c = \nu \lambda & \text{(velocity = frequency x wavelength)} \\ \text{so } h = p \lambda & \end{array}$$

That is, the momentum of a photon multiplied by its wavelength = Planck's constant

The May 2019 value for Planck's constant is $6.626\,070\,15 \times 10^{-34}$ Joule secs (General Conference on Weights and Measures). Planck's constant defines the amount of energy that a photon carries, dependent on the frequency of the wave in which it travels.

Planck's constant is now used to define the second (since 1967) and the metre (since 1983). Other SI units were redefined this way in 2019 including the kilogram, thanks to Einstein's mass / energy relationship.

For something the size of a house, the 'waviness' is undetectable, but for electrons, whether they are inside or outside atoms, it is of huge consequence. And as Heisenberg explained in a paper in 1927: *we cannot know, as a matter of principle, the present in all its details.* Having said that, there are certain

aspects of matter about which we can be confident, even though none of us sat on the sidelines and watched the 'Big Bang' nearly 14 billion years ago, or the rusting of the oceans over 2 billion years ago.

These comments, and those below from *Extreme Cosmos*, Bryan Gaensler, UNSW Press, can help us to be less restricted in our thinking about our world, and how it impacts on our thoughts about *life, the universe and everything*, using the terminology of Douglas Adams' *The Hitchhiker's Guide to the Galaxy*.

The Big Bang was no bang really. Both time and space started about 13.7 billion years ago, and in silence. Less than a trillion trillionth of a second later the Universe was about the size of beach ball, and had started to become lumpy and there was a series of expansion and collapses through the influence of gravity. Pressures rose and fell, and the first sounds were produced, high pitched at first. 10 years after the Big Bang the dominant note in the Universe was F sharp, 35 octaves lower than what we can hear, and at 90 decibels - as loud as a lawnmower.

10 trillionths of a second after the Big Bang the temperature was 10 000 000 000 000 000°.

380 000 years after the Big Bang the temperature had dropped to about 2700°

The current temperature of outer space is -270.42°, or about 2.73° above absolute zero.

In the last 1500 years of life of the star which has become the Boomerang Nebula, material was being blasted outwards at 600 000 kilometres per hour, shedding material at 60 000 000 000 000 000 tonnes per second, causing the temperature in that part of the nebula to be the coldest in the universe at -272°, an example of the Joule-Thompson effect.

Our Milky Way is a typical spiral galaxy with a diameter of 100 000 light years and containing several hundred billion stars. It takes about 200 million years for our Galaxy to rotate, and has done so only 22 times since the Earth was formed.

Its enormous mass and gravity devours smaller galaxies.

We are moving towards the Andromeda galaxy, about the same size as the Milky Way, at 430 000 kilometres per hour and will reach the maximum impact with it in about 2 billion years.

The Milky Way itself is more than 1 trillion solar masses, 10% of which is stars, gas and planets, and the remaining 90% is dark matter and dark energy.

Neutron star SGR 1806-20 on 27 December 2004 blasted off 10 billion billion tonnes of material (equal to the mass of Pluto) at 50% of the speed of light. The gamma radiation overwhelmed earth's satellites etc for 0.6 second, and 2.6 secs later there was an echo of it off the moon.

This burst put out more energy in 0.6 second than the sun's total output for 150 000 years.

A typical neutron star has a density of 340 million tonnes per cubic centimetre. (!)

After reading such mind-blowing information about our world, our universe, we are perhaps more appreciative of the efforts of the writers of Genesis as they struggled with their world which contained powers beyond their control. Who am I in this maelstrom of activity, so ancient and yet continually being renewed?

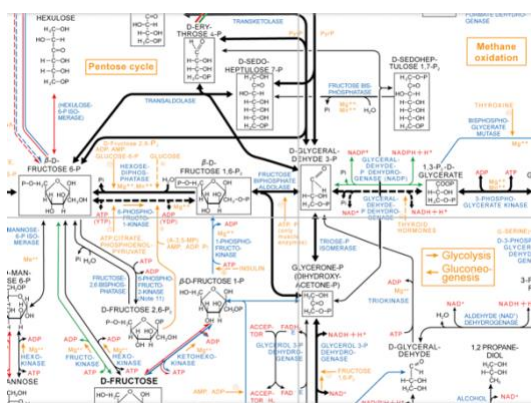
What is the story of life which we tell ourselves and our families?

Any attempt to write a creation story or give a history of the universe uses a particular view of life, God and the world around the writer. In earlier times the communities we lived in had a common view or story of the world around them, be they Jewish, Christian, Muslim, Hindu, Buddhist, animist or other worldview. One feature of our times is that we are now global citizens with no commitment to a commonly agreed story.

The scientific view of the world is fragmented too, through over-specialisation. We see disputes between people whose science training and experience leads them to be very passionate in the battle to save polar bears or to beat cancer or to land on Mars, but there is no common unifying theme.

He had noted that the hee-haw Doppler effect when applied to light waves is not symmetrical. The energy gained in the blueshift of a star travelling towards you at ten per cent of the speed of light is half of one percent greater than the energy decrease in the redshift of a star moving away at ten percent of the speed of light. This led Einstein to see that the increase in the energy coming from that non-accelerating body could only come from its mass: $KE = \frac{1}{2} mv^2$. From this came what Einstein, and most physicists, considered to be the most important single result of relativity theory: that mass and energy are different forms of each other.

Dark Matter and Dark Energy are two of the big unknowns, the current big unsettlers. Dark Matter and Dark Energy make up 90% of the mass of the universe but they seem to elude detailed detection and description. The Dark Energy Survey is a large international collaborative effort to map hundreds of millions of galaxies, detect thousands of supernovae, and find patterns to explain the dark energy which is accelerating the expansion of our universe. Professor Tamara Davies of the University of Queensland is a major participant.



In the next section of this book there is more information about a couple of the biochemical pathways and processes which proceed at a terrifying pace whether we are awake or asleep.

This input from science could go on for some time, but that is enough for the moment for us to look at what that means for one person's worldview.

Mozart had a problem. So did JS Bach, Cesar Franck, Wagner, Beethoven, ABBA and the Beatles. This was their problem: should they use their time and talent to write what other people wanted (and hopefully pay for) or should they write that which was personally satisfying and intellectually necessary? How many times did they and countless others have to suspend their pursuit of noble ecstasy to write drivel for the masses? How many half-developed beautiful musical phrases have never been shared because of domestic or societal interruptions?

John Lennon made the choice to leave The Beatles and its commercial success to pursue what was in his mind more honest and a better use of his talents. George Harrison's version of The Beatles, as he settled in for another jam session out in the cosmos somewhere, was: *It's all about the music, man. The words are just roobish.*

We, too, have a problem. What are we to do with the outpourings, the mental music, of all that we have been looking at in this book and elsewhere? What were the stories of our origins which Darwin told his family, or told by Heisenberg to his family? More personally, what does each of us say to the deepest recesses of our own mind for our own personal consumption? What is my story to me?

As noted back in the chapter on Christology, life is not static, and at different times of the day there are different needs and different reasons for our behaviour. When the opportunity or the need arises for some reflection, this is what I do.

I give thanks for the gift of life and all that has brought me to where I am today. There have been many times which other people might refer to as highs and lows, but I try not to categorise them that way. They are all part of the package, even the heartbreaking times of the death of two of our baby girls. Using the title words of the book by Richard Rohr: *Everything Belongs*. Life is a package, and I give thanks for it to the *Otherness, God, the Numinous* which is beyond the brashness and superficiality of my daily self. This *Otherness/ God* is noticed and experienced by me in different ways, and supports me in different ways.

Music is a good starting point: real music, not the head-thumping, screaming sound-deluges so common now, nor the rapidly written, easily forgotten music which sounds like the output from an untalented government servant but still performed to acclamation. What inspires and lifts me is to listen to and play the music of Cesar Franck (such as Chorale No.1 in E Major), Bach (Ich ruf 'zu dir, Herr Jesu Christ), Mendelssohn (Organ Sonata No.1), Billy Joel (Lullabye) and some of Roy Orbison, ABBA, The Beatles and trad jazz. I am thankful that at university I was in a choir which performed the Mozart Requiem, and that for decades I have been a church organist or pianist. For me, music can be deeply emotional and spiritual.

Gardening can be a spiritual experience too. If you ever need to be lifted beyond your self-centredness and arrogance, just watch a climbing bean. It has no brain and yet it will wrap itself around a pole or netting with what could be interpreted as supreme confidence. Yes, we know that gibberellins and other compounds are involved but the wonderment remains.

Then there is the endless almost frantic activity going on our cells, as mentioned in the previous chapter and the next chapter. How does it all work together and keep going?

Where is the spiritual element, you ask. For me there is not a clear dividing line to answer this. It is more a matter of preparedness to see what is already there, and being amazed and thankful. Sometimes, even often, there is hard work involved in learning music, gardening or studying. Then there are the times, even embedded in the hard work, when you are aware of being carried along in a surge or swell of deep contentment and a sense of unity with the world around you.

Richard Rohr, Franciscan priest, in *Everything Belongs*, puts it this way: *we cannot attain the presence of God. We are already totally in the presence of God. What's absent is awareness. God is maintaining us in existence with every breath we take. As we take another it means that God is choosing us now and now and now. We have nothing to attain or even learn.*

Sometimes it is the prodding of sad circumstances which makes us stop and reassess. It has been so for Sue and me and the family. It has also been the case for people in and around hospitals.



For ten years Sue has led the Ex-Trainees and Associates of Princess Margaret Hospital for Children in Perth, WA. This hospital started in 1909, funded by individuals, churches, the synagogue and general donations because the government saw no need for a hospital for children. Now known as PMH, it became a leader in its field, and has been replaced by the new, government-funded, Perth Childrens' Hospital. The Ex-Trainees and Associates raised the funds and assisted in the design

of a memorial to PMH, a large illuminated stained-glass window in the chapel part of the PCH multifaith centre. Some parents whose child has died in the hospital have said to the chaplain that they "don't want any religious stuff", and yet have sat there all day looking at the artwork. In their need for answers they went looking in new places, and this beautiful artwork, focussed on the family in the Tree of Life, has given acceptable answers to them.

Sometimes we are ambushed by beauty, not just in a cathedral or in a stretch of countryside. It can be the smile of a child, or the happy recognition of common humanity in the eyes of an old person, or the rich, joyful nature of a young person whose family background would make any of us weep.

I too have been looking for answers in new places. For many years, as a physics, chemistry and biology teacher, I have been a student and teacher of what could be called traditional Newtonian physics, as well as being a slightly liberal Bible student and accredited lay preacher. But the need to know more of what the Bible is (and isn't) and the need to have it occupying some common ground with science has led me down some interesting paths, including the writing of this book, and to rewrite the story of creation in the following way.

Loving Action has always existed.

Loving Action was what we call God, full of truth and loving care.

Loving Action is with us now, and so often we do not recognise it.

The beginning of space and time was an expression of God's own substance, appearing as a singularity, a chaos seemingly devoid of rules and order.

The singularity was an extremely dense, dimensionless form of energy.*

*In much less than a second**, some of this energy of God*** had become the material of the whole universe as we know it, defined by the Law of Everything****.*

As each galaxy condensed out of the furnace of creation God delighted in its goodness.

Over billions of years the condensing materials formed the earth, which cooled into land and sea and rain and rivers.

A few of the molecules became self-organizing and self-replicating complex groups, and in some places the different types of complex compounds benefited each other and developed selective barriers around themselves.

Some early cells developed the ability to use light as the source of their energy for cell processes. These simple plants appeared in the oceans followed by animals.

Plants and animals multiplied into many different types in the oceans and on land.

Some animals formed societies and developed ways of understanding their surroundings.

When the world was ready, the nature of God the creator was perceived by some of these animals. Humankind had appeared. They saw and appreciated God's handiwork.

God became quite excited that out of chaos had come beauty, a beauty which could be seen and appreciated by these human children.

God's abiding presence was demonstrated in the life of Jesus of Nazareth.

Loving Action was and is and always will be.

* The singularity at the beginning of space / time had a density of 10^{94} gm/cc

** 10^{-43} second: the time taken to form the substance of the whole universe

*** Energy and matter are different forms of the same thing, different forms of Loving Action / God

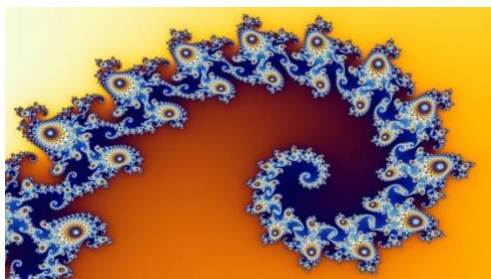
**** The Law of Everything still eludes physicists as they try to quantise gravitation.

For an excellent history of the universe in 18 minutes, see [ted.com/talks/david_christian_big_history](https://www.ted.com/talks/david_christian_big_history). David Christian is an American born historian now living in Australia.

After reading and thinking about some of these issues a sense of bewilderment can set in. But imagine that you lived in the early 1920s and heard of Rutherford's assistants firing bits of atoms (helium nuclei) through gold sheet, with very little bouncing back - or you had just heard about that chap Einstein with his funny views about energy and matter. Perhaps we need to be able to live with not knowing everything, and then enjoy the discoveries as they come.

We are fortunate that we live in a society which encourages exploration and change. Our origins include Greek society and its desire to know how the world functioned. Judaism, Christianity and Islam are grounded in a world view of one God and an organised creation which follows rules. Usually this basis of faith and its accompanying worldview have encouraged discovery of these rules, and then the use of these rules to change the worldview of that society. Chinese and other societies were capable observers and made great discoveries but were not given the encouragement to use them to influence or change the structure of those societies.

The edge of discoveries can still be unsettling, however. I know we should not try to visualise the fourth dimension, or many dimensions, or multiverses, or all sorts of things about black holes, but what will the future look like, and where is the spirituality?



Every now and then an author publishes a 'choose your own ending' book. This is where, on page 59 for example, you are given the option that the lead character dies ('go to page 73') or the lead character inherits a million dollars ('keep reading'). Some physicists would have us believe there are multiple endings available to us. They suggest that there is a continual birth of new universes and that our decisions and our prayers simply take us down this path rather than a whole lot of other ones. It is like being inside and part of a

Mandelbrot set, continually unfolding in amazing complexity and beauty.

It is then that I come back to basic principles. I exist in a world with many daily challenges and rewards, and more than enough intellectual fodder to keep me grafted into the present. Sue and I hold hands and say grace at each meal, giving thanks. The young family version is: *Thank you God for this food. Amen. Bless the cook.* (Don't ask me why *Bless the cook* comes after Amen.) Our private version for most of the past 54 years has been: *Heavenly Father, we give thanks for the food that we eat and the life that we share. We ask for your continued blessing on and us in your service. In Christ's name. Amen.*

You may say that this is surprisingly traditional. But grateful thanks for life, food and company is my universe, and affects my viewpoint on life, my worldview.

Any viewpoint is a view from a point. Each of us already has a viewpoint in the creationism / evolution / natural selection debate. Each of us has a combination of understandings, experiences and possibly prejudices which I am not asking you to change. I hope however that you feel encouraged to continue spending a few minutes in another person's shoes, viewing the world from a point which may not be your own.

Discussion of evolution by natural selection uses the same scientific processes of observation, hypothesis formation, testing, debate and restructuring of the hypothesis as are used for our advances in medicine, technology, and communication. Natural selection as the process for what we see as evolution is the simplest and most complete explanation of the mechanism of that change. As such it is accepted by scientists, using the general guiding rule known as Occam's razor, that the simplest hypothesis should be used.

But natural selection does not provide a personal and satisfying reason for existence, or for the existence of good, evil, love and service to others.

I know and I believe that God exists: a knowledge not just of my head. It is a deep conviction supported by experience. I believe that this world is his / her show in which we are invited to share. I believe that God knows and understands me. She/he made me. I am privileged to be a current holder of a very long line of coded information (DNA) which determines to a very large extent my body structure, my learning abilities and my moods. I am a TUBE: a Temporary Unique Biochemical Eruption.

I also understand something of the world in which we live. I live in a world which no longer sees the earth as flat. We admit to the existence of the air around us (a relatively recent understanding in science) and we even understand something of our own biochemical makeup.

My wife and I have avoided much of the birds and bees and storks discussions with our children. We preferred to say that God made us, and later told them in one way or another that mum and dad also had something to do with it, as the means by which God makes people.

Perhaps in a similar way we can let the Genesis passages say what they were intended to say: that this is God's creation out of chaos because he wanted it that way, and that we are stewards or caretakers of this gift. If, comparatively recently, we have started to find out a bit about how it happened, is that a problem?

My experience of some evolutionists is sad. They see themselves as mere accidents of history, leading a life controlled only by their population's DNA. In this view, for which there is good evidence, our DNA (genetic makeup inherited from our parents) uses us in a competition against the DNA of other species and our own species in such a way that our own DNA attempts to survive to the next generation, casting aside our bodies when they are of no further use. We become temporary carriers of the more permanent and lasting DNA.

For each of us, this can be referred to as the Flyby Effect. In this view, the processes of evolution have provided us with enough strength and resilience in our body parts to carry us through the child bearing and child raising years, but with no provision beyond that. In this way we are similar to a satellite which is built just robust enough to get it to its destination for a flyby visit, after which it is space junk of no use, just cluttering up space.

All of us need a *God as Creator* viewpoint to remind us that we are more than bags of atoms on a flyby and about to become space junk. *God as Creator* could make many evolutionists a lot happier. The consistent message from God is about a new creation in which competition and exclusion will be replaced by love and inclusion.

My experience of many Creationists is sad, in that they have an us/them, right/ wrong, siege mentality. They devote vast amounts of their time and money to fight a battle which many people are not interested in, and they are careless and selective with their use of data. But Creationists see this battle as an easily identified cause for which they can fight: an opportunity to do something positive for God. What they cannot see is that Creationism is a sect which is based on bad science and bad theology, and that it misunderstands and misuses the Bible.

Creationists, in fact all of us, need an Evolutionist viewpoint at times to remind us that we have some inbuilt structures and programs which have limitations and possibilities which are best understood from an evolutionary position. Examples are disease and its transfer across species, genetic disorders, and issues about sexuality and ageing.

The Bible states in bold fashion that God is the creator of all: the universe, humankind and everything. But the Bible does not show how he did it. The early chapters of Genesis are a later and composite addition to provide a starting point to the story of God and his searching love for his people, all people. We were created out of chaos. We are mere dust: Adam (people) and Eve (life) formed from the Adamah (dust).

We need to remember that the beginning of Genesis was written around and after the fall of Jerusalem to Nebuchadnezzar in 597 and 587 BCE. Many of the children of Israel had been taken into captivity. After Babylon had been overthrown by Persia, the returning Jews were allowed to have some autonomy in return for having a generally agreed code of beliefs and behaviours.

Whatever the causes, the priests and others had asked of themselves: *What is the essence of our existence, our beliefs?* The answers included one God, 7 day creation and circumcision of males. The Genesis 1 account rewrote the creation stories of surrounding peoples showing that there was one God (rather than many gods) and that God created the world out of chaos. In essence the Genesis text is saying: *So don't worry that we are in chaos now: God created the world out of chaos. God will act again. Go out and settle down and enjoy life: be fruitful and multiply.*

We need to hold two things together. We need to do justice to the Biblical view of the nature of humankind, while also ensuring that we do not for any reason read into the Bible narrative any meanings which were not intended.

We should give thanks for the energy and the spiritual fervour of the Creationists and also accept with joy God's gift of the universe many billions of years ago and the ability of each of us to start to understand how it happened and to live lives of joyful thanks.

It is not a matter of who is right and who is wrong. Each of us should feel empowered to continue to explore our physical and spiritual world. No one will be damned for seeking, and the rewards can be breathtaking.

So where do we go from here? Several pathways, several ways of living and believing as Christians, have now disappeared.

No longer can we believe in the Papal view of the world in which successive Popes have been understood to be the only link with Peter, to whom Jesus gave the keys of the Kingdom of Heaven. This mechanistic, ritualistic view of the Roman Catholic Church does not seem to be supported by scripture. As an institution or organisation, however, the Roman Catholic hierarchy can be very effective, especially in its sense of community. A strict hierarchy has also been effective for the Orthodox churches.

Some Protestant churches, while claiming to be non-hierarchical, actually operate in ways which belie their claimed stance. For example, in the Uniting Church in Australia, formed from the Congregational, Methodist and Presbyterian churches in 1977, the excellence of its dreams and its Basis of Union are at times tarnished by individuals and committees which act in ways which border on being Papal.

Closed Brethren and churches whose titles are similar to *Full Gospel Calvary Baptist Church* may also be considered to be as Papal and exclusive in their conduct as any Roman Catholic or Orthodox church.

The rites of churches have varying degrees of scriptural authority: baptism of believers, baptism of infants, baptism by immersion (of infants or adults), holy communion (eucharist), ordination (or setting apart for particular tasks), exorcism, and confession to a priest or other Christian.

Some practices have origins which were meaningful for the Christians who initiated these practices: celibacy for Roman Catholic priests, veneration of icons or statues, and the many holiness practices such as retreats, fasting, flagellation, speaking in tongues, the sign of the cross, and self-sacrificing service to others.

These rites and practices should be retained and celebrated if they are positive and assist in the continuing transformation of people into being a deeply loving community. Which rites and practices are retained, and which ones are left behind, will be different for different groups of people. But the ultimate test is the same: has transformation occurred, producing people who are in a deep loving relationship with others, with themselves, and with God.

A practice I do not follow is crossing myself, unlike my brothers and sisters in the Roman Catholic and

Orthodox churches. There are times and places however where crossing myself would be helpful for me. To do so, though, could be problematic for some Protestants around me because it would indicate that I was probably not a Protestant, and therefore not a part of their in-group. And if I did cross myself the method of crossing would be seen to be either Roman Catholic style (thumb, index finger, middle finger together, touching forehead, base of sternum, left chest, right chest) or Orthodox (thumb, index finger, middle finger together, touching forehead, between sternum and navel, right shoulder, left shoulder, then repeat). So, whatever I do, or don't do, it could be seen to be divisive or isolating, and yet for some people to see me crossing myself could be affirming to know that there was a fellow believer present.

Similar consideration could be given to other Christian practices: censers burning incense for visual and aromatic accompaniment to prayers, high altars in churches, the lectionary of Bible readings used by many denominations, Saints Days, pilgrimages, liturgical dance, hymn singing, and others.

Practices which have outlived their usefulness or are counterproductive should be let go. If we are bold enough to heavily prune the institutional Church and our practices as Christians, then what we are left with is a simple basis for a simple faith.

If it is helpful to then express this faith in various old or new rites or practices then we should feel free to do so. If we continue to baptise children as the church has for two thousand years, and find that this is helpful in understanding God's inclusive loving action in the world, then surely that practice should continue. If we dismantle the rites and practices of the church and then choose to reinstate them then that is healthy. But to continue existing practices, just because they are there, is demeaning to the Gospel and is self-defeating for us and for the Church.

Some would go even further and say that the institutional church itself is at risk of its very survival. To keep repeating that God will always have his witnesses avoids the point, which is: *Does God need an **institutional** church?*

The more relevant question may be: *Do **we** need an **institutional** church?* To many people the answer is: *No, we just can't settle into a church, but that doesn't alter our faith or belief.*

Falling back on Paul's instruction not to avoid the assembling of the people is to ignore the context of his writings. Paul was coming from a legalistic and institutional background, and he was writing to people who had little support except from the institutional church.

For us to consider stepping out into non-institutional life can be difficult and daunting. But it can help us see the role of the institutional church. It acts as a reference point for decisions, a little like parents whose attitudes always have an influence on the behaviour of children, either positively or negatively. Institutional church also acts as a repository for the story, in both formal and informal ways. Where would we be, where could this book have come from, if not for the wisdom of the church and its availability.

At a personal level I enjoy being in a large congregation which is singing praises to God. I enjoy studying the art and sculpture and other expressions by people about their own faith, or of the faith of their patron. My wife and I have most recently been a part of a very small congregation which is lay led and provides literally truckloads of clothing, furniture and food for people in need. For us, the traditional large church congregation would be nice, but has not been our experience for most of our married life.

Placing our faith into our social context has been important. In so doing, my wife and I join with others down the centuries and millennia in their understanding of their place in the world and their expression of the sense of the *Other*, or *God*, or (Jungian) *Self*. With a deep joy we can therefore sing hymns, enjoy art work, read theology and participate in many other forms of expression of faith and life, even though we might not have expressed our faith that way ourselves, but we feel a solidarity with other people in their expression. In Biblical terms this is called *the company of saints*.

The future direction of the Church may be like a family going on their annual holidays. Each time in

the past, that family went by a particular route to a particular camping ground and met people who they had met on previous visits. After setting up camp they would go walking and fishing in the same places which they had used in previous years. If each year the family decides to do the same as they have always done then that can be positive. If, however, they find that they have lost the enjoyment of this routine, and do the same things only out of habit or ritual, then change is necessary.

So it should be with our life as Christians. Institutional church and the various accompanying practices should only continue if they continue to serve the needs of the people, for it is the people who are the body of Christ.

As mentioned in chapter 7: Original sin: a human artefact, Descartes (1596–1650), the mathematician and philosopher, wrote *Cogito ergo sum* (*I think, therefore I am*) as the basic foundational point in his search for the reality of his existence, and he then rebuilt his understanding of the world around him.

Seeing that our senses sometimes deceive us, I was willing to suppose that there existed nothing really such as they presented to us. When I considered that the very same thoughts which we experience when awake may also be experienced when we are asleep, while there is at that time not one of them true, I supposed that all the objects that had ever entered into my mind when awake, had in them no more truth than the illusions of my dreams.

*But immediately I observed that, whilst I wished to think that all was false, it was absolutely necessary that I, who thought this way, should be something; and, as I observed that, this truth **I think, therefore I am** was so certain and of such evidence that no ground of doubt could be capable of shaking it, I concluded that I might accept it as the first principle of the philosophy I was searching for.*

Descartes later, in about 1647, also wrote

I feel that it is necessary to know what doubt is ... I doubt therefore I am - or what is the same - I think therefore I am.

In a similar way we can deconstruct the Christian faith until we are left with one dependable fact: the life and witness of a humble carpenter two thousand years ago. Jesus in his life and teachings was like God. He showed us the face and nature of God. Jesus was God-like. In Bible-speak, Jesus was the Son of God.

We are called into a relationship which is based on this remarkable and unique life. If we do this, we will see the world differently, very differently. The quote *We don't see things as they are, we see them as we are* has various origins, including Immanuel Kant.

If we detach from our power-based, materialistic world view and see it through new eyes we may see God more clearly. This is why mystics and prostitutes have a head start in seeing the Good News.

Remember the quote in chapter 7 from the astronomer Sir James Jeans: *This brings us very near to those philosophical systems which regard the universe as a thought in the mind of its Creator, thereby reducing all discussion of material creation to futility.* Perhaps we need to relax and enjoy the life we have been given.

Einstein's famous equation $E = mc^2$ is more than an equation showing how much energy is obtained by the annihilation of a certain quantity of matter. This equation puts into mathematical language Einstein's proposal that energy and matter are simply different forms of existence.

Christians say that God created the universe out of his own substance. Perhaps some of God's energy became matter. If we can see this then we are very close to Francis of Assisi, who saw God in everything around him: he saw nature as being the mirror of God. From such a viewpoint we can then accept our place more joyfully as being literally a part of God's family – or we can turn away. It is our choice.

The beauty of creation around us, and its praise of its Creator, has been expressed in many ways, including song. In church we can sing this hymn from Australians Alister Spence and Patricia Lewis, part of which is:

*Made in God's likeness, moved by the Spirit, called to create a new world for the Lord,
Birds in the mountains sing of your praises, called in the morning to tell of your love;
Bell-birds and whip-birds sing of creation, celebrate always that Christ is the King.*

*Called now at all times, to wait on the Father, follow his lead as he partners our dance;
Brolga bird dances, retreats and, returning, bowing at last to his partner, the Lord.*

Celtic Thunder put it this way in their catchy singing of this song:

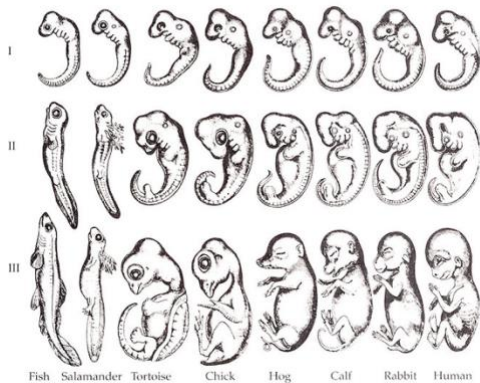
*All God's creatures got a place in the choir, some sing low and some sing higher,
Some sing out loud on a telephone wire,
Some just clap their hands, or paws, or anything they've got now*

The Isaiah 55:12 way of saying it is:

*You will go out in joy and be led forth in peace; the mountains and hills will burst into song
before you, and all the trees of the field will clap their hands.*

Psalms 98:8 says: *Let the rivers clap their hands, let the mountains sing together for joy ...*

God is love is a well-known quote (1 John 4:16). God is a relationship.



A discarded hypothesis in Zoology is that *Ontogeny recapitulates Phylogeny*: that in developing from an embryo to adult, an animal goes through stages resembling or representing successive stages in the evolution of its remote ancestors. Note the external gills so easily seen on the fish embryo, becoming gill folds for us and for other vertebrates.

Zoologists now see the stages of human embryonic and foetal development as necessary steps which have evolutionary origins, but throughout the process each of us has our humanity expressed in different ways as controlled by our individual genetic codes.

Similarly, Christian ontogeny does not need to recapitulate Christian phylogeny.

In other words, we are what we are now: we do not have to experience the earlier stages of the human experience of God. We do not have to experience living under the laws and understandings which existed prior to the Ten Commandments. We do not have to experience life under the Ten Commandments and its additions. We do not have to be overrun and exiled. As Peter found out, we do not have to be circumcised as Jews before becoming Christians (Acts 15, also the Council of Jerusalem in approximately 50 CE).

Instead, we have Jesus and his simple but demanding standards. Such standards are not to be seen in isolation from the history of the Jews and the Church. We are the current experiencers and expressers of human life, informed and guided by the past but not bound by it. Our ontogeny is allowed to be our own, even though we then find that our social and biological inheritances affect what we thought was purely us.

We can go even further in this pruning of the world and our place in it. When we look at the Biblical record, we may see that God's most obvious and effective work takes place when starting from nothing.

Regarding the creation of the world, Martin Luther wrote *It is God's nature to make something out of nothing. This is why God cannot make anything out of him who is not yet nothing.* Elijah the prophet, ninth century BCE, at a time of depression found God in the *sound of sheer silence* or *the still small voice*. At the transfiguration of Jesus, the disciples who wished to maintain and retain this moment were in effect told that God's work was where God was not obvious, in the noisy and dirty valley

among people who were spiritual deserts, spiritually nothing. The early church was founded using the talents of people without good social standing, in fact not a lot of training in anything except being real people.

In the words of Richard Rohr:

The Jews showed an amazing propensity to face all situations with nothing but God. As they were about to cross the Red (Reed) Sea Moses says: "Do nothing. Just stand there, do nothing, and let God act".

and

People who've had any genuine spiritual experience always know that they don't know. They are utterly humbled before mystery. They are in awe before the abyss of it all, in wonder at eternity and depth, and a Love which is incomprehensible to the mind. New Great Themes from Scripture

This is not a denial of life or its value. It instead deflates our egos, and opens us up to see our world, untainted by personal agendas. We hear echoes of the sixth Beatitude, the bliss of the pure in heart.

In *Falling Upwards*, Rohr likens the Christian life to falling in love, in which a person will abandon all, and fall into the loving arms of the lover.

M Scott Peck was a Christian psychiatrist. His books include the highly influential *The Road Less Travelled*. In a later book, *People of the Lie*, describing some of his clinical experiences, he writes: *The process of deep healing, at least within the psychoanalytic framework, requires the patient to regress on some level to some degree. It is a difficult and frightening requirement. It is like a death. Yet it can be accomplished. When it is, healing will result. When it does not, the foundation cannot be reconstructed. No regression, no healing: it is as simple as that* ⁽²²⁾.

Healing can happen, and frequently we see this and are thankful for it. Ultimately, though, each of us will die. Death is very real to us. It cannot be postponed. It will still come to us, and will still make us anxious. It still separates us from those whom we love. But I believe death is not the final word. The last word is always with the Holy Spirit, the giver of Life.

What does it mean to live in the timeless world of God, where past, present and future are all together in one glorious, eternal celebration? I am without words, partly because I do not understand a lot of things, including many aspects of life itself. Accompanying that 'not understanding' is the 'knowing that I am not alone' and that it gives me the confidence to go into all sorts of situations, some of them risky.

What is this life which we enjoy? We live on a tiny speck called earth orbiting a rather smallish sun in a galaxy of hundreds of billions of stars (suns) amongst hundreds of billions of galaxies, which have been around for billions of years (some of them three times longer than the age of our solar system), and consisting entirely of waves of energy (or particles if you wish).

We have noted that everything has a wave – particle duality. You can describe everything in the world around you as waves, or particles. For some people, the mathematics is the better and only description, and the waves or particles are just alternative ways of picturing what the maths is saying. Yet we go about our daily business, more concerned about where our next meal is coming from, or whether our clothes match, or whether the rubbish bin is on the street ready for collection. And we only think of ourselves as waves, or particles, if we have to.

The Heisenberg Uncertainty Principle states that you can know either the position of an electron or its momentum, but not both. The wave version is harder to put into words. Either way, there is, at the very base of our God-given world and our lives, an underlying uncertainty which will never be resolved.

After his initial outpourings in Relativity, which have changed the world forever, Einstein spent the rest of his life in an unfinished attempt to find The Theory of Everything. One major problem he and others encountered was in attempting to quantise gravitation, trying meld something which is organised and packaged with something which is boundless and endlessly fading.

You and I have an even more complex task, trying to meld the packaging and promotion of the many different perceptions of The Way of Jesus with the boundless and infinitely variable nature of people's spiritual starting points and spiritual development.

Once again, we can think very hard about this, but we still have to eat and sleep and go on with our lives. It reminds us again of the Exile in Babylon, where the people in the middle of the chaos were being told, by means of the second Creation story in Genesis, to just settle down, to enjoy the world around them, and not get distracted by heavy issues which are beyond their control, such as the knowledge of good and evil.

Our lives are a gift from God. At some time, this life will end for each of us and we will be with the source of this life we have been given. But although we cannot describe these things, no matter how hard we try, we are encouraged to get on with living our lives in a way which reflects the inclusive loving of God our creator. Life is a gift and can be enjoyed and shared, forever, starting now.

May I now express my thanks to you for reading this book, for journeying with me. We have been on the same journey, carrying different baggage according to our upbringing, training and life experiences.

I hope that you become involved with a local church: you and they may not agree on everything that they say and do, but that is not as important as meeting with other Christians.

We do not need to agree on our ancestors' lives and writings, nor any description of the future, nor even the details of the nature of Jesus. Of supreme importance is whether all of these factors have transformed us into people who are loving and loved: caring and cared for.

Love is the answer, and the source and example of this love is God.

SCIENTIFICALLY SPEAKING

17: Examples of separate creation or modification upon modification?

For many people the evidence for the process of evolution is fossils. Fossil evidence includes bones, cavities in rocks, and structures which have been mineralized (replaced by salts from the surrounding liquid).

Each of us however carries around large amounts of cellular and biochemical evidence which unites all living things, and makes us ask: *Is each variation an example of separate creation? Does each variation come from an earlier common plan?*

Creationists say that there have been separate creations which made a few main types, after which, in what they claim is about 6 000 years, there has been variation of these few main types to provide the variety that we now see today.

There are two questions which arise from this approach.

- If in much less than 6000 years there has been enough time for a few main types of plants and animals on Noah's Ark to become the wide range of plants and animals we see today, what is the problem with that range coming from single cells and their progeny over a much, much longer period of time? (Creationist websites refer to floating weed mats as the way in which the plants and insects survived.)
- Can I believe in the small God that the Creationists must believe in, who makes all creatures as special creations, but with an enormous amount of commonality? Surely such a god could be more creative.

A. Cell structure and functioning

Classifying things and grouping like things together is what we commonly do in everyday life, and is helpful in many ways. We keep socks together, separate from other clothing. We keep nails and screws in separate boxes and well away from breakfast cereals or socks.

We classify organisms also, keeping like things together. A particular type of organism is called a species. A species is the only part of the classification system which can be defined and (if it is still living) tested. Organisms are said to be of the same species if they can interbreed to produce offspring which themselves can breed successfully. For example, although horses and donkeys are similar, they are considered to be separate species. They do interbreed, but the offspring (mules and hinnies) are usually sterile.

All other levels of classification are established by discussion and agreement on similarities in structures. What an organism eats or where it lives is not used in classification.

In broad terms, all living things can be divided into two Kingdoms (plants and animals) or some systems use a third Kingdom of single celled organisms. Other systems have many Kingdoms. From Kingdom to species the defining characteristics for membership of that group become more and more specific. The common sequence is Kingdom, Phylum, Class, Order, Family, Genus and species. The first letter of the name of each level except species is written with a capital. Here are abbreviated versions of some classifications.

a human being is classified as

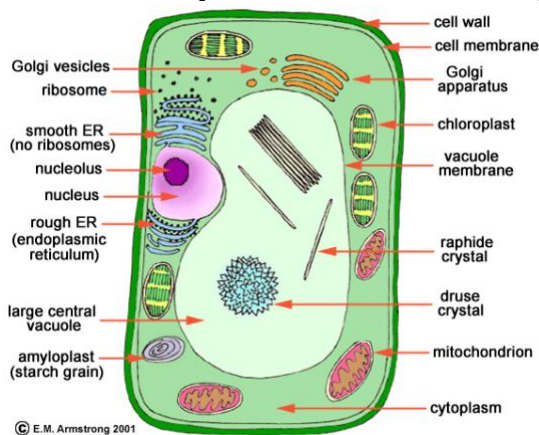
Kingdom Animalia, Phylum Chordata, Sub Phylum Vertebrata, Class Mammalia, Order Primates, Family Hominidae, Genus Homo, species sapiens. (and is usually referred to as Homo sapiens)

the common chimpanzee is classified as

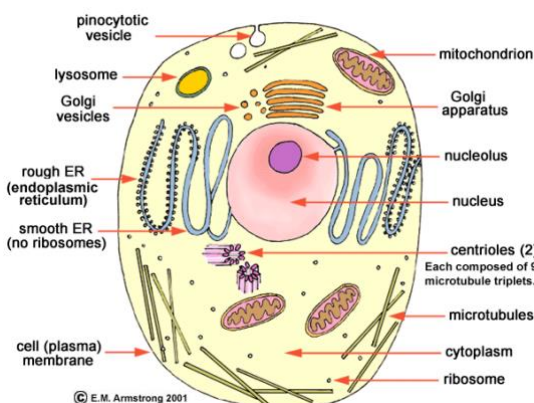
Kingdom Animalia, Phylum Chordata, Sub Phylum Vertebrata, Class Mammalia, Order Primates, Family Hominidae, Genus Pan, species troglodytes. (and is usually referred to as Pan troglodytes)

the common house fly is classified as

Kingdom Animalia, Phylum Arthropoda, Class Insecta, Order Diptera, Family Muscidae, Genus Musca, species domestica (and is usually referred to as pesky fly)



The fundamental difference between plant cells and animal cells is the presence or absence of a tough pressure casing called a cell wall. Plant cells are generally harder than animal cells because the contents of the cell, surrounded by a cell membrane, are encased by the cell wall. It is like a balloon (the cell membrane and its contents) blown up inside a wire mesh cage (the cell wall).



Other aspects of cell structure and functioning are the same for plants and animals. All cells have a cell membrane which allows a range of materials to enter and leave. Inside the cell membrane of every plant and animal is a fluid which has some structure to it, as well as bodies such as mitochondria (power houses of the cell), ribosomes (protein manufacture), Golgi apparatus (packaging of proteins), and in most cases nuclei (containing the genetic code).

Kangaroos, mushrooms, wheat, earthworms and ourselves all have these same types of structures in our cells, except that the cells of plants also have cell walls.

This has led to the proposal, Serial Endosymbiosis

Theory, that not only have all cells arisen from common ancestors, but that within the cell itself is continuing symbiosis (see below).

Is each type of cell a separate creation? Or is each type of cell a variation of an earlier common plan?

B. Serial Endosymbiotic Theory (SET)

Serial Endosymbiotic Theory proposes that symbiotic groups of prokaryotic cells (microbial cells lacking a nuclear membrane and organelles such as mitochondria) were the ancestors of eukaryotic cells (cells which have a nuclear membrane and defined organelles).

Symbiosis is the term for two different organisms living in association with one another for mutual benefit, and there are many examples of symbiotic relationships. Lichens, often seen as grey green scaly growths on rocks, trees and roofs, demonstrate an association between a particular alga, which makes food through photosynthesis, and a particular fungus, which provides the anchorage and the protected environment for the alga.

Endosymbiosis refers to a symbiotic association between prokaryotes over a long period of time which produced an interdependent relationship. Metabolic cooperation produced a survival advantage for each of the contributors.

What follows basically says that the small structures inside modern cells, structures such as mitochondria and ribosomes and Golgi apparatus, arose a long time ago, possibly a billion years ago, by the symbiosis of particles which at that stage lived independently but found survival advantage in specialization and cooperation at the cellular level.

In the 1960's, biologist Lynn Margulis actively promoted endosymbiotic theory: *The Endosymbiotic Theory of Eukaryote Evolution*. Margulis published *Symbiosis in Cell Evolution* in 1981. Even though the essential idea had a lengthy history, mainstream biologists initially reacted negatively to Margulis' theory. But on the basis of experimental evidence, Serial Endosymbiotic Theory (SET) is now almost universally accepted as the most plausible explanation for the evolution of eukaryotes.

Evidence for SET is complex and detailed, but includes the observation that mitochondria have their own cell membranes, as do prokaryotic cells. Also, each mitochondrion has its own circular DNA genome, like a bacterium's genome, and mitochondria multiply in the same way as bacteria do, by binary fission (pinching in half). Mitochondria and chloroplasts are the same size as prokaryotic cells, and they have the same organising proteins at place where fission is occurring (FtsZ proteins).

The proposed mechanism of the initial endosymbiosis is phagocytosis (engulfing) of a bacterium (or bacteria) by another prokaryotic cell. The phagocytosed bacteria survived on nutrients from the host prokaryotic cell. Subsequently, both host and symbiotic bacterium reproduced co-independently such that subsequent generations of endosymbiotic neocytes would also contain the descendants of the originally ingested bacterium.

Ultimately, both the prokaryotic host and the bacteria endosymbionts developed an interdependence through which both entities lost their ability to function without the other. It is assumed that oxygen generated in the early atmosphere by Cyanobacteria necessitated endosymbiotic metabolic association between ingested aerobic bacteria and anaerobic host prokaryotes. The ingested bacteria ultimately performed oxidative metabolism necessary for the survival of the original host cell, which would otherwise have been poisoned by atmospheric oxygen. The former free-living aerobic bacteria assumed the role of mitochondria within its host cell.

Similarly, serial ingestion of photosynthetic bacteria by endosymbiotic prokaryotes or eukaryotes led to the evolution of the ancestors of eukaryotic plants and photosynthetic protists. As the ingested photosynthetic bacteria adapted to the ingesting prokaryotic host cell, plastids evolved, for example the chloroplast. Primary plastids are found in Chlorophyta (green algae), Rhodophyta (red algae) and

plants, because their plastids are derived directly from a Cyanobacterium. All other lineages of plastids have arisen through secondary (or tertiary) endosymbiosis, in which a eukaryote already possessing plastids is engulfed by a second eukaryote. Considerable gene transfer has occurred among genomes and, at times, between organisms.

Prior to Margulis' conception of the Symbiotic Theory in the 1960's, biologists thought that the eukaryote's nuclear DNA carried the code for and determined the cellular organelles. When Margulis initially proposed the Symbiotic Theory, she predicted that organelles of prokaryotic origin would be coded for by their own DNA. In the 1980's, evidence in support of Margulis' prediction was found in the distinct prokaryotic-DNA of the mitochondria and chloroplasts of eukaryotic cells.

**Is each type of cell an example of separate creation?
Or is each type of cell a variation of an earlier common plan?**

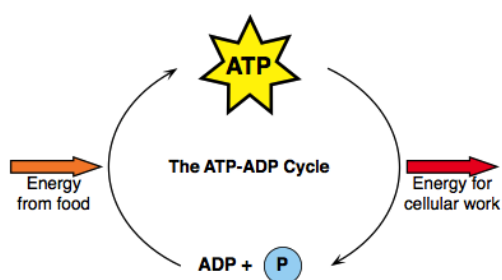
C. Aerobic and anaerobic ATP / ADP cycles

Organic chemistry focusses on the element carbon. Carbon is central to all living organisms. There are also very many nonliving things made from carbon compounds, and include drugs, plastics, and dyes.

One atom of carbon can combine with up to four other atoms. Organic molecules can be small or large, simple or very complex and include carbohydrates, proteins, nucleic acids and lipids.

By combining a carbon atom with four hydrogen atoms a molecule of methane CH_4 is formed. Ethanol or ethyl alcohol has the formula $\text{C}_2\text{H}_5\text{OH}$, and ethanoic acid is CH_3COOH (known commonly as acetic acid, a 4% solution of which is vinegar). Sucrose $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ (cane sugar) contains a glucose molecule $\text{C}_6\text{H}_{12}\text{O}_6$ and a fructose molecule which is also $\text{C}_6\text{H}_{12}\text{O}_6$ (the same number of atoms but arranged differently) minus a molecule of water H_2O .

The ability to convert fuel such sugars into usable energy distinguishes a living organism from a dead one. The fuel contains large molecules (macromolecules) which get broken down. When the macromolecules have been broken down into smaller parts, they can enter the cells, and be broken down further or used to build more macromolecules, which are involved in more processes. There are also glucose transporters present in all phyla of living things, and these carry whole glucose molecules through the cell membrane.

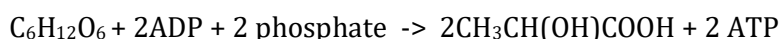


Respiration is a cellular process in plants and animals in which the chemical energy in high energy molecules such as glucose is made available to cells for making new molecules, repairing damage, etc.

All plant and animal cells carry out this complex, multistage stage process by using much smaller adenosine triphosphate (ATP) molecules as intermediary transfer molecules to assist in making the large incoming high energy molecules more usable.

ATP is then carried to other parts of the cell where it then breaks down to become adenosine diphosphate (ADP) plus phosphate plus energy. This ADP and the separated phosphate then reform as ATP for another cycle of energy transport in cells.

Anaerobic respiration or fermentation involves making energy available in a usable form through the process of oxidation of the fuel (such as sugars) in the absence of oxygen. The equation for the oxidation of glucose to lactic acid is:



This production of lactic acid from glucose is what happens in our muscles when we get a stitch.

Insufficient oxygen has been available to fully oxidize the glucose, leading to only partial breakdown of the glucose and the accumulation of relatively insoluble lactic acid in the muscle cells.

In prokaryotes, such as bacteria, multiple electron acceptors can be used in anaerobic respiration. These include nitrate, sulfate or carbon dioxide. These processes lead to the ecologically-important processes of denitrification, sulfate reduction and acetogenesis, respectively.

Aerobic respiration uses the stored energy in glucose more completely, and provides 18 times as much ATP per mole of glucose respired.



The total quantity of ATP in the human body is about 50 grams. At any given time, the total amount of ATP + ADP remains fairly constant.

Each human requires the breakdown of 50 to 75 kilograms of ATP daily. In other words, a human will typically use up his or her body weight of ATP over the course of the day. This means that each ATP molecule is recycled 1000 to 1500 times during a single day. ATP cannot be stored. Its consumption closely follows its synthesis.

**Why do all cells use the same ADP / ATP cycle?
Does this imply a common ancestor?**

D. The RNA world hypothesis

The RNA world hypothesis proposes that life based on ribonucleic acid (RNA) pre-dates the current world of life which is based on deoxyribonucleic acid (DNA), RNA and proteins.

In 1982, Thomas Čech became the first to show that RNA molecules are not restricted to being passive carriers of genetic information. He showed that they can have catalytic functions and can participate in cellular reactions. RNA-processing reactions and protein synthesis on ribosomes in particular are catalysed by RNA.

RNA enzymes are known as ribozymes and are a tool for gene technology. They also have the potential to provide new therapeutic agents. For example, ribozymes have the ability to destroy some or all invading viral RNAs.

RNA is able to store genetic information, like DNA does, and to catalyse chemical reactions, like an enzyme protein. It may therefore have supported pre-cellular life and been a major step in the evolution of cellular life.

In a 2011 review of the evidence, Čech suggests that multiple self-replicating molecular systems probably preceded RNA. Proteins large enough to self-fold and have useful activities came about only after RNA was available to catalyse peptide ligation or amino acid polymerization, although amino acids and short peptides were present in the earlier mixtures.

Čech proposes that the RNA world evolved into a world of ribonucleoprotein (RNP) enzymes, such as the ribosome and ribozymes, before giving rise to the DNA, RNA and protein world of today. DNA is thought to have taken over the role of data storage due to its increased stability, while proteins, through a greater variety of monomers (the amino acids), replaced RNA's role of specialized biocatalysis.

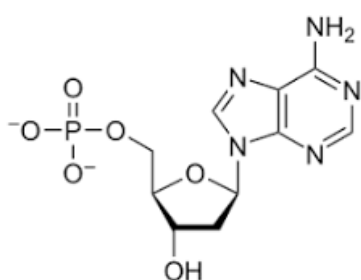
The RNA world hypothesis suggests that RNA in modern cells is an evolutionary remnant of the RNA world that preceded ours. Also, many critical cofactors (ATP, Acetyl-CoA, NADH, etc.) are either nucleotides or substances clearly related to them.

Is RNA an evolutionary remnant predating DNA?

**Is DNA a separate new creation, or is it a modification from an earlier RNA plan?
Why do cells have this common plan?**

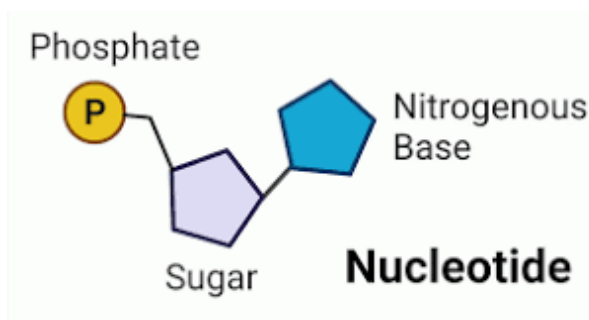
E. Nucleic acids: the genetic material of life

Ten years after the publication of *On the Origin of Species*, nucleic acids were first isolated by Friedrich Miescher in 1869. It took another 75 years after this discovery for DNA to be identified as the genetic material of life (Avery *et al.* 1944). We could have found a different genetic material for each species. In fact, it is still possible that newly identified species might have unknown genetic materials.



Nucleotides are organic molecules consisting of a nitrogenous base, a five carbon sugar (ribose or deoxy ribose) and at least one phosphate group. Nucleosides are nucleotides without phosphate groups.

Nucleotides are monomers for the formation of the nucleic acid polymers ribonucleic acid (RNA) and deoxyribonucleic acid (DNA). Both of these polymers are essential polymers in all forms of life on earth, and are used for storing species-specific information. All known organisms base their replication on the duplication of this molecule.



The DNA used by living organisms is synthesized using only four nucleosides (deoxyadenosine, deoxythymidine, deoxycytidine, and deoxyguanosine) out of the dozens known. Over a hundred occur naturally and many more have been artificially synthesized.

The bases used in DNA are adenine, cytosine, guanine and thymine. Note that this is not DNA for a particular species, but is DNA in any species, regardless of whether it is from a tree, a mould, a cow or you. What makes one type of organism differ another type of organism is the order in which these bases occur.

**Why do all cells use the same genetic coding process?
Does this imply a common ancestor?**

F. Protein Catalysis

In order to perform the functions necessary for life, organisms must catalyse chemical reactions. In all known organisms, enzymatic catalysis is based on the abilities provided by protein molecules, and in relatively rare cases by RNA molecules. Proteins are made from amino acids. Amino acids are organic molecules which contain both amino (-NH₂) and carboxylic acid (-COOH) groups.

There are hundreds of naturally occurring amino acids; however, the protein molecules used by all known living organisms are constructed with the same subset of 22 amino acids.

For an excellent description of amino acid structure and functioning, go to <https://amit1b.wordpress.com/the-molecules-of-life/about/amino-acids/>

**Why do cells use the same 22 amino acids?
Does this imply a common ancestor?**

G. Common metabolism processes

All known organisms use extremely similar, and often the same, metabolic pathways and metabolic enzymes in processing energy-containing molecules. For example, the fundamental metabolic systems in living organisms are glycolysis, the citric acid cycle, and oxidative phosphorylation. In all

eukaryotes, and in the majority of prokaryotes, glycolysis is performed in the same ten steps, in the same order, using the same ten enzymes. Also, as shown already, the most basic unit of energy storage, the adenosine triphosphate molecule (ATP), is the same in all species that have been studied.

Thousands of new species are discovered each year, and new DNA and protein sequences are determined daily from previously unexamined species. Billions of new bases are sequenced every day. Each one is a test of the theory of common descent.

Based solely on the theory of common descent and the genetics of known organisms, it is confidently predicted that we will never find any modern species from known phyla on this Earth with foreign, non- nucleic acid genetic material. Also, there is the strong prediction that all newly discovered species that belong to the known phyla will use the standard genetic code or a close derivative thereof.

For example, according to the theory, none of the thousands of new and previously unknown insects that are constantly being discovered will have non-nucleic acid genomes. Nor will these yet undiscovered species of insects have genetic codes which are not close derivatives of the standard genetic code.

In the absence of the theory of common descent, it is quite possible that every species could have a very different genetic code, specific to it only, since there are 1.4×10^{70} informationally-equivalent genetic codes, all of which use the same codons and amino acids as the standard genetic code (Yockey 1992).

This possibility could be extremely useful for organisms, as it would preclude interspecific viral infections. However, this has not been observed, and the theory of common descent suggests that this will never happen.

There are thousands of thermodynamically equivalent glycolysis pathways (even using the same ten reaction steps but in different orders), so it is possible that every species could have its own specific glycolysis pathway, tailored to its own unique needs. The same reasoning applies to other core metabolic pathways, such as the citric acid cycle and oxidative phosphorylation.

Many molecules besides ATP could serve equally well as the common currency for energy in various species: for example, CTP, TTP, UTP, ITP, or any ATP-like molecule with one of the many known amino acids or one of the dozens of other bases replacing the adenosine core are possibilities.

**Why do all cells have common metabolic pathways?
Does this imply a common ancestral origin?**

H. The 1 bone, 2 bone, 5 bone plan and the coelacanth

Coelacanths belong to a group of lobed-finned fish that are related to lungfish, and to other extinct Devonian fish. Coelacanths were thought to have gone extinct in the Late Cretaceous, about 80 million years ago, but were rediscovered alive in 1938 off the coast of South Africa. *Latimeria chalumnae* and *Latimeria menadoensis* are the only two living coelacanth species and are found along the coastlines of the Indian Ocean.

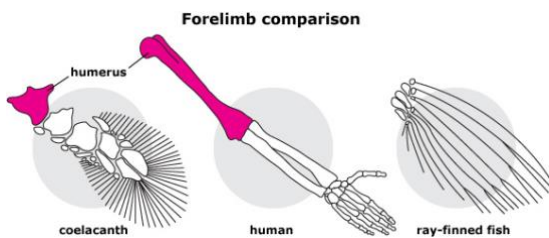


The coelacanth has been nicknamed a *living fossil*, because its fossils were found 100 years before the discovery of a live specimen. The coelacanth is thought to have first evolved approximately 400 million years ago. According to genetic analysis, the divergence of coelacanths, lungfish, and tetrapods is thought to have occurred 390 million years ago.

The first recorded coelacanth fossil was found in Australia and was of a coelacanth jaw that dated back 360 million years, and named *Eoactinistia foreyi*. Over 100 fossil species of coelacanth have been described.

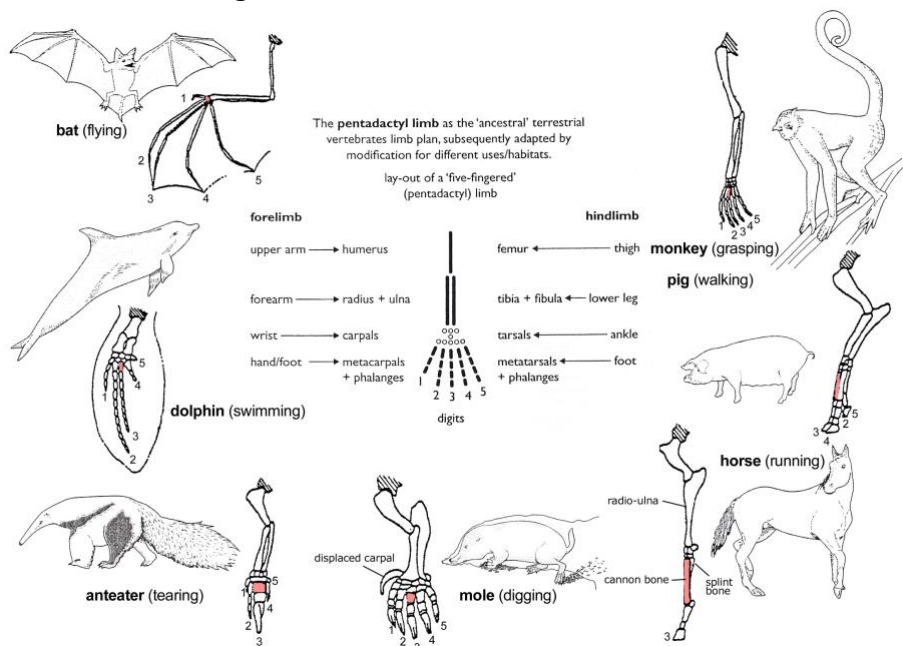
In 1997, a marine biologist was on her honeymoon and discovered the second live species, *Latimeria menadoensis* in an Indonesian market. In July 1998, another *Latimeria menadoensis* specimen was caught in Indonesia and kept alive for six hours. Over 90 live specimens have been recorded.

What is striking about the coelacanth is the one bone, two bone, five bone plan of the limbs. At the extremities of the limbs are the rays or fins. The current dominant fish species such as herring or tuna have only rays or fins, but no one bone, two bone, five bone structure.



The one bone, two bone, five bone structure of the coelacanth's limbs have the same pattern of bones as those in your arms and legs. So does the whale and most other vertebrates. Most snakes have these appendages too: either internal, or greatly reduced as pectoral and pelvic girdles.

The cetaceans (whales, dolphins and porpoises) are marine mammal descendants of land mammals. Their terrestrial origins are indicated by their need to breathe air from the surface; the bones of their fins, which resemble the limbs of land mammals; and the vertical movement of their spines, characteristic more of a running mammal than of the horizontal movement of fish.



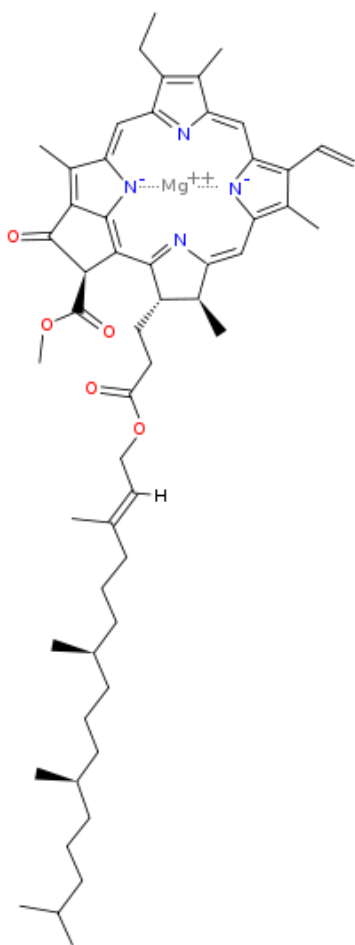
Is each variation an example of separate creation?

Or does each variation come from an earlier common plan?

The question of how land mammals became adapted to aquatic life was a mystery until discoveries starting in the late 1970s in Pakistan revealed several stages in the transition of cetaceans from land back to the sea. The baleen whale has the remains of a pelvic girdle: a girdle which is kept internal throughout its life.

A good overview of this topic can be seen at en.wikipedia.org/wiki/Evidence_of_common_descent

I. The porphyrins and the heme, chlorophyll, vitamin B12 relationship



See elsewhere the details of chlorophylls *a*, *b*, *c1*, *c2*, *d* and *f* and haemocyanin

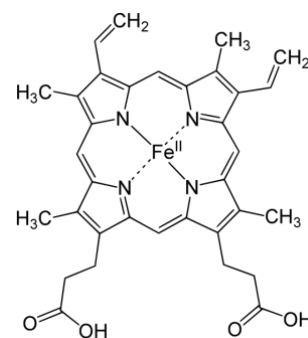
Porphyrins are complex heterocyclic organic compounds. Haemoglobin for instance has the formula $C_{2952}H_{4664}N_{3248}O_{812}S_8Fe_4$. Porphyrins consist of four pyrrole units (five membered rings C_4H_4NH) forming a macrocycle. Porphyrin macrocycles are highly conjugated systems and can act as conjugate acids, bonding to metal ions such as those of iron (Fe), copper (Cu), magnesium (Mg), and cobalt (Co).

Porphyrins typically have very intense absorption bands in the visible region of the electromagnetic spectrum, and this causes them to be deeply coloured. The name porphyrin comes from a Greek word for purple.

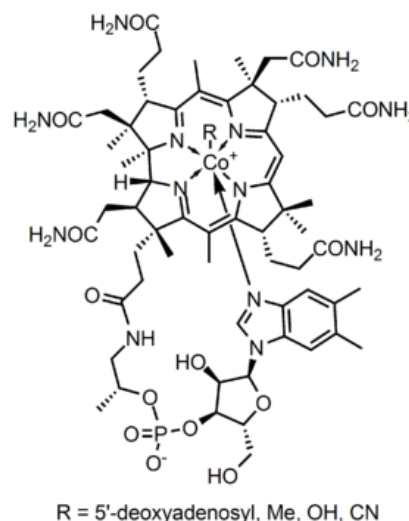
Although natural porphyrin complexes are essential for life, synthetic porphyrins and their complexes are of limited use.

See the common structure of a metal atom surrounded by four pyrroles (pentagons each containing one nitrogen atom and linked in the same way)

chlorophyll a



haem (or heme)



vitamin B₁₂

R = 5'-deoxyadenosyl, Me, OH, CN

Why is it that, of the millions of complex organic structures available, there are porphyrins with an almost identical core structure used in:

- vertebrates as haemoglobin (iron based) to carry oxygen in the blood cells, and is an antioxidant
- earthworms as haemoglobin (iron based) to carry oxygen, not in cells but dissolved in the blood
- crustaceans as haemocyanin (copper based) to carry oxygen, not in cells but dissolved in the blood
- green plants as chlorophyll (magnesium based) to initiate photosynthesis
- nitrogen fixing nodules of leguminous plants (iron based) to scavenge oxygen
- Vitamin B₁₂ (cobalt based) to assist in synthesis and regulation of DNA

An overview of the evolution of chlorophyll and haemoglobin.

Biological processes which convert energy into another form usually occur in places defined by membranes. That is, they are not simple reactions in solutions and catalysed by enzymes. These energy transfers became possible only after cells or at least cell precursors had evolved.

In the course of the evolution of photosynthesis and the respiratory chain, proton gradients

developed. They polarize the membrane, and the energy stored in these gradients is used for the production of energy-rich bonds in the ADP / ATP cycle (phosphorylation), as described earlier. The cell then uses energy stored in these bonds for other processes.

Phosphorylation can also occur under abiotic conditions though with only a small yield, and in the absence of membranes, but in the presence of molecules that might have existed already shortly after the formation of the earth's surface.

A simple transformation of light energy into chemical energy occurs in the archaeobacterium *Halobacterium halobium*. Just a single protein participates in its photosynthesis, and the electron transport chain that is typical for more advanced energy-yielding mechanisms is missing. The energy yield of *Halobacterium* is very small.

The photosynthesis that is typical for green plants, blue-green algae, and photosynthetic bacteria is based on the use of light energy, the conversion of a flow of photons into a flow of electrons, and the existence of electron transport chains.

The membrane proteins bound to chlorophyll *a* as well as the composition of the other accessory pigments differ among species. It is assumed that the primitive atmosphere was reducing. Hydrogen, hydrogen sulfide and other sulfide compounds may have acted as electron donors.

Blue-green algae (Cyanophyceae, Cyanobacteria) were the first organisms to use water as both a proton and an electron donor. As a consequence of their early photosynthetic activity, free oxygen entered the atmosphere and its concentration rose from originally almost zero to roughly 20 percent. This changed the conditions of selection for all organisms considerably. Those able to protect themselves from oxygen and eventually be able to use it did finally succeed.

The increase in the amount of oxygen led to the development of an ozone layer in the stratosphere and thus to a shift in the spectral composition of the light reaching the earth's surface. Short waves (UV) were now kept back almost completely. The organisms now had the opportunity to use the visible light increasingly more and as a consequence, the pigment composition of the photosystems changed.

The evolution of energy-converting processes includes the evolution of the electron transport chain. Photosynthesis and the respiratory chain use the same proteins: ferredoxin, cytochrome *c*, cytochrome *b*, and several others.

The cytochromes from plastids and mitochondria have very similar structure, which is further evidence of a common ancestor of photosynthesis and the respiratory chain.

The respiratory chain is a variation of photosynthesis.

There was survival advantage in developing in parallel to the increase of free oxygen.

In the chloroplast are two photosystems. Photosystem I optimally absorbs photons of a wavelength of 700 nanometres and appears red. Photosystem II optimally absorbs photons of a wavelength of 680 nm. The numbers indicate the order in which the photosystems were discovered, not the order of electron transfer. The photosystems I and II developed at first independently. Combination led to a system, the Z-scheme of photosynthesis, that is far more capable of using light energy efficiently than each of its partial systems alone.

Under normal conditions electrons flow from PSII through cytochrome *b₆f* to PSI.

Photosystem II uses light energy to oxidize two molecules of water and produces one molecule of molecular oxygen. The 4 electrons removed from the water molecules are transferred by an electron transport chain to ultimately reduce 2NADP⁺ to 2NADPH. During the electron transport process, a proton gradient is generated across the thylakoid membrane (a highly folded membrane, having a large surface area, within the disk-shaped thylakoids). This proton motive force is then used to drive

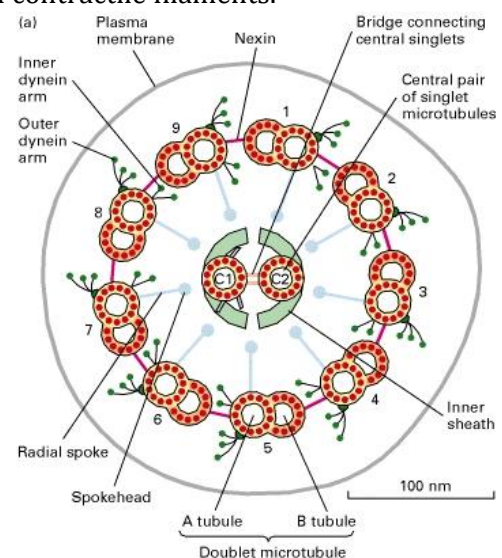
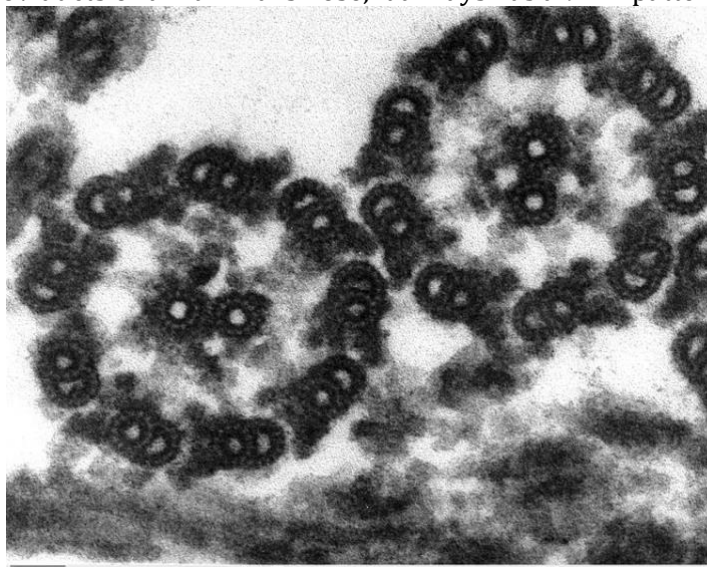
the synthesis of ATP. This process requires PSI, PSII, cytochrome b_6f , ferredoxin-NADP reductase and chloroplast ATP synthase.

**Is each porphyrin variation (heme, chlorophyll, etc) an example of separate creation?
Or does each variation come from an earlier common plan?
Why are the same Photosystems I and II used in chloroplasts, which are also the same?**

J. The 9 plus 2 pattern in cilia

Although cilia and flagellae are the same, they were given different names before their structures were studied. Typically, flagellated cells possess one or two long flagella, and ciliated cells have many short cilia. For example, the mammalian spermatozoon has a single flagellum, the unicellular green alga *Chlamydomonas* has two flagella, and the unicellular protozoan *Paramecium* is covered with a few thousand cilia, which are used both to move it and to bring in food particles. In mammals, many epithelial cells are ciliated in order to sweep materials across the tissue surface. For instance, huge numbers of cilia cover the surfaces of mammalian respiratory passages (the nose, pharynx, and trachea), where they dislodge and expel particulate matter that collects in the mucus secretions of these tissues. There are about 5 million cells per square centimetre and there can be hundreds of cilia per cell.

The photomicrograph shows a cross section of a flagellum. Flagella have a propulsive action. It does not matter from where the sample of the flagellum is taken, from an alga, a protozoan, a shark's oviducts or a mammal's nose, it always has a 9 + 2 pattern of contractile filaments.



The flagellum is a bundle of nine fused pairs of microtubule doublets surrounding two central single microtubules. The microtubule doublets slide against each other and the flagellum as a whole bends. These forces are produced by ATP hydrolysis.

In his 1996 book *Darwin's Black Box*, intelligent design proponent Michael Behe cited the bacterial flagellum as an example of an irreducibly complex structure that could not have evolved through naturalistic means. Behe argued that the flagellum becomes useless if any one of its constituent parts is removed, and therefore could not have arisen through numerous, successive, slight modifications. This claim has been strongly challenged by the work of Zvonimir Dogic. His team reported constructing active hairlike structures containing only two proteins that reproduce the beating functionality of flagella, proving that the flagellar complexity is in fact reducible. Behe's argument is weakened by the observation that the proteins used by Dogic are all present in every eukaryotic cell in the centriole, and could easily have evolved into a flagellum through numerous, successive, slight modifications.

Evolutionary pathways have since been identified for the bacterial flagellum, undermining Behe's argument.

In addition, the Type Three secretion system, a molecular syringe which bacteria use to inject toxins into other cells, appears to be a simplified sub-set of the bacterial flagellum's components, meaning that it is much less likely to be *irreducibly* complex in that the bacterial flagellum could have evolved from the Type Three secretion system.

**Is each type of cilium and flagellum an example of separate creation?
Or is each of them a variation from an earlier common plan?**

We now return to the questions posed at the beginning of the chapter:

- If in much less than 6000 years there has been enough time for a few main types of plants and animals on Noah's Ark to become the wide range of plants and animals we see today, according to Creationists, what is the problem with that range coming from single cells and their precursors over a very much longer period of time?
- Can I believe in the small God the Creationists must believe in, who makes all creatures as special creations, but with an enormous amount of commonality?

18: Some statements by Creationists and their rebuttal

Creationism is bad science, for it adopts a viewpoint in which the end point or conclusion is already fixed after which there is selection from scientific research of only that information which can be tweaked to support that end point. Creationism is also poor theology, and it deliberately misrepresents the Bible and history.

What follows are several of many detailed dissections and analyses of Creationist writings by significant Biblical scholars and by real scientists.

- (A) Some general errors in the writings of Paul Taylor
- (B) Some Noah errors in the writings of John D Morris
- (C) Some genetics errors in the writings of Ken Ham
- (D) Errors in the writings of Ken Ham about the velocity of light
- (E) Some general errors in the writings of Morris and Parker
- (F) Errors in the writings of Gish about the evolution of hearing
- (G) Errors in the writings of Behe about the evolution of the whale
- (H) Photoshop fraud: The Giants of Nephilim
- (I) Some of the errors in Snelling's Flood geology: a house built on sand and exposed by Alex Ritchie
 - (i) The origin of Ayers Rock (Uluru)
 - (ii) The recent formation of the Mount Isa ore-bodies during Noah's Flood
 - (iii) Challenge to Dr Andrew Snelling by Alex Ritchie
- (J) Some of the errors in Creationist Continental Drift: Michael Creech

Please note that the Creationist statements in italics contain many scientific or Biblical errors.

(A) Some general errors in the writings of Paul Taylor

Job lived 2000 years before Jesus, Brontosaurus never existed (p8), man and dinosaurs lived at the same time (p12), the worldwide flood occurred 4 000 to 5 000 years ago; dinosaurs went onto the ark; the dinosaurs lived for at least a few centuries after the Flood; snow and rain began to fall for the first time; before the Flood plants were watered by rivers, underground springs and dew; and when dinosaurs were originally created they were peaceful and harmless just like all other animals.

Paul S Taylor *The Great Dinosaur Mystery and the Bible* Accent Books, p17

My comment:

- The book of Job was not written 2 000 years before Jesus: it was written less than 500 years before Jesus, and is 'the literary masterpiece of the wisdom movement' (Jerusalem Bible

commentary). It is later than Jeremiah and Ezekiel and its language has a strong Aramaic flavour. It was written when the emphasis was shifting from the destiny of the nation as a whole to an interest in the individual. (Also, note that not even Abraham lived 2 000 years before Jesus.)

- Brontosaurus did exist. It is the second most common sauropod in the Morrison Formation (western USA), which is the most fertile source of dinosaur fossils in the USA. These fossils are up to 150 million years old, spanning 10 million years, and the deposits cover at least 1.5 square kilometres.
- There is no evidence that man and dinosaur lived at the same time. All of the claimed evidence (by Creationists of course) has been disproved. For example, concerning the Paluxy River site, near Glen Rose Texas see <http://www.talkorigins.org/faqs/paluxy.html>
- There is no evidence of a worldwide 'Noachian' flood covering even Mt Everest by many metres. See chapter 8: Noah: a misunderstood story.
- There is no evidence of an Ark of Biblical proportions, in spite of the efforts of Ron Wyatt and others. Bill Crause, in a lengthy and detailed analysis, ends by saying: "*In our opinion Ron is either fraudulent or delusional.* This analysis is worth reading. See: *Ron Wyatt: are his claims bonafide?* <http://noahsarksearch.com/ronwyatt.htm>
- Nor are there Biblical references to dinosaurs on the ark, in spite of what Creationists claim.
- There is no evidence that rain only started to fall after the 'Noachian flood'.

(B) Some Noah errors in the writings of John D Morris

Pairs of each kind or basic type of air breathing, land dwelling animal had to be on board the Ark (Gen 7:22); today there are less than 20 000 types of animals; all modern types could have come from about 5 000 kinds or less that God originally created; after the flood the water ran off the edges of the continents into the new cracks which had opened up between the continents.

John D Morris *Noah's Ark and the Lost World* Creation Life Publishers 1988

My comment:

- Pairs of each kind of animal: this is supported by the parts of the Noah story of Priestly origin (Gen 6:9-22 and 7:6-10; 13-16; 18-21). This is not supported by the Yahwist sections (Gen 6:5-8 and 7:1-5; 12; 16c-18; 22-23) which refer to 7 of each kind of clean animal and 2 of each kind of unclean animal, which allowed for some of the clean animals to be sacrificed when dry land appeared.
- *today there are less than 20 000 types of animals.* This is pure fantasy. There is no evidence for this claim.
- Morris claims that all modern kinds of animals came from about 5 000 kinds or less, in 6 000 years. If that was possible, why do Creationists claim that all of the more than 30 million species of animals currently alive could not have come from very simple ancestors in hundreds of millions of years?
- *after the flood the water ran off the edges of the continents into the new cracks which had opened up between the continents.* If water had drained in this way, what happened when it hit the molten lava? Surely even Creationists know that at greater depths the temperature of the earth rises significantly.
- Note: there is a *Flat Earth Society*, which uses the flat earth and three-tiered universe of the Bible as evidence. They believe that the North Pole is the centre, that the South Pole is a ring of ice around the edge, and that the United Nations symbol supports their view. See www.theflatearthsociety.org

(C) Some genetics errors in the writings of Ken Ham

One pair of parents of middle brown colour could produce all known shades of colour, from very white to very black, in one generation. The Bible teaches clearly that there had to be intermarriage between brother and sister; mutations need time to occur and accumulate in a population; the first few generations would have inherited perfect or near perfect genes, largely undamaged by mutations; by the time of Moses it was absolutely necessary to have laws against incest; light from distant, old stars actually started out travelling much faster than it does now - the speed of light has been decreasing to a seemingly constant value around 1960 - meaning that the universe is much younger than astronomers have been

My comment:

Ken Ham once again does not understand science, in this case genetics. One pair of parents of *middle brown colour* simply cannot *produce all known shades of colour, from very white to very black, in one generation*. Skin colour is determined by two types of melanin: pheomelanin (red) and eumelanin (very dark brown). Both the amount and type of melanin produced is controlled by a number of genes which operate under incomplete dominance. One copy of each of the various genes is inherited from each parent. Each gene can come in several alleles, resulting in the great variety of human skin tones. The genetics of skin colour and its evolution over the past 1.5 million years is well understood and complex. Ken Ham's offering is simplistic nonsense.

(D) Errors in the writings of Ken Ham about the velocity of light

My comment: In the previous quote Ken Ham offers for serious discussion the speed of light fantasy, that the universe only appears old because the speed of light has changed. This has been quite decisively and frequently disproved but is still a favourite piece of Creationist 'science'. Thankfully some Creationists are now rejecting it.

In <http://www.fsteiger.com/light.html> the commentary says:

A favorite creationist argument is the theory by Australian Barry Setterfield that the speed of light has been slowing down exponentially from the moment of creation. Based on this theory, light from the most distant galaxies would have covered most of its journey to earth in the recent past, because (according to the theory) at that time it was traveling at a velocity millions of times faster than at present. Thus, according to Setterfield's hypothesis, the light from the most distant stars actually left those stars only a few thousand years ago. This would support the creationist contention that the universe is only a few thousand years old.

Walter Brown of the *Center for Scientific Creation* refers to Barry Setterfield's 1981 hypothesis that the speed of light is slowing down, and therefore the light from the most galaxies began its journey towards earth a mere 6000 years ago. Setterfield based his belief on a plot he constructed of measured light velocity vs. the year the measurement was made. From this plot he concluded that the velocity of light increases exponentially as we go backward in time, becoming infinite at 4004 BCE, which he describes as *the time of creation/fall*.

Actually, none of the plotted points lie on the curve, yet he claimed a perfect correlation. In fact, the more accurate determinations of the velocity of light made since 1960 do not support Setterfield.

Setterfield's alibi is that the speed of light had reached its minimum at that time and was constant thereafter. Although Setterfield's plotted curve shows that the speed of light was infinite at the moment of creation, he arbitrarily modifies the curve. Setterfield abandons science entirely and descends fully into Christian apologetics, stating: *I will assume that this value held from the time of creation until the time of the fall, as in my opinion the Creator would not have allowed it to decay during His initial work.*

Setterfield's hypothesis was so lacking in plausibility that even the Institute for Creation Research rejected it (Acts and Facts, June 1988, G. Aardsma).

See: *The decay of c-decay* concerning the decay of the proposal that the speed of light, "c", has decayed.

www.talkorigins.org/faqs/c-decay.html

According to Informit, the work does not merit serious attention because of "wholesale editing of data on inadequate grounds; gross manipulation of evidence; dubious mathematics; and many minor errors."

(E) Some general errors in the writings of Morris and Parker

Each author is an ex-evolutionist who claims to now see Creationism as the better, more scientific explanation of the living and nonliving world around us. After an initial somewhat irrelevant and confusing introductory chapter on *The vanishing case for evolution science* Dr Parker considers the biological evidence and its meaning. He claims to be a lecturer in evolutionary studies but shows an amazing lack of understanding of some areas, he selects only the evidence which supports his case, and he misrepresents other evidence.

- **Creationist thinking on Mutations**

Almost every mutation we know of is identified by the disease or abnormality that it causes. Creationists use mutations to explain the origin of parasites and disease, the origin of hereditary defects, and the loss of traits. (p 100)

My comment:

Parker's statements are nonsense.

Mutations are changes in the genetic code or its interpretation. They occur frequently. Mutations can be neutral (neither helpful nor harmful), completely harmful, completely helpful - or harmful or helpful depending on the environment. Most mutations are neutral in their effect, or their effect depends on the environment.

A well-known example of a mutation which may be harmful or helpful, depending upon circumstances, is the English peppered moth which comes in two varieties, light and dark. Before the industrial revolution dark moths were very rare. During the worst years of the industrial revolution, when the air was very sooty, dark moths became quite common. In recent years, following the major efforts to improve air quality, the light moths are replacing the dark moths.

H.B.D. Kettlewell proposed the following explanation for this phenomenon:

Birds eat the kind of moth they can see the best. In England before the Industrial Revolution trees were often covered with light coloured lichens. As a result, light moths survived better because they were hard to see on the bark of trees whereas the dark moths were easy to see; and so birds ate the dark moths. During the worst years of the Industrial Revolution the air was very sooty so tree bark was dark because of soot. Dark moths were hard to see whereas the light moths were easy to see; and so birds ate the light moths. As a result, the dark moths became common and the light moths became rare.

Despite creationist criticisms, this explanation has stood the test of time. Before the Industrial Revolution, a mutation which changed light moths into dark moths was an unfavourable (harmful) mutation, whereas during the dark years it was a favourable (helpful) mutation.

If we look at populations of animals and plants, we find that there are multiple alleles at 10-20% of the genes. In other words, if we look at a given locus in all the members of a population about 10-20% of the time we will find more than one sequence at that locus. There can be more than two alleles within a population for a given gene locus.

The appearance of rare dominant genetic diseases, such as retinoblastoma, has been used to estimate the mutation rate in the human population. Retinoblastoma is a childhood cancer of the eye and was a lethal condition until recently. Hence almost every case represented a new mutation, because individuals with the condition did not survive to reproduce and pass the genetic propensity for the disease along to their offspring. The mutation rate can be estimated, and is estimated at 8×10^{-8} per gene per cell division.

One estimate, based on DNA sequencing of the Y chromosome indicates that as one generation passes its DNA on to the next generation it accumulates 100-200 new mutations. There are many more mutations in non-coding portions of DNA, but these are fairly difficult to study.

About 90 percent of human mutations arise in the father rather than the mother. This may be related to the difference in the number of cell divisions required to produce a sperm versus an egg. Also, sperm are produced late in a male's development, compared to eggs, which are produced quite early in the development of a female.

- **Creationist thinking on the Origin of Species**

Do I really mean that all the tremendous variety we see today was built right into the created types - just a pair as a minimum for most types or perhaps a dozen in one-celled forms with multiple sexes? Could there be enough variation in created human beings, for example, to produce all the variation among human beings we see today? Yes, indeed; no problem!

How long would it take to get all the variations in the amount of skin colour we see among people today?

Answer: one generation! According to the Creation concept, each type starts with a large gene pool present in created, probably average-looking parents.....
Thus, the created ancestors of dogs, for example, have produced such varieties in nature as wolves, coyotes and jackals.
op cit
pp 112-116

My comment:

Light skin colour in humans is a well-documented mutation which became a positive factor for survival in northern latitudes from about 50 000 years ago and further south it was possibly as late as 6 000 to 10 000 years ago, coinciding with the establishment of village life and farming.

Loss of body hair in Hominini species is assumed to be related to the emergence of bipedalism and its associated higher production of heat, around 5 million years ago. Bipedal hominin body hair gradually disappeared to allow better heat dissipation through sweating.

The emergence of skin pigmentation dates to after this, around 1.2 million years ago (about the time of the emergence of *Homo heidelbergensis*), when the earth endured a megadrought that drove early humans into arid, open landscapes. This would have resulted in the skin of early humans experiencing excess UV-B radiation. This favoured the emergence of skin pigmentation to protect from folate depletion due to the increased exposure to sunlight. By 1.2 million years ago archaic humans, including the ancestors of *Homo sapiens*, had exactly the same receptor protein as modern Sub-Saharan Africans.

This was the genotype inherited by anatomically modern humans, but retained only by part of the remaining populations. Subsequently, migration into higher latitudes and its lower light levels reversed the selection pressures on skin colour, particularly for children and pregnant females and their requirements for certain minimum levels of folate. In some places this could have happened as late as 6 000 years ago.

Biologists consider wolves, coyotes and dogs to be of different species, not varieties, and in the case of the jackals they are placed in different Genera. Also, the genetics used by Parker to explain why people are of different colours is a mixture of simplistic and wrong: he states that all human skin colour is the result of the action of two pairs of genes (only) and goes on to say that two persons each AaBb could have in one generation sixteen shades of offspring (!). Actually AaBb refers to an organism heterozygous or hybrid in each of two characteristics but showing the dominant form (A and B) of the action of each.

Parker simply does not understand basic natural selection theory. There are many cases of this. Just a few of his mistakes are:

- **Creationist thinking on Bombardier Beetles**

Referring to its development Parker states that *a single mistake and boom, the bombardier beetle blows itself up, and there's surely no evolutionary future in that!*
op cit p86

My comment: What he confuses in this statement is individual survival and species survival.

- **Creationist thinking on Adaptation**

ADAPTATION has to come first, before natural selection can act.
op cit p88

My comment: Adaptation is our description of the characteristics of a population and how that population survives or dies out in a particular environment. A range of variants is produced, and the one or more variant groups which survive are said to be adapted to that environment.

- **Creationist thinking on Archaeopteryx**

Many now consider Archaeopteryx the first bird and not a missing link between reptiles and birds

op cit p137

My comment: Birds have for some time considered to be remnant dinosaurs - see Bakker *The Dinosaur Heresies* ²³ which was heretical when first published in 1986.

Archaeopteryx lived in the Late Jurassic Period around 150 million years ago. It was similar in shape to a European Magpie, and could grow to about 0.5 metres in length. Despite its small size, broad

wings, and inferred ability to fly or glide, *Archaeopteryx* has more in common with other small Mesozoic dinosaurs than it does with modern birds.

In 1861 the first complete specimen of *Archaeopteryx* was announced, and many have been found since.

Most of these fossils include impressions of feathers, among the oldest direct evidence of such structures. Because these feathers are of an advanced form (flight feathers), these fossils are evidence that the evolution of feathers began before the Late Jurassic. The type specimen of *Archaeopteryx* was discovered just two years after Charles Darwin published *On the Origin of Species*. *Archaeopteryx* seemed to confirm Darwin's theories and has since become a key piece of evidence for the origin of birds, the transitional fossils debate, and confirmation of evolution.

- **Creationist thinking on Trilobites and Dinosaurs**

Why aren't they found together? Because they live in different ecological zones. Dinosaurs are land animals, but trilobites are bottom dwelling sea creatures. (Note their use of present tense)

My comment: Dinosaurs lived on the land, in the water and in the air, and some of the trilobites were free swimming.

Trilobites lived from 521 million years ago to 250 million years ago, and existed as at least 17 000 species. The first dinosaurs were from 231 million years ago to 66 million years ago. There is obviously only a small overlap in the fossil record, and they lived in different environments.

- **Creationist thinking on Fossil Formation**

To have any chance at all to be preserved as a fossil a plant or animal must be buried rapidly under a relatively heavy load of sediment.

My comment: It is easily observed and demonstrated that the low temperatures and very low oxygen levels in deep ocean trenches also arrest decay, as does falling into caves which are very dry such as those on the Australian Nullarbor.

(F) Errors in the writings of Gish about the evolution of hearing

All mammals, living or fossil, have a single bone, the dentary, on each side of the lower jaw, and all mammals, living or fossil, have three auditory ossicles or ear bones, the malleus, incus and stapes. ... Every reptile, living or fossil, however, has at least four bones in the lower jaw and only one auditory ossicle, the stapes. ... There are no transitional fossil forms showing, for instance, three or two jawbones, or two ear bones. No one has explained yet, for that matter, how the transitional form would have managed to chew while his jaw was being unhinged and rearticulated, or how he would hear while dragging two of his jaw bones up into his ear.

Gish 1978, *Evolution? The Fossils Say No!* p80

My comment: Gish was incorrect in stating that there were no transitional fossil forms, and he has been corrected on this gaffe numerous times since he wrote these words. Gish simply does not understand how gradual transitions happen.

During their evolution, the two mammalian middle ear bones (the hammer and anvil, or malleus and incus) were derived from two reptilian jawbones. This means that there was a major evolutionary transition in which several reptilian jawbones (the quadrate, articular, and angular) were extensively reduced and modified, and gradually became the modern mammalian middle ear. At the same time, the dentary bone, a part of the reptilian jaw, expanded to form the major mammalian lower jawbone. During the course of this change, the bones that form the hinge joint of the jaw changed identity. Importantly, the reptilian jaw joint is formed at the intersection of the quadrate and articular whereas the mammalian jaw joint is formed at the intersection of the squamosal and dentary.

In several of the known intermediates, the bones have overlapping functions, and one bone can be called both an ear bone and a jaw bone; these bones serve two functions. There is no reason to expect transitional forms with intermediate numbers of jaw bones or ear bones.

For example, in *Morganucodon*, the quadrate (anvil) and the articular (hammer) serve as mammalian-style ear bones *and* reptilian jaw bones simultaneously. In fact, even in modern reptiles the quadrate and articular serve to transmit sound to the stapes and the inner ear. The relevant transition, then, is

a process where the ear bones, initially located in the lower jaw, become specialized in function by eventually detaching from the lower jaw and moving closer to the inner ear. This is a part of a much longer article, with diagrams, found on www.talkorigins.org/faqs/comdesc/section1.html#morphological_intermediates_ex4.

(G) Errors in the writings of Behe about the evolution of the whale

Finally, and most glaringly obvious, if random evolution is true there must have been a large number of transitional forms between the mesonychid and the ancient whale: Where are they? It seems like quite a coincidence that of all the intermediate species that must have existed between the mesonychid and whale, only species that are very similar to the end species have been found. Michael Behe 1994

My comment: Mesonychids possess unusual triangular molar teeth that are similar to those of Cetacea (whales and dolphins), as well as having similar skull anatomies and other traits. For this reason, scientists had long believed that mesonychids were the direct ancestor of Cetacea, but the discovery of well preserved hind limbs of archaic cetaceans as well as more recent phylogenetic analyses now indicates that cetaceans are more closely related to hippopotamids and other artiodactyls than they are to mesonychids, and this result is consistent with many molecular studies.

Most paleontologists now doubt the idea that whales are descended from mesonychids, and instead suggest that whales are either descended from or share a common ancestor with the anthracotheres, the semi-aquatic ancestors of hippos.

Also note that in the 2005 *Kitzmiller v DoverArea School District* trial, Behe gave testimony on the subject of irreducible complexity.

The court found that *Professor Behe's claim for irreducible complexity has been refuted in peer-reviewed research papers and has been rejected by the scientific community at large.*

(H) Photoshop fraud: The Giants of Nephilim



An email being circulated says:

These astounding photos are from a recent archaeological discovery in Greece

This totally unexpected find furnishes proof of the existence of "Nephilim." Nephilim is the word used to describe the giants spoken of in biblical times by Enoch as well as the giant David fought against (Goliath).

Genesis 6:4 There were giants on earth in those days; Numbers 13:33 And there we saw the giants, the sons of Anak, which come of the giants: and we were in our own sight as grasshoppers, and so we were in their sight.

This shows that that the Bible is true with history lessons that are applicable both then and today and it is not just a spiritual book.

Now let us play "Spot the difference between the two photos".



My comment:

The first photo appears to have been photoshopped, placing a magnified human skull onto the skeleton of a 60-foot-long plant-eating dinosaur, *Jobaria*, which was being excavated during the 1993 expedition to Niger by Paul Sereno of the University of Chicago.

For a fuller description of the dig, see *The University of Chicago Chronicle*, November 18, 1999, Vol 19, No.5.

This is another example of the false evidence used by Creationists to make their version of their God look good.

The Bible is the masterpiece of revelation about God and us and creation and relationships between all of us, and does not need to be supported by lies and manipulations.

(I) Some of the errors in Andrew Snelling's Flood geology: a house built on sand.

Please note: This section is a summary by Doug Burtenshaw of an article by Alex Ritchie, *The Skeptic*, Vol 17 No 4

(i) The origin of Ayers Rock (Uluru)

(ii) The recent formation of the Mount Isa ore-bodies during Noah's Flood

(iii) Challenge to Dr Andrew Snelling by Alex Ritchie

The Creationist magazine *Creation Ex Nihilo* (June – August 1996, 18 – 22) features an article entitled *Rock-solid for Creation - an interview with geologist Dr Andrew Snelling*. Dr Andrew Snelling BSc (Hons) (Geology), PhD has been geological spokesman for what was known as the Creation Science Foundation (CSF) in Queensland, and in 1997 was renamed Answers in Genesis. Snelling is a prominent young-earth creationist with genuine geological qualifications and a published research record in this field. Although his geological qualifications are always emphasised in creationist publications, it would be more accurate to describe him as a fundamentalist Protestant missionary rather than a working geologist. In creationist literature Snelling is referred to openly as a 'missionary'. Since the 1980's he has been geological adviser on the editorial board of *Creation Ex Nihilo* and he is currently Editor of the CSF's *Technical Journal*, a glossy publication carefully tricked out to resemble a mainstream scientific journal.

Snelling's academic qualifications are not in question, only the uses to which he has applied them since he acquired them, as I explained and illustrated in my article *Will the Real Dr Snelling Please Stand Up?* (*The Skeptic*, 11 (4), pp 12-15). Strangely, Dr Snelling has never attempted to answer, or refute my allegations.

Why is it important that individuals such as Dr Andrew Snelling, who publicly misrepresent science, be asked to account for their actions? Lay audiences and even many science teachers lack the geological expertise to analyse skilful and deliberate misrepresentations of earth history perpetrated by someone familiar with geological literature and technical terminology. I suspect that most geologists never see or read these remarkable efforts and are thus unaware of the anti-scientific deception involved in them. Science depends on intellectual honesty, both in one's own research and in accurately reporting and using the findings of other scientists, living and dead. To be wrong in science is no dishonour; but to deliberately misrepresent one's own or other scientist's findings is the worst crime in the book!

Snelling proposes that geologists world-wide have got it all wrong for the past 160 years and insists that we must throw out our geological column and rewrite our geology textbooks to accommodate a 6 day creation 6000 years ago followed, 4300 years ago, by a one-off, year-long Noah's Flood.

Most of Snelling's articles in *Creation Ex Nihilo* (CEN) refer to Australian geological features or formations, many of them internationally famous. I have chosen two examples from more than 50 articles by Dr Andrew Snelling in *Creation Ex Nihilo*, to illustrate how he skilfully selects, edits and doctors his source materials to deceive his creationist readers, most of whom probably have little or no geological knowledge. The two examples are:

- (i) Ayers Rock (aka Uluru), one of Australia's most important tourist attractions
- (ii) Mount Isa ore-bodies, one of Australia's richest mineral deposits

(i) The origin of Ayers Rock (Uluru)

(I am retaining the terminology from Ritchie's article: Ayers Rock rather than the name now preferred which is Uluru)

Ayers Rock is a major Australian geological feature and tourist attraction with a simple but fascinating history. Its origins are not difficult to understand nor to explain to a lay audience, unless, like Dr Snelling, you are constrained by a young-earth creationist mindset in which nothing can possibly be older than 10,000 years!

Snelling's article in CEN (1984 a), under a heading "Science for the Layman", describes Ayers Rock as: *a single bed or rock layer tilted so that it now stands almost up on its end. When measured, this single bed is at least two and a half kilometres (1.6 miles) thick...*

but this is only the visible part and:

.. the entire bed is in the order of some six kilometres (3.75 miles) thick.

Snelling describes the predominant rock-type forming Ayers Rock, correctly, as an arkose. This is a coarse grit-type sedimentary rock in which the component particles, many of which are unweathered feldspars, are ragged, not smooth and rounded. But, says Snelling confidently (and incorrectly), you would not expect to find such fresh feldspars:

if Ayers Rock had been formed slowly over millions of years and had then endured further long periods of exposure to weathering at the earth's surface. Feldspar minerals break down relatively rapidly when exposed to the sun's heat, water and air (for example in a hot humid tropical climate) and very quickly form clays.

This ignores the well-established fact that, during rapid accumulation of sediments, earlier deposits may be quickly covered, sealed off and protected from any further weathering during the processes of deep burial and consolidation to form rock. Undaunted, Snelling develops his scenario in which the feldspars turn to clay, the sandstone is weakened and then collapses as the clay is washed away. The whole explanation is a fantasy and bears no resemblance to the real world. Snelling illustrates his explanation for the origin of Ayers Rock with a sequence of four sketches.

Figure 1 shows water currents bringing in sand, supposedly from the Musgrave Ranges to the south. The sand pours into a very deep water-filled basin whose floor consists of heavily folded and eroded older rocks (age of deposition and erosion unspecified).

Figure 2 shows how a "catastrophic flood" filled in this basin by dumping:

some 6000 metres (approx. 20,000 feet) of sand, probably in only a matter of hours, after having carried this sand some 100 kilometres (63 miles).

The clear implication here is that the basin seen in Fig 2 was at least 6000 metres deep! But this leaves Snelling with a little problem.

Since the beds are now standing vertically, it is also obvious that the sand, after being washed into the depression, and while still being compressed and hardened, was pushed up and tilted by earth movements.

Figure 3 thus depicts the "sand layers tilted late in Noah's Flood" with the waters draining off and eroding and sculpting the massive structure as they went.

Following the retreat of these flood waters, and as the landscape dried, the material in Ayers Rocks finally hardened.

Snelling thus keeps us (and Ayers Rock) in suspense with a dramatic image of a six kilometre thick deposit of poorly consolidated, gravelly sludge, tilted on its side and yet somehow miraculously standing up through all of the catastrophic, destructive events of the Flood.

According to Snelling it was not until after the Flood waters finally subsided that:

the chemicals in the water between the sand grains formed a cementing material to bind the mineral grains together, drying in much the same way as cement in concrete dries and binds together the stones and sand mixed with it. With the final retreat of the waters from off the land, and the continued drying out of the continent, present day desert wind erosion has merely pock-marked the surface of the rock.

It would appear from this incredible chain of events that Dr Snelling has uncovered a revolutionary new technique of concrete manufacture which would revolutionise the building and construction industry, solve our balance of payments problems and, in the process, make his fortune!

Figure 4 shows a cross-section of Ayers Rock today, with its relationships to the present land surface and desert sands. The underlying folded and eroded bedrock conveniently disappears from the scene. If a first-year geology student proposed such a scenario to explain the origins of Ayers Rock, he/she would probably be failed. That such a puerile explanation could seriously be published by someone with a BSc (Hons) and PhD in Geology beggars belief!

Of course, Snelling's explanation of the origin of Ayers Rock turns out to be that last resort of a fundamentalist creationist - Noah's Flood - which means it is no answer at all. Despite this Snelling concludes:

It is hardly surprising then that most geologists are puzzled by Ayers Rock, because the evidence there does not fit into their evolutionary story with its vast eons of slow erosion and deposition, then slow erosion again. Instead, the evidence at Ayers Rock is much more consistent with the scientific model based on a recent and rapid, massive catastrophic flood, such as that of Noah's day.

I challenge Dr Snelling to name *one* mainstream geologist who is so puzzled by the origin of Ayers Rock that he or she has to resort to Flood geology to explain it. Snelling conveniently avoids any mention of the nearby, equally spectacular Olgas (or Katajute) composed of enormously thick, and only slightly inclined, boulder beds, or conglomerates.

For anyone interested in the *real* story of how Ayers Rock and the Olgas formed, I recommend a beautifully illustrated little booklet produced by the Australian Geological Survey Organisation in Canberra.

(ii) The recent, rapid formation of the Mount Isa ore-bodies during Noah's Flood, Snelling (1984 b)

Many rocks of Precambrian age (>550 million years) contain fossils of primitive life forms (*algae, cyanobacteria*) with no trace of higher organisms. Creationists claim that *all* rocks containing fossils are the products of one universal Flood. In his explanation of the origin of the Mt Isa ore-bodies Snelling (1984) carries this argument to absurd lengths.

Some of the richest ore-bodies in Australia, at Mt Isa in north-west Queensland, occur in a great mass of severely deformed and altered (metamorphosed) rocks. One rock unit, originally shale deposits, contains abundant fossil microorganisms, interpreted as blue-green algae. If, as maintained by Snelling and other creationists, these very ancient rocks are Flood deposits, then all of them formed in less than one year, ca 2350 BCE!

According to the conventional geological time-scale (rejected by creationists) the Mt Isa Group, the source of the rich silver-lead-zinc and copper ore-bodies, is Middle Proterozoic in age, deposited around 1,650 million years ago. The silver-lead-zinc and copper ore-bodies are distinct and separate; each is enclosed in a different kind of originally sedimentary, but now metamorphic, rock.

As in the case of Ayers Rock, to explain the Mt Isa ore-bodies in terms of Flood geology, Snelling must first build a case for:

- a) *recent* formation and
- b) *rapid* formation.

a) Snelling notes the presence of microfossils (blue- green algae) in the shales around the Mt Isa ore-bodies, but remarks that:

Wherever fossils or organic matter are found in the geological column, the rocks containing the fossils were deposited either by or after Noah's Flood regardless of their assumed geological age. (1984, p42).

Snelling's initial postulate, that the Mt Isa rocks are of *recent* origin, is thus based, not on scientific data, but solely on a belief in the literal interpretation and inerrancy of the *Genesis* account in the Bible, ie. on religious dogma.

b) To support *rapid* formation of the Mt Isa ore-bodies Snelling employs a different tactic, first exposed by Strahler (1987, p242). He cites genuine research work on mineral deposits forming today near a sea-floor rift in the Red Sea (Finlow-Bates 1979) which indicated that a 1 cm thick layer of lead sulfide (*galena*) could be deposited in under 5 weeks by a 1 metre thick, sluggish bottom layer (with 50 ppm of lead) moving at 1 metre/minute.

However, the Mt Isa ore bodies are more than 100 metres thick and consist of thousands of 1centimetre thick layers of rich ore interbedded in shale deposits over 1000 metres thick. Snelling's

problem is to explain how these ore-bodies were all deposited during the year of Noah's flood. How he achieves this is a classic example of deliberate deception and lack of scientific integrity in creationist writings.

Snelling (1984,43-44) writes:

It is not difficult to see the implications of these calculations. If we make some appropriate and reasonable changes to Finlow-Bates' parameters and then recalculate the deposition rate the result is even more startling. Consider, then, a layer of dense ore solution, 15 metres deep flowing on the sea floor at the rate of 500 metres/minute (30 km/hr, still relatively slow) carrying 1000 pp lead all of which is to be deposited within a distance of 1000 m. (It should be noted that these figures are reasonable even in present day terms; the Red Sea brine pools are up to 250 metres deep: dense turbidity currents are known to have travelled thousands of kilometres down the continental slope and across the ocean floor at speeds up to between 65 and 80 km/hr and concentrations of metals such as lead carried by ore-forming solutions are by consensus stated to be in the range $X0 - X,000$ ppm, where $X = 1,2,\dots$, and by analysis of residual fluid inclusions in ore and ore-related minerals have been measured as up to 10,000 ppm. A galena bed carrying 25% lead with an average thickness of 1 cm would form in only about 20 seconds, a rate of about 1 metre/30 minutes.

To see how the trick is done compare Finlow-Bates' version (1979) with Snelling's (1984).

The total increase is therefore $15 \times 500 \times 20 = x 150,000$; in fact a 1 metre/30 min flow rate represents an increase of $x 175,000$!

Snelling's reference to a 250 m deep brine pool in the Red Sea is irrelevant. Brine pools are stagnant, stratified concentrations of hot brine in closed depressions on the sea floor, far removed from any continental slope down which they are presumed to have slid.

An ore-bearing sequence 1000 metres **thick** is thus miraculously explained away by lateral transport of ore for a distance of 1000 metres.

Every step in Snelling's recalculations is deliberately contrived and concocted from unrelated observations, and combined to achieve astounding, and completely unwarranted, results. The futility of the exercise is that 'recent' and 'rapid' are not synonymous. Even if such fanciful ore-depositing conditions **had** ever occurred at such speeds it could equally well have happened 1.65 billion years ago instead of just over 4000 years ago.

Snelling even has the gall to cite, as further proof of rapid ore formation, the fact that lead-isotope ratios are remarkably constant within Mt Isa ore-bodies. This is from a man who consistently and publicly labels universally accepted radiometric methods of dating ancient rocks using radioactive isotopes as fallacious. However, even deposition of the ore over a period of 1 million years (a reasonable rate in geological terms) some 1.65 billion years ago would barely show up today within the range of standard error in radiometric dating methods applied to such rocks.

Snelling concludes with a creationist interpretation that all the silver-lead-zinc ore bodies of Mt Isa could have been deposited in less than 20 days (1984,45-6). He states flatly that because: *Noah's Flood occurred approximately 4,300 years ago according to Biblical Chronology, evolutionary ages for the rocks and ores at Mt Isa have to be discarded.*

To support this remarkable statement Dr Andrew Snelling BSc, PhD (Geology), expert in uranium mineralisation, cites the writings of other creation 'scientists' such as Slusher, Setterfield, Mathews and others *who have shown that radioactivity is unreliable as a means of dating rocks*. None of the individuals cited are experts in radiometric dating.

Postscript

Within a few kilometres of Mt Isa anyone can readily collect beautifully preserved, complete Cambrian trilobites (*Xystridura*, *Lyriaspis* and others) in well-bedded, unmetamorphosed and almost horizontal white shales. Trilobite fossils are so abundant that the locality, Beetle Creek, is known to most Australian geology students and amateur fossil collectors. It is unlikely that Dr Andrew Snelling is unaware of its existence.

These trilobite beds date from the Middle Cambrian, around 520 million years ago, and they rest directly, and unconformably, on older metamorphic rocks such as those containing the Mt Isa ore-

bodies. Clearly a long time gap separated the deposition of the ore-bodies and their later deep burial and subsequent metamorphism, followed by major uplift and erosion. Then, and only then, could the burial of myriads of trilobites in shallow Cambrian seas have taken place.

If Dr Snelling is correct then these Middle Cambrian trilobites lived, died and were buried post-Noah's Flood. Would Dr Snelling like to hazard a guess at their date in Biblical terms (ie. post-2350 BCE) and tell us what it is?

(iii) Challenge to Dr Andrew Snelling, from Alex Ritchie

Nearly 10 years ago, writes Ritchie, in the Sydney Morning Herald, I publicly challenged Dr Andrew Snelling, geological spokesman for the creationist movement in Australia to a public debate on a subject close to his heart - Noah's Flood - the Geological Case For and Against. Although I have repeated my challenge several times since then, Dr Snelling has declined to defend the creationist cause in front of his scientific peers, although he is more than ready to do so in front of lay audiences.

I throw out another challenge, this time to the geological community and to the national organisations governing professional qualifications. If any geologist were to be caught salting a deposit, falsifying results or engaging in other forms of behaviour likely to bring his/her discipline into disrepute, they would be promptly dealt with by their peers.

In my opinion it is equally abhorrent for anyone claiming to be a professional geoscientist to indulge in deliberately misleading and deceptive conduct aimed directly at lay audiences and especially at young people. Dr Snelling's main aim in life, presumably for deeply held religious reasons, is to show that **no** scientific evidence (from physics, chemistry, biology, palaeontology, geology, astronomy etc.) that implies a great age for the Earth can be accepted. His only alternative is a 6 day Creation event and Noah's Flood - take it or leave it.

To 'prove' this, Snelling is apparently prepared to misquote, misrepresent and falsify genuine scientific data. How long will it take before he is required to justify his behaviour before his professional and scientific peers? How many young Australians will he turn off science before he is called to account for his actions?

(j) Some of the errors in Creationist Continental Drift: Michael Creech

This section is a summary by Doug Burtenshaw of an article by Michael Creech, *The Skeptic*, Vol 14 No 4 p22

Continental Drift is to Geology what evolution is to Biology. It provides the broad canvas onto which all other observations are placed into context. Like evolution, CD is a fact, though details of the mechanisms are still the subject of scientific papers.

Continental Drift involves the creation of new oceanic crust at the mid-ocean ridges, which bisect the world's oceans. At these localities, basalts rise and cool, and submarine vents spew out cocktails of chemicals. Such vents, in the geological past, have been the sites of extensive mineral deposits such as those found at Broken Hill and Mt Isa. The new crust is forced, like two conveyor belts, away from the submarine ridges. The crustal plates, along with their continental passengers, ride over the mantle. But, no, the Earth is not growing! Crustal material is also being consumed at the other end at deep ocean trenches where one plate rides over another and the lower one is consumed by the mantle. At these 'subduction zones' there is considerable volcanic activity and earthquakes, one manifestation of which is the Pacific 'ring of fire'.

Other plate boundaries involve collisions where mountains are formed. The example of the Himalayas is apt, as they are still rising, as India continues to collide with China. Since the world is round and far from perfect, transform faults, perpendicular to the mid ocean ridges, occur, which contain these irregularities, creating large scars on the earth where one part of the crust moves laterally in relation to the other side. A well-known transform fault is the San Andreas Fault in California, which is a rare land-based example.

The mechanisms which drive these plate motions are considered to be large scale convection cells in the upper mantle, rising at mid ocean ridges. But as already stated, this premise is still the subject of

scientific inquiry.

So the answer to the first creationist response that *it never happened* is seen in the direct evidence for Continental Drift, which includes:

- a bathymetric map of the ocean floor, resplendent with mid ocean ridges, subduction trenches, and transform faults. Yes, the world isn't flat!
- volcanic island chains forming, as the plate rides over a stationary hot spot in the mantle;
- earthquake foci at subduction zones, tracing the subducting plate to depths of 4-500 kilometres;
- a new mid ocean ridge system that is currently forming in the Red Sea and along the African Rift Valley: the process is still happening;
- the concentration of volcanic and earthquake activity at plate margins: the process is obviously ongoing;
- gravity lows existing over subduction zones, where lighter crustal material is being consumed in the more dense mantle;
- radiometric dating of ocean floor basalts, clearly show the spreading away from mid ocean ridges. The oldest ocean floor is less than 200myrs, the oldest sedimentary rocks are almost 4000myrs;
- records of reversals of the earth's magnetic field in the ocean basalts also testify to this spreading phenomenon, as ancient magnetic fields are preserved by the inherent magnetic minerals;
- polar wander paths for continents are calculated using magnetic minerals which, when cooled, have recorded the inclination and direction of the earth's magnetic field. For instance, at the equator the field is flat, at the poles it is vertical. So a global position can be determined from rocks of various ages and a continental wander path calculated;
- the jigsaw fit of many continents at their continental margins;
- the ability to correlate the geology of widely separated continents across the vast expanses of younger, basaltic oceanic crust;
- the distribution of fossils, one of the most striking being the tree *Glossopteris*, once restricted to Gondwana.

It is worth noting that all these various diverse forms of evidence reinforce each other, creating a powerful, interconnecting set of evidence to support the theory of Continental Drift. For example: where radiometric dating and magnetism show spreading, a mid-ocean ridge exists, which bisects an ocean basin between two continents, which contain fossils and rocks, which can be correlated, indicating they were once one landmass.

The other creationist argument that must be addressed is that Continental Drift started only 3500 - 4000 years ago and then slowed down to present rates. The supporting nature of the diverse evidence listed previously, also provides proof of relatively constant slow rates of drift. However, all this evidence is ultimately based on radiometric dating, which creationists argue is unreliable. Except for one fresh piece of evidence. Recent attempts at using satellite assisted surveying, to measure plate motions, have shown remarkably good agreement between these measurements, and the predicted rates estimated, using evidence based on radiometric dating. This agreement also gives strong support that radiometric dating actually does work.

The website www.badarchaeology.com/ says about Creationism:

Of all the forms of Bad Archaeology, creationism is perhaps the worst: its practitioners are frequently not of the honest-but-deluded category but are cynical manipulators whose principal interest is in the power they wield over their disciples and congregations.

It's not the creationist Bad Archaeologists who are confused, but their deluded followers.

Creationism was the first hurdle that developing Good Archaeology overcame, back in the late eighteenth and early nineteenth centuries. The dishonest charlatans who promote it deserve constantly to be exposed as the evil frauds they really are.

Keith Fitzpatrick-Matthews 17 July 2007

A final comment from Doug

Again I thank you for walking a few steps in my shoes as we considered aspects of Creationism compared to The Way of Jesus. Together may we all realise that walking is better than standing still, and we may also at times see that we are walking in the same direction, wearing different shoes, murmuring different creeds, but still walking together to pastures green.

May your life's journey be one of wonderment, love and commitment to others.

Blessings
Doug Burtenshaw

As long as we remain lambs we overcome,
we overcome and are victorious,
but as soon as we become wolves we are lost
for then we lose the support of the shepherd
who feeds not wolves, only lambs.

St John Chrysostom 347 - 407 CE

Appendices

Appendix 1 A timeline of the universe

Where we have come from, including our spiritual heritage

Notes:

- BCE: means Before the Common Era, and used to be referred to as BC: Before Christ.
- CE means Common Era, and used to be referred to as AD: Anno Domini (in the year of Our Lord)
- The common usage for "billion" in Australia, UK and USA is the "short scale" in which billion is 1000 million
- Ages, such as the Bronze Age, are specific to each geographic area. The dates shown below are only a general guide.

The creation of the universe: the 'Big Bang' 13.79 billion years ago (13,798,000,000 yrs ago) plus or minus 0.02 billion years.

4.5 billion yrs ago	Formation of our planet Earth
3.6 billion yrs ago	First simple cells including photosynthetic bacteria which produce oxygen
2.3 billion yrs ago	The Great Oxygenation Event: the oceans rust, depositing iron ore
2 billion yrs ago	First complex cells
1.6 billion yrs ago	Mount Isa, Queensland: deposits of silver, lead, zinc the copper form
1 billion yrs ago	First multicellular life such as red and brown algae
750 million yrs ago	Green algae
600 million yrs ago	First simple animals
	Impact of 4km diameter meteorite makes the Acraman Crater, Sth Aust
575 million yrs ago	First complex organisms, Rangeomorphs, neither plant nor animal
550 million yrs ago	First complex animals
550 million yrs ago	Gondwana forms: now Antarctica, Sth America, Africa, Australia, India
460 million yrs ago	Early land plants
418 million yrs ago	Early lobefin fish (Coelacanth) (see 1938 CE)
400 million yrs ago	Days 22 hours long, 410 per year. Moon drifts away 3.8 cm/yr
395 million yrs ago	First tetrapods, leading to amphibians, reptiles, birds and mammals
248 million yrs ago	Largest ever mass extinction, lasting 40 million years
200 million yrs ago	First mammals
184 million yrs ago	Gondwana starts to break up
150 million yrs ago	Brontosaurus roam what is now Texas
130 million yrs ago	First flowering plants
80 million yrs ago	First appearance of the mammals which clearly lead to primates
65 million yrs ago	Dinosaurs die out

55 million yrs ago	Earth starts to cool significantly
45 million yrs ago	Some land mammals return to water and become whales and dolphins India starts to collide with Asia, producing the Himalayas – a factor In the increased cooling of the whole earth
14 million yrs ago	Glaciers return, first in Antarctica, then in Alaska and the Arctic
7 million yrs ago	Last common ancestor of chimpanzees and humans. Evolution of the larynx in hominids, making speech possible. Brain 33% of modern humans, gradual loss of body hair
4 million yrs ago	'Lucy', an early hominid
3.6 million yrs ago	Full time bipedal upright stance (<i>Australopithecus afarensis</i>)
2.6 million yrs ago	Stone (Paleolithic) age for <i>Homo habilis</i> in Africa; stone tools, hair loss
1.8 million yrs ago	<i>Homo erectus</i> moves out of Africa. Brain 75% of size of modern humans
1.5 million yrs ago	Mega drought; increased skin pigmentation in early humans
700 000 yrs ago	Rapid brain expansion. Intense climate variability (to 150 000 yrs ago)
400 000 yrs ago	Neanderthal man: <i>Homo neanderthalensis</i> (to 30 000 years ago)
250 000 yrs ago	'Mitochondrial Eve', female MRCA (most recent common ancestor), or much earlier
200 000 yrs ago	'Y-chromosomal Adam', male MRCA (most recent common ancestor), or much earlier
195 000 yrs ago	First <i>Homo sapiens</i> : Omo Kibish formation, Ethiopia
180 000 yrs ago	Modern humans, <i>Homo sapiens</i> , successfully migrated out of Africa
160 000 yrs ago	Early <i>Homo sapiens</i> fishing activities and mortuary rituals
110 000 yrs ago	Beginning of the last ice age, to a max at about 22 000 years ago
50 000 yrs ago	Migration of <i>Homo sapiens</i> to Australia: evidence at Lake Mungo
45 000 yrs ago	Migration of <i>Homo sapiens</i> into Italy and progressively into Europe
43 000 yrs ago	Earliest Cro-Magnon man (<i>Homo sapiens</i>): Grotto del Cavallo, Italy
40 000 yrs ago	First known petroglyphs (art carved into rock) in the world (Australia). The carvers were larger, more robust, greater variation than now. Partially cremated, ritually buried skeletons: Lake Mungo, NSW
32 000 yrs ago	Gravettian culture, including carved mammoth bones (to 2000 yrs ago)
30 000 yrs ago	Grinding stones for grass seeds, Cuddie Springs, NSW
28 000 yrs ago	Earliest dated painted rock art in Australia: Narwala Gabarnmang
22 000 yrs ago	End of the intense part of the last ice age. Sea level was 130 metres below its current level. Other forms of Genus <i>Homo</i> die out. Solutrean culture France, for 5 000 yrs; sewing needles, arrow heads
16 000 yrs ago	Probable earliest settlement of the Americas, via the Alaskan ice bridge
15 000 yrs ago	Domestication of the dog from the wolf (possibly earlier) Mammoth bone houses: Predmost, Czech; Mezhyrich, Ukraine
15 000 to 7000 yrs ago the sea level rose about 100 metres	
13 000 yrs ago	The mammoth becomes extinct in Ukraine Major climatic change: vast areas of grasses in the 'Fertile Crescent'. Natufian culture, East Mediterranean; sedentary, lasted 3 000 years
12 500 yrs ago	First kangaroo drawings in rock art
12 000 yrs ago	First light skinned Europeans (some possibly as early as 100 000 yrs ago). Earliest evidence of farming in Europe. Jericho settled by the Natufians
11 000 yrs ago	Damascus settled, about 7 000 years before Abraham
10 700 yrs ago	First working of copper; copper pendant, northern Iraq
10 500 yrs ago	End of the last glacial period.
10 000 yrs ago	Jericho abandoned or destroyed. Neolithic age (New Stone Age) until about 6 000 yrs ago (4 000 BCE). First agricultural revolution. Woolly mammoths die out (except at St Paul, Alaska in 3750 BCE). Tasmania becomes an island due to rising sea levels. Domestication of the goat in Iran and western Asia. Sugar cane cultivated in New Guinea, now separated from Australia. Domestication of Emmer wheat (Israel) and barley (Fertile Crescent)
9 500 yrs ago	Cold working, annealing, smelting, lost wax working of copper: Anatolia
9 000 yrs ago	Oldest preserved boomerang, from a peat swamp in South Australia
8 800 yrs ago	Jericho settled for the second time, and more than 20 times in all
8 500 yrs ago	Land bridge joining Britain to Europe is flooded: English Channel
8 000 yrs ago	Woolly rhinoceros extinct in Europe. The wheel appears in what is now the Middle East: Iraq and elsewhere. Pottery appears in Jericho
7 500 yrs ago	Creation of the world according to literal use of the Greek Septuagint
7 200 yrs ago	Domestication of the sheep from the wild mouflon: Greece
7 000 yrs ago (= 5 000 BCE)	Fish included in Aboriginal rock art: sea dependence due to rising sea levels: turtles engraved over tops of kangaroos. Conflict for land seen in replacement of graceful figures by armed warriors: Australia

The dingo arrives in Australia at about this time
First small scale attempts at farming in Britain

Change of date names to BCE. 4004 BCE is approximately 6000 years ago

- 4 004 BCE 29 October: Creation of the world, according to one literal use of the Hebrew text
- 4 000 BCE Start of the Bronze age.
First bricks: Egypt and Assyria
- 3 300 BCE Otzi the Iceman, Europe's oldest naturally preserved mummy.
- 3 000 BCE The first earthworks and burials at Stonehenge in Britain.
Menes (First Dynasty in Egypt): earliest human whose name we know.
Sahara Desert being formed by lower rainfall and overgrazing.
Decimal counting appears in Egypt and Babylonia.
The first forms of Cuneiform writing appear in the Middle East
- 2 348 BCE One of the dates for the Noah flood, according to some Creationists
- 2 000 BCE Start of the Iron Age in the Middle East
- 1 800 BCE Taboos against eating pork, food for their enemies, appear in the Near East
- 1 700 BCE Abraham, a prince of Ur, moves to Canaan.
Human sacrifice replaced by animal sacrifice: story of Abraham and Isaac (Genesis 22)
- 1 628 BCE Massive volcanic eruption (Thera) causes worldwide cooling
- 1 500 BCE Geometry developed by Egyptians to re-survey their fields after flooding
- 1 400 BCE Large scale smelting of iron in Anatolia, Turkey
- 1 350 BCE Tutankhamun dies at 17 by murder or in battle during a coup by the army
- 1 349 BCE Tutankhamun buried at Thebes with a vast amount of treasure
- 1 275 BCE Moses leads the Israelites out of slavery in Egypt
- 1 200 BCE Most of the remaining Jews in Egypt are expelled.
Philistines ("sea peoples") settle in Canaan and slowly lose their identity
- 1 141 BCE Israel's Ark of the Covenant taken by Philistines. Plague outbreak follows
- 1 025 BCE Saul anointed King of Hebron by the prophet Samuel
- 1 010 BCE Saul and son Jonathon die in battle with Philistines. David becomes King of the tribe of Judah, then all Israel
- 1 005 BCE King David makes Jerusalem the capital and moves the Ark of the Covenant there
- 1 000 BCE The Iron Age spreads across central Europe
Rice becomes a main part of people's diet in China
- 970 BCE King David dies: son Solomon, by Bathsheba, starts to make Israel significant
- 931 BCE Death of Solomon and split of the nation into Israel, ten tribes, and Judah /Benjamin ('Jews'), two
- 776 BCE First recorded Olympic Games
- 750 BCE Prophets such as Amos (d.745), Hosea, Isaiah and Micah through to 690
- 722 BCE Samaria, the capital of the ten tribes of the Northern Kingdom of Israel, taken by Assyria
- 721 BCE Assyrian records show 27 000 Israelis taken by Assyria: the lost ten tribes of Israel
- 700 BCE Homer's Iliad and Odyssey inscribed at about this time
- 686 BCE Approximate date for Isaiah chapters 1 to 39: Isaiah part 1
- 625 BCE Jeremiah and other prophets such as Nahum and Ezekiel
- 621 BCE In Athens, Draco makes almost all offences punishable by death: 'Draconian'
- 597 BCE. Jerusalem, the capital of the two Southern Kingdom falls to Nebuchadnezzar II, Babylon.
Jews deported. They are the 'Judahs': tribes of Judah and Benjamin
Prophet Jeremiah dies.
- 586 BCE The First Temple in Jerusalem destroyed by the Babylonians
(Song *By the rivers of Babylon* is based on Psalms 19 and 137 written about now)
- 571 BCE Last recorded prophecy of Ezekiel
- 563 BCE Siddhartha Gautama, the Buddha, is born
- 551 BCE Confucius, Chinese philosopher, is born
- 539 BCE Babylon destroyed by Cyrus, and some of the Jews return from exile
- 536 BCE Writing of Isaiah chapters 40-55 (or could have been written later)
- 520 BCE Writing of Isaiah chapters 56-66 (or could have been written later) and Haggai
- 500 to 300 BCE Writings of Zechariah, Ezra, Nehemiah and other prophets. Also Job, Ruth, Jonah and some Psalms
- 475 BCE Iron comes into common use in China, 1 000 yrs after the Middle East
- 470 BCE Birth of Socrates
- 450 BCE Celts cross the English Channel and colonise the British Isles, some possibly as early as 1 000 BCE.
- 430 BCE One third of Athenians die of plague in three years
- 400 BCE Writing of the first Dead Sea Scrolls by the Essenes (to about 318 CE)
Around this time Laozi's *Tao Te Ching* is written: Daoism / Taoism in written form
- 399 BCE Socrates forced to commit suicide for corrupting young minds: drinks hemlock
- 356 BCE Birth of Alexander the Great. Conquers most of the known world, dies at 32
- 234 BCE Invention of the Archimedes Screw for raising water (eg bilge water from a ship)
- 220 BCE Archimedes: the first ever research-expository paper: estimating the no. of grains of sand in universe
- 218 BCE Hannibal crosses the Alps with elephants to attack Rome
- 215 BCE Start of linking of smaller sections from up to 600 years ago to form the Great Wall of China
- 210 BCE Qin Emperor Shi Huang dies after unifying China: 6 000 clay soldiers buried
- 168 BCE Antiochus IV Epiphanes ('God-manifest') outlaws Judaism, makes Temple unclean by sacrificing a pig
- 167 BCE Maccabean revolt until 160, the Temple cleansed: celebrated now as feast of Hanukkah

- 164 BCE The writing of the book of Daniel. It refers to the Antiochus regime and the uprising against it.
- 101 BCE Chinese ships reach the east coast of India. They use magnetic compasses
- 100 BCE to 200 CE The final form of the Hebrew Bible (Old Testament) is established
- 69 BCE Birth of Cleopatra
- 63 BCE Palestine conquered by Pompey using siege.
- 55 BCE Julius Caesar's expedition to Britain, again in 54 BCE
- 49 BCE Julius Caesar crosses the Rubicon into Italy, begins a civil war.
- 46 BCE Julius Caesar decree: the variable Roman calendar has its last 'year of confusion', 445 days long.
- 45 BCE The Julian calendar decreed by Julius Caesar: 365.25 days, one leap year in 4.
- 44 BCE Julius Caesar assassinated: leads to the end of the Roman Republic. Calendar confusion: now 3 leap years in 4!
- 37 BCE Herod the Great becomes King of Judea
- 36 BCE Mark Antony marries Cleopatra, even though he is still married to Octavia, Octavian's sister
- 30 BCE Mark Antony and Cleopatra defeated by Octavian and commit suicide. Egypt becomes a Roman province
- 5 BCE World population is approximately 250 million
- 4 BCE **Birth of Jesus** (not 0 because of a miscalculation in 525 CE. Also, note that there is no year 0)
- 27 CE John the Baptist and the commencement of Jesus' teaching ministry
- 30 CE Crucifixion of Jesus and his resurrection.
- 36 CE. Stephen tried and stoned for blasphemy. First Christian martyr.
Conversion of Saul the Pharisee. Becomes Paul who then writes many letters of the New Testament
- 42 CE. According to tradition, Mark establishes the Coptic (lit. Egyptian) Church
- 44 CE James, son of Zebedee, is executed: the first apostle to be martyred for his faith
- 47 CE London is founded by the Romans, who had been overrunning south east England since 43 CE
- 61 CE Roman London is overrun by local Ireni people, led by Queen Boudica. Revolt put down, Boudica dies.
- 65 CE Execution of Paul: major Christian missionary and theologian
- 70 CE Destruction of Jerusalem by Roman troops.
- 70 CE to 110 CE The writing of the Gospels, in the order of Mark, Matthew, Luke and John.
- 79 CE Mount Vesuvius erupts; mud and ash bury the cities of Pompei and Herculaneum
- 80 CE Opening of the Colosseum in Rome: 500 wild animals and many gladiators killed
- 100 Rome's population exceeds 1 million
- 105 Paper making perfected in China by Tsai Lun, using mulberry leaves, fish nets and rags
- 122 Hadrian's Wall, 120 km, in northern England, for defence and expression of power
- 135 Jewish uprising suppressed, Jerusalem flattened. Diaspora: Jews banished, sold, enslaved or killed. Judea renamed Syria, Jews forced to leave. Rabbinic Judaism fully portable, based on synagogues.
- 142 Gunpowder invented by Chinese, possibly Wei Boyang
- 177 Systematic persecution of Christians begins, Rome: many now live in the catacombs.
The fish becomes a symbol of Christianity: acronym ICHTHUS
200. Galen of Pergamon: blood is made in the gut, and soaks into extremities.
(That is, no return flow.) This view was uncontested for 1400 yrs. See 1628 CE
- 300 Roman Empire under attack by Berbers, Franks, Vandals, Goths – and the plague
- 301 King of Armenia makes Christianity a state religion: first head of state to do so
- 312 Constantine's vision: a cross in the sky with words: *By this sign you will conquer*
- 313 Conversion of Constantine, Emperor of Rome, to Christianity
- 324 Constantine declares Christianity to be the official religion of Rome.
Property recently confiscated from Christians is returned to them
- 325 Council of Nicaea, summoned by Constantine, produces the Nicene Creed, a statement of faith, and helps to establish the New Testament canon (contents)
- 340 Coptic Christianity is introduced into Ethiopia
- 360 Huns invade Europe
- 370 Picts and Scots cross Hadrian's Wall and attack Roman troops
- 372 Buddhism reaches Korea from China
- 383 Romans under Magnus Maximus start withdrawing troops from Britain. The Roman Empire is shutting down
- 405 The Colosseum starts to be progressively closed down. Roman 'civilisation' is dying
- 409 Romans withdraw from Britain. Native rule returns to Britain
- 410 The sack of Rome by Alaric and the Visigoths
- 426 St Augustine *The City of God*: contrasting declining, abusive Roman power with the kingdom of God
- 429 Invasion of North Africa by 80 000 Vandals, a Germanic tribe which had converted to be Arian Christians.
- 430 Vandals besiege and sack Hippo (Algeria). Bishop Augustine dies in Hippo. His church and library respected.
- 431 Council of Ephesus recognises Mary as *Mother of Jesus* / *Mother of God*: the dogma of the Virgin Mary
- 432 Patrick sent from Britain as a missionary to Ireland
- 434 Attila becomes leader of the Huns. Attila one of the most powerful rulers in world history
- 450 England starts to be settled by Angles and Saxons
- 450 Polynesian chief Hawaii-Loa discovers the Hawaiian Islands
- 455 The Vandals sack Rome. Roman civilization disintegrates
- 500 The Maya city of Tikal becomes the first great city of Mayan civilisation. Mayan culture evolves in central America
- 525 Establishment of the Christian calendar by Dionysius Exiguus
- 541 Bubonic plague / Black Death kills 40 million, 30% of eastern Mediterranean. Old world's first pandemic plague
- 546 Rome falls, again, to Goths, Huns and Vandals: people they call barbarians
- 550 St David becomes bishop of a region in Wales, accelerates the conversion of the Welsh to Christianity

- 563 St Columba, Irish missionary, founds the monastery of Iona, Scotland
570 The prophet Muhammad is born
596 Augustine (not St Augustine of Hippo) sent to Britain by Pope Gregory 1
597 Augustine in Kent to convert King Ethelbert. Becomes Archbishop of Canterbury.
St Columba dies on Iona
600 Mayan civilization, Central America, reaches peak: wealthy sophisticated monarchy
629 Muhammad returns in triumph to Mecca with *The Koran*
632 Muhammad dies. Abu Bakr succeeds him as Caliph. Sunnis support this decision
634 Caliph Abu Bakr dies. Mohammed's adviser Umar succeeds him
635 Formal arrival of Christianity in China. (Christianity is later banned, in 845)
638 Jerusalem falls to Islamic forces. Rapid expansion of Islam
656 Caliph Othman is assassinated at Medina. Succeeded by Mohammed's cousin Ali
ibn Abi Talib. Shia believe that Ali should have been the first Caliph, chosen by Mohammed
661 Caliph Ali is assassinated
682 Muslim forces overrun the north African coast
688 Ine, King of Wessex, Christian, draws up the earliest code of British laws to survive
691 Dome of the Rock, Jerusalem, completed, 62 years after *The Koran*
700 Drinking tea becomes popular in China, partly because it's safer than unboiled water
711 Muslim forces invade Spain
732 Muslim advance into Europe halted in Battle of Tours in southern France
725 Parsees following the teachings of Zoroaster move to India
731 The Venerable Bede: *Ecclesiastical History of the English people*
765 Three crop rotation mentioned for the first time in Europe
787 The Second Council of Nicaea restores permission for the veneration of icons.
789 First Viking raids in Britain
795 First Viking raids in Scotland
First Viking raids in Ireland
806 68 monks killed in a Viking raid on Iona
845 Chinese Emperor Wuzong suppresses Buddhism, seizes property, releases slaves.
Christianity, the other 'foreign religion', is also banned
852 Burning of coal mentioned in English chronicles as a replacement for burning wood
863 Cyrillic alphabet invented by Macedonian missionary brothers Cyril and Methodius
868 The world's first printed book, a Tang dynasty Chinese Buddhist *Diamond Sutra*
874 First Viking settlement in Iceland
892 A Viking invasion of Britain is carried across the Channel by 330 ships
899 The great Mayan city of Tikal is abandoned
900 Indian mathematician Sridhara defines zero, separates algebra from arithmetic, quadratic solution formula
969 Byzantine forces retake Antioch, ending 300 years of Arab rule
First known use of firearms: Two Song generals of armies of China fire bullets from tubes
975 Indian modern arithmetical notation into Europe by Arabians, but called 'Arabic numerals'
988 Russians convert to Eastern Orthodox
991 The Norse and Danish Kings are paid 3,300 kg of silver to go away, but attacks on London continue
999 Panic selling and high church attendance as the end of the millennium approaches
1001 Mayan civilization is in retreat: over-use of land, soil erosion, malnutrition
1009 Egypt's Fatimid Caliph Al-Hakim bi-Amr Allah orders destruction of Church of the Holy Sepulchre in Jerusalem,
the Probus hospital for pilgrims and 3 000 other buildings, leading to calls for a crusade to liberate the Holy
Land
1022 The Synod of Pavia decrees that the higher clergy must be celibate
1026 Do re mi is introduced into music by Benedictine monk Guido d'Arezzo
1036 Modern musical notation is pioneered by Benedictine monk Guido d'Arezzo
1040 Macbeth murders Duncan, King of Scotland, and himself becomes King
1041 Movable clay type is developed by Chinese printers
1050 The Sovereign Order of St John of Jerusalem, Knights Hospitaller is founded
1054 Eastern Orthodox churches and Western Roman Catholic church separate.
Supernova explodes to become the Crab Nebula: visible in daylight for 23 days
1057 King Macbeth of Scotland is defeated by Malcolm, son of Duncan, assisted by Danes.
1066 Battle of Hastings: William of Normandy is victorious, becomes English King William I
1074 Pope Gregory VII excommunicates all married priests
Pope Gregory declares that the Bishop of Rome is absolute sovereign of the Church
1080 Around now many cathedrals built or started: Winchester, Hereford, Rochester, Ely
1086 *The Domesday Book*: inventory of England's domestic and agricultural resources, land ownership
1088 University of Bologna begins, still in operation, and is the oldest university in the world
1095 More than 30 000 men join the First Crusade, converging on Constantinople
1099 Jerusalem falls to the Crusaders
1115 A nobleman, Bernard from Burgundy, founds a monastery at Clairvaux, France
1120 Measurement of latitude and longitude in degrees, minutes, seconds pioneered: Anglo Saxon Welcher
1121 French theologian Peter Abelard condemned for heresy, castrated, secretly marries Heloise. They establish a priory
1123 The First Lateran Council forbids priests to marry, and many other pronouncements.
The Rubaiyat of Omar Khayyam, a Sufi (Sunni mystic): *The Moving Finger writes ..*
1139 War of succession in England: Empress Matilda, of Anjou, France, lands in Sussex

- 1145 The Second Crusade begins with 500 000 men – and starvation, disease
 1150 The University of Paris (France) begins
 1162 Henry II appoints Thomas Becket, a champion of Church rights, as Archbishop
 1167 Oxford University (UK) begins. Teaching began in 1096
 1170 Thomas Becket murdered in Canterbury Cathedral by four knights of King Henry II
 1173 Thomas Becket is canonised
 1173 Bonanno Pisano: The Leaning Tower of Pisa commences, finished in 1372
 1176 The Welsh found an annual Eisteddfod of music, poetry and drama: Cardigan Castle
 1187 Saladin besieges Jerusalem and takes it
 1188 Philip III of France imposes a Saladin tithe for the Third Crusade: first tax in France
 1150 Parchment (from animal skins) is still the almost universal writing material in Europe
 1189 Richard I of England embarks on the Third Crusade
 1192 Richard I truce with Saladin: keeps the ports already taken, has access to Jerusalem
 1193 Indigo dye imported from India to Britain for dyeing textiles
 Saladin dies: his empire is divided among quarrelling relatives
 1200 The Mayan culture of Central America dies out, including through poor land management. Pop. < 1000
 1202 Leonardo Fibonacci expands maths: uses Arabic numerals and zero from India
 1204 Bubonic plague decimates the Fourth Crusade
 1205 The Bible is divided into chapters by Bishop Langton (see 1551: verses)
 1206 Uighurs on the border of China overrun by Mongols led by Genghis Khan
 1209 Papal approval of an Order founded by Francesco Bernardone (Frances of Assisi)
 Cambridge University (UK) begins, probably by scholars who left Oxford after a dispute with locals
 1211 Genghis Khan invades China, after raids in 1205 and 1207, and successfully captures Beijing in 1215
 1215 *The Magna Carta*, limiting the power of the English monarchy, sealed at Runnymede.
 1216 Genghis Khan invades the Near east with 60 000 horsemen, destroying civilization
 1217 Pope Innocent III proposes a Fifth Crusade: a costly failure
 1220 Salisbury Cathedral, UK, commenced (completed 1258)
 1227 The Sixth Crusade begins. For several decades various Christian and Muslim groups control Jerusalem
 1229 Roman Catholic Council of Toulouse prohibits translation of the Bible
 The Council also forbids lay persons from reading the Bible
 1235 Surgeons in Salerno dissect human bodies, not allowed since Alexandria 300 BCE
 1236 Theodoric of Lucca pioneers anaesthesia: sponge soaked in narcotics applied to nose
 1237 Mongols use gunpowder, composite bows and leather armour to conquer much of Eastern Europe
 1241 Hanseatic League (Lubeck-based Baltic community) forms. Ships use innovations such as the rudder
 1243 Famine strikes German towns.
 Black rats have followed the Mongols
 1244 The Bible is divided into chapters: Archbishop Stephen Langton, Hugo de Santo Caro
 1248 The Seventh Crusade, led by Louis IX of France
 1249 Roger Bacon makes the first known European reference to gunpowder, recording its formula
 1250 Polynesians settle New Zealand and develop a distinctive Maori culture
 1260 Birth of Meister Eckhart: German theologian, philosopher and mystic: dies 1327
 1264 Henry III England at war with his own barons
 1269 Louis IX France: Jews to wear *figure of a yellow or red wheel on purple cloth* sewn on their clothes
 1271 Marco Polo, 17, joins his father and uncle in a journey to India and the Far East
 1273 Thomas Aquinas: *Summa Theologica*
 1279 Kublai Khan seizes power in China
 1289 Block printing employed for the first time in Europe, at Ravenna
 1295 Marco Polo returns to Venice, after travelling from 1275 to 1292 for Kublai Khan
 1298 Battle of Falkirk: Edward 1's forces using the longbow defeat William Wallace's
 1305 William Wallace of Scotland (Braveheart) is executed in London after a show trial
 1314 Enlargement program of St Paul's Cathedral, the fourth St Paul's, (UK) completed
 1315 The first documented public dissection of a human body, by Mondino de Luzzi, Italy
 1320 A series of bad harvests weakens and starves European populations
 1321 Civil War, the Despenser War, breaks out in England
 1322 First summary death sentence and forfeiture for high treason (UK): Edward II
 1300 Alliances which become the complex, tribute Aztec Empire start to emerge in Central America
 1328 Birth of John Wycliffe, pioneer translator of the Bible into English
 1334 The second Bubonic plague / Black Death starts in China
 1337 The Hundred Years War between England and France begins in earnest
 1340 Travellers from China bring rat-borne fleas and ticks which will spread Black Death / Plague
 1347 Tartars throw plagued corpses at Genoese merchants, Caffa, spreading the plague
 The plague starts in Europe, lasting seven years and killing one third (~100 million)
 1350 Plague kills one third of population of England and two thirds of Bergen, Norway
 Plague and Hundred Years War produce economic and social crises in England
 1362 English replaces French as the language of pleading and judgments in England
 1376 John Wycliffe says all authority, secular and ecclesiastical, comes from God
 1380 *The Bible*, translated into English by John Wycliffe
 1400 *Canterbury Tales*, Geoffrey Chaucer
 Average life expectancy in Europe drops to 45 years as a result of the Black Death. See 1851
 1409 The Pope orders all books of John Wycliffe to be collected and burned

- 1415 John Wycliffe declared a heretic.
John Hus, reformer and philosopher, burned at the stake.
Battle of Azincourt (Agincourt): English forces defeat French forces. Severe losses by French
- 1422 Henry VI of England proclaimed King of France. Disputed, and ceased in 1453
- 1424 *The Imitation of Christ*, possibly the most widely read devotional book, Thomas a Kempis
- 1428 Council of Constance orders Wycliffe's bones dug up, burned and thrown in the river
- 1429 Joan of Arc has visions: persuades the Dauphin he is the heir to Charles VI of France
- 1430 Portuguese explorers sailing along the west of Africa discover bananas
- 1431 Joan of Arc captured by French, burned at the stake in Rouen by English
Henry VI of England, 10 years old, crowned in Paris as King of France
- 1440 Johannes Gutenberg invents the printing press. Modern book printing
- 1441 The slave trade begins: African slaves sold in Lisbon. Collusion between white traders and warring African tribes
In the next 450 years over 20 million slaves transported to Europe and New World
- 1445 All moa become extinct in New Zealand, along with Haast's eagle which had relied on them for food.
- 1449 Ming dynasty Tumu crisis; parts of the Great Wall of China rebuilt using slave labour
- 1450 Around this time the Incas start to use terrace cultivation in the Andes
- 1453 Fall of Constantinople to the Ottomans (Turks, Muslims). High tariffs lead to links between Europe and Orient
Migration westwards by Greek scholars avowing the Ottomans helps to start The Renaissance (see 1543)
End of the Hundred Years War: English expelled from France
- 1455 *The Gutenberg Bible*: first printed Bible. One of the earliest with movable type
The Wars of the Roses: civil wars in England between Yorkist and Lancastrian factions. Ended 1487
- 1470 The Inca army overruns Chimor, the most developed state in South America
- 1474 Christopher Columbus revives the ancient Greek idea that the earth is spherical
- 1477 An early form of cricket banned because it distracts from archery practice
The first national postal service: Poste Royale, France
- 1483 Edward IV dies, uncrowned 12 yo Edward V deposed after 10 weeks by uncle (Richard III), Ed IV murdered
- 1485 Richard III killed in battle against Henry Tudor who becomes Henry VII.
End of the Middle Ages in England
- 1487 Consecration of Aztec Tenochtitlan Temple, Central America: 20 000 sacrificed
- 1489 Johannes Widmann; the first university lectures on algebra; publishes book on the use of the symbols + and -
- 1490 First globe of the world: Martin Behaim
- 1492 Christopher Columbus discovers America: discovered hundreds of years earlier by Vikings and others
- 1495 Leonardo Da Vinci submits plans to control the flooding of Florence by River Arno
Naples: outbreak of syphilis, among soldiers of Charles VIII of France. Spreads rapidly through Europe
- 1497 Lucrezia Borgia persuades her father, Pope Alexander VI, to annul her marriage
Savonarola alleges crimes by Pope Alexander VI and refuses an offer to be a cardinal.
Painting *The Last Supper* by Leonardo Da Vinci
- 1498 Savonarola, a Dominican calling for Christian renewal, burned at the stake for heresy
- 1502 Amerigo Vespucci returns to Europe. His report is the basis of the name America
- 1503 Columbus discovers Panama. He sees rubber being used as a ball game
- 1504 Michelangelo's 5 metre tall marble statue *David* put on display in Florence
- 1505 Painting *Mona Lisa* by Leonardo Da Vinci, completed over many years
- 1508 Painting *The Creation of Adam* by Michelangelo, finished 1512
- 1512 Sistine Chapel ceiling finished: Michelangelo
- 1513 The battle of Flodden, a major battle won by King Henry VIII, England over James IV,
- 1514 Pope Leo X: *Not the Christian religion only, but nature herself*, cries out against *the state of slavery*
Ottoman Sultan Selim 1 invades Shiite Persia with 800 000 cavalry; imposes Sunnism
- 1516 The first sugar is exported to Europe from the New World
- 1517 Martin Luther, a Catholic priest, denounces some Roman church practices. Starts the Protestant Reformation
- 1520 Smallpox epidemic, up to 50 million died. Up to 90% indigenous death rate: land vacant for colonisation
- 1521 The Diet of Worms orders Luther to recant. He refuses, saying *Here I stand*.
Luther protected by Frederick of Saxony while he translates The Bible into German
- 1525 William Tyndale publishes The New Testament in English
- 1529 Martin Luther publishes the hymn: *A mighty fortress is our God*
- 1532 Horses reintroduced into South America by Pizarro. (Most / all died out there 12 000 yrs ago)
- 1533 End of the Inca Empire looming, through Pizarro and the Spanish Conquistadors
- 1534 Henry VIII breaks from Rome and forms The Church of England: "The Act of Supremacy"
- 1535 Myles Coverdale publishes the complete bible in English
- 1536 The Act of Union joins Wales to England
- 1537 Pope Paul III condemns the slave trade but not slavery itself
- 1538 Potatoes are brought to Spain by returning Conquistadors
- 1540 The potato is introduced into France as an ornamental plant.
Pope Paul III formally recognises the Jesuit Order (Society of Jesus)
- 1541 John Calvin establishes a theocratic state in Geneva: becomes a Protestant centre
- 1542 August: Henry VIII England defeats James V Scotland. James, 30 yrs, dies December.
James' baby daughter, Mary (Marie) Queen of Scots, 6 days old, succeeds him
- 1543 Probable start of the Renaissance: radical books by Vesalius and Copernicus:
Andreas Vesalius *De Corporis Humani Fabrica*, with drawings by Titian, and
Nikolaus Copernicus *De Revolutionibus Orbium Coelestium*
Early stages of the Agrarian Revolution in England

- 1545 Spanish mine silver at New Castile which funds Europe's commerce for a century
- 1551 The Bible's chapters are divided into verses: Robert Estienne (see 1205: chapters)
- 1553 Edward VI (Protestant, Henry VIII / Jane Seymour), 15 yrs old, dies of TB.
Catholic half sister Mary (now Queen) marries Philip of Spain, restores Roman Catholicism.
Persecution of Protestants: 280 burned at the stake. 'Bloody Mary'
- 1554 Mary executes 'the nine day queen', Jane Grey: imprisons half sister Elizabeth
- 1557 Mary declares war on France in support of her husband, Philip II of Spain
- 1558 Mary dies, aged 42. Succeeded by half sister Elizabeth, 25
- 1559 The Presbyterian Church, Scotland, begins, part of the Reformation, influenced by John Knox and John Calvin
- 1562 English navigator John Hawkins seizes a slave ship, and starts English slave trade
- 1563 Queen Elizabeth: *the slave trade will call down the vengeance of heaven*
- 1564 Elizabeth takes shares in Hawkins' second slave trading venture: lends him a ship
- 1565 Hawkins introduces tobacco into England from Florida
- 1567 Mary Queen of Scots 'abducted' by the Earl of Bothwell. They marry.
Scottish nobility then desert Mary who abdicates in favour of her 1 yr old son James VI
- 1569 Mercator publishes his Mercator projection of the world, a cylindrical map
- 1572 St Bartholomew's Day massacre: up to 30 000 protestants murdered in France
- 1582 Pope Gregory: Gregorian calendar, our current calendar: 5th Oct becomes 15th Oct
- 1584 The first English colony in North America: Roanoke Island, Virginia
- 1587 Mary Queen of Scots executed on the orders of Elizabeth I.
Spanish invasion fleet prepared by Philip II of Spain burnt in Cadiz harbour by Drake
- 1588 English defeat the Spanish Armada, helped by severe weather conditions
- 1589 The Russian Orthodox Church becomes independent of Constantinople: the Moscow Patriarch.
- 1591 William Shakespeare *Henry VI* and *Richard III* (the probable dates of his first works)
- 1592 Robert Browne's theory of union helps to start The Congregational Church.
- 1595 The Dutch East India Company sends its first ships to the Far East
- 1599 There are now 900 000 black slaves in the New World.
- 1600 Populations: China 120 million; India 56 million; Holy Roman 34 million; Spain /Portugal 28 million;
Ottoman 28 million; France 18 million; Italy 13 million; England 6 million; North America 1 million.
Giordano Bruno supports the Copernican solar system view: is burned at the stake
- 1601 William Shakespeare *Twelfth Night*
- 1603 Elizabeth I of England dies. Succeeded by James (I England, VI Scotland): a United Kingdom
- 1604 James I *Counterblaste to Tobacco* : *loathsome to the eye ... dangerous to the lungs*. A 4 000 percent tax
- 1606 Dutch sailor Janszoon reaches north Queensland: first Europeans to reach Australia
- 1607 John Smith in Virginia captured by Indians. His life spared by 12 yr old Pocahontas
- 1610 Kepler uses the newly invented telescope to prove that planet orbits are elliptical
- 1611 The King James Authorised translation of The Bible
- 1612 African slaves transported from Angola to Brazil at 10 000 per year
- 1614 John Rolfe, Virginia settler, marries Pocahontas, now a Christian: Rebecca.
Logarithms are publicly propounded: John Napier
- 1615 England turns increasingly to coal as timber becomes scarce and expensive
- 1617 Smallpox in New England kills Rebecca (Pocahontas) and nearly all Indians
- 1618 The Thirty Years War in Europe. Massive destruction. Half of the German population die.
Sir Walter Raleigh is executed on the orders of James I to pacify the Spanish
- 1619 The first black slaves arrive in Virginia, the first to go to British colonies in America
The first American Thanksgiving Day, on the ship *Margaret* in Hampton, Virginia
- 1620 The *Mayflower* arrives at Cape Cod with 100 'pilgrims'
- 1625 One outbreak of the Black Death kills 41 000 people in London.
James I dies and is succeeded by his son Charles I
- 1626 Sir Francis Bacon dies of pneumonia after attempting to preserve a chicken in snow
- 1628 William Harvey: demonstrates circulation of blood, overturning Galen, 200 CE
- 1629 Charles I dissolves the English Parliament for 11 years. Several disputes over tax and power.
- 1633 Galileo's trial (Roman Inquisition) for his alleged heresy that the earth moves
- 1634 Oberammergau villagers vow to perform Passion play if spared Black Death.
- 1637 Speculation on tulip bulbs reaches absurd heights in the Netherlands
- 1638 Dutch settle Mauritius and start clubbing to death the flightless Dodo.
John Harvard, 31, dies of TB and leaves his library to what is now Harvard College
- 1642 English Civil Wars, three of them to 1651.
Abel Tasman discovers what is now Tasmania.
Blaise Pascal, a 19 yr old mathematical prodigy, invents an adding machine
- 1643 Torricelli, assistant to Galileo, devises the world's first barometer
- 1645 Cromwell's Roundheads defeat Charles: effective end of the military phase of the English civil war
- 1646 Charles I surrenders himself to the Scots at Newark
- 1647 The Society of Friends (Quakers) begins, based on the teachings of George Fox.
The Scots sell Charles I to the English Parliament for 400 000 pounds. He escapes.
Massachusetts, USA requires towns to establish schools (see 1870)
- 1648 Taj Mahal, India, completed: a mausoleum to the third wife of Shah Jahan
- 1649 Trial and execution of King Charles I of England and the abolition of the monarchy.
- 1650 One of several Little Ice Ages, freezing parts of the English Channel.
Bishop Ussher: The Creation took place the Sunday before 23 October 4004 BC (Julian calendar).

- Charles II returns to Britain, landing in Scotland: proclaimed King.
Cromwell successfully invades Scotland. Edinburgh Castle surrenders
- 1651 Charles II crowned at Scone, Scotland.
Royalist forces defeated again. Charles II escapes to France
- 1652 Cape Town, South Africa, is founded
- 1653 Cromwell is proclaimed Lord Protector of England, Scotland and Ireland
- 1654 Otto von Guericke proves the existence of atmospheric pressure
- 1656 Dutch scientist Huygens revolutionizes clockmaking by adding a pendulum
- 1658 Oliver Cromwell dies, succeeded by his son Richard
- 1659 A "Rump Parliament" forces Richard Cromwell to resign as Lord Protector
First bank cheques in England
- 1660 Reestablishment of the English monarchy under Charles II: Parliamentary monarchy
- 1662 Champagne (wine with fizz): Royal Society by Christopher Merret. See 1698
- 1665 London has last outbreak of Black Death: two thirds of Londoners leave, 68 000 die
- 1666 Isaac Newton invents calculus to help solve problems involving rates of change.
Isaac Newton describes gravity.
Great Fire of London destroys large parts of London incl. St Paul's Cathedral. Social unrest
The first Stradivarius violin is made
- 1667 Robert Hooke, major polymath, shows blood changes through the lungs.
First known blood transfusion, from a lamb into a boy. Miraculously the boy survives
- 1669 Christopher Wren appointed to design the new St Paul's Cathedral
- 1670 Gabriel Mouton proposes a uniform decimal system across all measurement.
Minute hands appear on watches for the first time
- 1674 The first Anglo-Dutch war ends; England free to expand trade while Europeans continue wars
- 1676 Greenwich Observatory established. It fixes standard time and helps navigators
- 1679 Denis Papin, a French physicist, invents the pressure cooker
- 1681 First bank cheques in the US
- 1684 Another freeze. The Thames River, London, freezes to 30 cm thick and 3 km offshore.
- 1685 Recommencement of intimidation of Protestants in France. Up to 500 000 leave.
- 1686 School opens in France for daughters of impoverished nobility: Cordon Bleu
- 1687 Catholic James II grants freedom of worship in England, Wales and Scotland
- 1692 Salem Massachusetts: 19 "witches" hanged, many on the evidence of a 12 yr old girl
- 1698 Champagne said to be invented in France by Dom Pierre Perignon: but preceded
in England by Merret 1662 (secondary fermentation) and use of stronger bottles
- 1699 William Dampier explores the west coast of Australia
- 1701 English farmer Jethro Tull invents seed planting drill: part of Agrarian Revolution
- 1704 Newton's major work *Optiks*, published after the death of major contributor Hooke.
- 1705 Thomas Newcomen: improved steam engine, paves way for Industrial Revolution
- 1706 Creation of the Kingdom of Great Britain (England, Wales and Scotland)
- 1709 Probable beginning of Industrial Revolution: iron can be smelted using coke from
coal instead of charcoal from wood. Large increases in production of iron as a result.
- 1710 English copyright law established: the basis of all future copyright law.
Christopher Wren completes the exterior of the rebuilt St Paul's Cathedral
- 1712 In Scotland Rob Roy evicted for debt and declared an outlaw
- 1713 John Woodward receives information from Constantinople re smallpox inoculation
- 1720 Belgian composer Jean Faber uses the clarinet for the first time in serious music.
The 'South Sea Bubble' land investment scheme causes massive financial losses
- 1721 Inoculation against smallpox trialled on prisoners and then the Royal Family (UK)
- 1726 Jonathon Swift: *Gulliver's Travels*
- 1727 Johann Sebastian Bach *St Matthew Passion*
- 1729 John and Charles Wesley, students at Oxford; Holy Club meetings, Sundays
- 1730 Feeding turnips to livestock in winter allows more to be kept, and in better condition
- 1731 John Hadley invents the reflecting quadrant: allows determination of latitude day and night
- 1733 John Kay (Eng): the flying shuttle revolutionizes the textile industry
- 1735 English distillers producing 6.4 million gallons of gin per year: 1 gallon per head.
First successful appendectomy, by Claudius Aymand at St George's Hospital, London
- 1736 Ship's Chronometer development award won by John Harrison, accurate within 0.1 sec / day
- 1738 John and Charles Wesley form the Methodist Society
- 1740 First Chippendale furniture
- 1741 Pope Benedict XIV: *Immensa Pastorum Principis* against enslavement of indigenous peoples
- 1742 The Celsius temperature scale: Anders Celsius.
George Frederick Handel: *The Messiah*.
- 1745 The Leyden Jar demonstrated to be able to store electric charge: a capacitor
Thomas Arne: the national anthem *God Save the King*
- 1746 Culloden: British troops defeat 'Bonny Prince Charles' who escapes to France
- 1750 Iron Act, Britain, prohibits the American colonies from manufacturing iron products
- 1755 William Cullen (Scot): small refrigerator: a partial vacuum over ether absorbed heat as it boiled. Ice produced.
- 1759 French Canada falls to British forces, and officially ceded to Britain in 1763
- 1761 First connection between tobacco (as snuff) and cancer: Dr John Hill, London.
Confusion in India after Anglo/Marathas battle favours transfer of power to British

- 1764 James Otis, Boston: "no taxation without representation": boycott of British products
- 1765 James Watt, Scottish engineer, invents a more efficient steam engine
- 1767 American whalers venture into the Antarctic: beginning of commercial exploitation
Richard Arkwright invents a spinning frame
- 1769 The Great Famine of Bengal kills 10 million people: world's worst natural disaster.
James Cook sails to Tahiti to observe the transit of Venus.
- 1770 James Cook explores the east coast of New Holland (Australia) and lands (now Botany Bay, Sydney)
Cook claims whole east coast of New Holland as *New South Wales* for Britain.
First open conflict between American colonists and British troops
- 1772 Joseph Priestley gives rubber its name in that it will rub out pencil marks.
Daniel Rutherford distinguishes nitrogen from carbon dioxide
- 1773 The Boston Tea Party: colonists throw 300 chests of tea into Boston Harbour
- 1774 Boston Harbor is closed by Britain until the East India Company is compensated.
American Continental Congress makes a Declaration of Rights and Grievances
- 1775 Cook returns to Britain: wins a Royal Society medal for conquering scurvy.
- 1776 American War of Independence begins July 4, Philadelphia. Britain hires mercenaries from Germany
- 1779 Samuel Crompton: the spinning mule, major advance in the Industrial Revolution
- 1780 The first modern pianoforte: Sebastien Erard
- 1781 The end of the American Revolution and the War of Independence
- 1783 First hydrogen balloon: Jacques Charles, France.
- 1784 The Methodist Church: a conference of preachers led by John Wesley, an Anglican priest
- 1786 Wolfgang Amadeus Mozart *The Marriage of Figaro*
Andrew Meikle, Scotland, invents a successful threshing machine
- 1787 British prisons becoming overcrowded through loss of American colonies.
William Wilberforce begins the campaign to end slavery in British colonies
Wolfgang Amadeus Mozart *Eine Kleine Nachtmusik*
- 1788 First workable steamboat: William Symington, Scotland.
"The First Fleet". First convicts arrive at Botany Bay, Australia.
The Botany Bay town is named after Home Secretary, Lord Sydney
- 1789 First Pears soap, commercial production from 1807.
Mutiny on the Bounty. Captain Bligh set adrift. Mutineers go to Pitcairn Island.
Captain Bligh reaches Timor after 5 800 km of open ocean in an open 7 metre boat.
George Washington becomes the first President of the US.
Storming of the Bastille in Paris. Commencement of the French Revolution
- 1792 First cotton gin: Eli Whitney, US. Greatly increases demand for cotton, and slaves.
Denmark is the first country to give up the slave trade.
The French National Convention abolishes the monarchy
- 1793 Louis XVI, France, is executed.
Later in the year Louis XVI's wife, Marie Antoinette, is executed.
France declares war on Britain, Holland and Spain
- 1795 Lime juice rations required on all British Royal Navy voyages exceeding five weeks.
Average weight of cattle at Smithfield market, UK, is now twice that of 1710.
Napoleon Bonaparte given command of French forces.
France adopts the metric system.
James Hutton: *Theory of the Earth*, a highly influential book on the earth's age, in 2 volumes
- 1796 Edward Jenner, UK, develops a new technique for vaccination against smallpox.
French invade Italy and Austria
- 1797 Cigar makers in Cuba make cheap little cigars using paper wrappers: cigarettes.
First copper pennies and pound notes are issued in Britain
- 1798 Napoleon takes the Pope into custody in Rome: takes Malta and parts of Egypt.
Thomas Malthus: *Essay on the Principles of Population*: highly influential
- 1799 Humphrey Davy produces 'laughing gas' (nitrous oxide). Uses it as an anaesthetic.
Commencement of income tax in Britain.
Ludwig van Beethoven: *Sonata Pathetique*
- 1800 William Herschel discovers infra red rays.
Alessandro Volta invents the electric battery: copper and zinc plates in brine.
Industrial Revolution spreads to Europe, including smuggling of a spinning jenny.
Richard Trevithick, England: high pressure steam engine.
China population 297 million; India 115 million; Holy Roman 41 million; Russia 21 million (Empire 35 m);
Japan 29 million; Spain 10 million (Empire 27 m); Ottoman Empire 26 million; Britain 10 million (Empire 49 m);
France 27 million (Empire 50 m); North America 5 million.
The United Kingdom of Great Britain and Ireland created
- 1801 World's first successful steamship: William Symington's *Charlotte Dundas*.
Ludwig van Beethoven: *Moonlight Sonata*
- 1802 Madame Tussaud's wax death masks from French Revolution put on show, London.
First photograph: Thomas Wedgwood. Cannot be fixed: it fades quickly.
- 1804 First vacuum bottling factory: Massey, France.
Steam railway locomotive: Richard Trevithick
- 1805 Beaufort Scale for describing wind velocities: Francis Beaufort, British naval officer.
Battle of Trafalgar ends Napoleon's sea power. Admiral Nelson mortally wounded.

- Battle of Austerlitz: Napoleon defeats a combined Austrian - Russian army
 Richard Trevithick, England: high pressure steam engine used to drive iron rolling mill and barges
 Cotton thread developed which is as strong as linen: Patrick Clark, Scotland
- 1810 Russian Ambassador to Paris, Kurakin, has meals served in courses, not all at once
- 1812 Machine-breaking Luddite riots spread through England (to 1814).
 Napoleon's army invades Russia and is defeated by weather, disease and attack.
 The first Methodist meeting in Sydney
- 1813 In the wake of Napoleon's defeat in Russia, wars of liberation break out in Europe.
 Jane Austen: *Pride and Prejudice*
- 1814 Duke of Sutherland drives 10 000 people off Scottish estates to make way for sheep.
 Allied troops enter Paris. Napoleon abdicates and is imprisoned on the island of Elba
- 1815 Napoleon escapes, his new army defeated in Belgium by Allied forces: Waterloo.
 The first Methodist minister arrives in Australia, in Sydney
- 1818 First successful human to human blood transfusion: James Blundell, London, UK
- 1821 Napoleon Bonaparte dies aged 52 on British St Helena
- 1822 The first Congregational meeting in Australia, in Tasmania.
 The first Presbyterian minister arrives in Australia.
 The Rosetta Stone, Egyptian, is deciphered, giving access to ancient culture
- 1823 Chlorine is liquefied: Michael Faraday, UK, allowing its use in water purification
- 1824 Louis Braille invents raised dots as a way of helping blind people to read.
- 1825 The Stockton to Darlington railway opens, north-east England.
- 1827 Invention of the electromagnet
 Erie Canal, US, opens, linking Hudson River with the Great Lakes. New York expands
 Invention of contact lenses
 Invention of the screw propeller for ships
- 1829 George Stephenson's *Rocket* wins a railway locomotive competition.
 Founding of the Church of Jesus Christ of Latter Day Saints (Mormons)
- 1831 Discovery of the principle of the Dynamo for electric current: Michael Faraday, UK
- 1832 The first Congregational minister arrives in Australia.
 Thomas Latta, Scotland, saves the life of a cholera patient by injecting hypotonic saline
- 1833 British Parliament abolishes slavery, thanks to the campaign by William Wilberforce who died 3 days later
- 1834 35 000 slaves freed in South Africa as slavery ends in the British Empire
- 1837 Isaac Pitman devises the shorthand system.
- 1838 Samuel Morse and his assistant devise the *Morse Code* which uses dots and dashes
- 1839 Charles Goodyear, US, accidentally discovers how to harden rubber, called vulcanizing.
 Kirkpatrick MacMillan, Scotland, invents the first true bicycle
- 1840 Anna Russell, Duchess of Bedford, introduces the afternoon tea tradition (Britain)
- 1842 Crawford Long, US, uses ether in the first operation using general anaesthetic; public demonstrated 1846
- 1843 The *Great Britain*: first large, screw driven, iron hulled steamship to sail the Atlantic.
 Felix Mendelssohn: *A Midsummer Night's Dream* which includes the *Wedding March*
- 1845 Potato crops fail throughout Europe, kills over 2 million.
- 1846 Irish potato crop fails again. Famine kills 1 million people, over 1 million emigrated
- 1847 Emily Bronte, UK: *Wuthering Heights*.
 Charlotte Bronte, UK: *Jane Eyre*
- 1848 The US buys one third of Mexico, including California, for 15 million dollars
- 1851 The Great Exhibition, London (first World Fair). The building: 1851 feet long, 564 m.
 Discovery of gold at Bathurst, NSW, producing gold rush, including Chinese workers
 Life expectancy in the UK 36 years, rising to 49 years in 1901
- 1852 Transportation of convicts to Tasmania ends: 67 000 have been transported
- 1853 The dogma of The Immaculate Conception of Mary proclaimed by Pope Pius
- 1854 Benjamin Silliman, US, fractionates petroleum by distillation.
 Crimean War: Battle of Balaclava includes the frivolous, disastrous Charge of the Light Brigade
- 1855 Crimean War: epidemics of cholera and typhus cost more lives than fighting.
 Robert Bunsen invents a gas burner now known as a Bunsen burner
 The third wave of the Bubonic Plague: started in China, finished 1959: 12 million dead
- 1856 Bessemer converter for the large scale production of steel: Henry Bessemer, Britain
 James Harrison (Scot / Australian): first practical vapour compression system. Widely adopted commercially
- 1859 Queensland is made into a separate colony with its capital at Brisbane.
On the Origin of Species is published by Charles Darwin
- 1860 Ferdinand Carre (France): first gas absorption system: gaseous ammonia / water, no compressor, uses heat source
- 1861 The American Civil War starts.
 Christian Hermann, palaeontologist, discovers first complete Archaeopteryx skeleton discovered, Bavaria
 Linoleum, 'lino', developed by Frederick Walton.
 Charles Dickens, UK: *Great Expectations*
- 1863 Abraham Lincoln, US: *Gettysburg Address*
- 1865 William Booth starts a mission in London which will become the Salvation Army.
 The end of the American Civil War which cost 620 000 lives of soldiers and indeterminate number of civilians
 Abraham Lincoln, lawyer and 16th President of the US, assassinated
- 1866 Johann Strauss: *The Blue Danube Waltz*.
- 1867 Dominion of Canada is formed.

- The US buys Alaska from Russia for 7 million dollars.
- 1866 Christopher Sholes patents the typewriter and its QWERTY keyboard
- 1868 Helium discovered in sunlight, named by Joseph Lockyer, and not discovered on Earth until 1882
- 1869 First isolation of nucleic acids: Swiss physician Friedrich Miescher (see 1953)
- 1870 Elementary Education Act in England. Attendance made compulsory: 1880 (see 1647).
The Vatican Council: the Pope is infallible when speaking on matters of doctrine
- 1873 Henry Rose, US, invents barbed wire, which makes broadacre farming feasible
- 1875 Alexander Graham Bell, US, pioneers the telephone
- 1880 Thomas Edison, US, patents the incandescent light bulb
Bushranger Ned Kelly killed; he was a sabotage threat; hero Thomas Curnow raised alarm about the sabotage
- 1883 Hiram Maxim, US/British, invents the machine gun, greatly increasing carnage in war
Krakatoa, Indonesia: most violent eruption since Thera 1628 BCE: 36 000 people die
- 1885 Carl Benz, Germany, the first motor car engine and production car
- 1888 Celluloid film and movie camera: William Friese-Greene, UK
- 1891 The first old age pension scheme, payable from age 70: Germany
- 1892 The zip fastener: Whitcomb Judson, US
- 1895 Wilhelm Rontgen, Bavaria, discovers the X ray
First motion picture theatre opens, in Paris
Wireless communication: Guglielmo Marconi, Italy
- 1897 The diesel engine: Rudolf Diesel, Germany
- 1898 The US annexes the Hawaiian Islands
- 1901 The six separate colonies of Australia become the Commonwealth of Australia.
The vacuum cleaner: Cecil Booth, UK
The safety razor: King Gillette, US
- 1903 The first powered flight: the Wright brothers, US, at Kitty Hawk, North Carolina
- 1905 Special (no acceleration) theory of relativity: Albert Einstein, Germany/US
- 1907 Stellite, a non-corroding alloy: Elwood Haynes, USA
- 1912 The *Titanic* sinks in the Atlantic after scraping an iceberg: 1500 lost
- 1913 George Bernard Shaw (Ireland): *Pygmalion* (later made into play and film: *My Fair Lady*).
- 1914 World War I starts after Archduke Ferdinand, Austria/Hungary, is assassinated: Sarajevo
- 1915 Huge losses of life in the war, on Eastern and Western Fronts.
Australian and New Zealand Army Corps, British and others land on Gallipoli, Turkey
- 1916 Massive losses of life continue: Battle of Jutland (sea), Battle of the Somme (land).
Murder of the Russian monk Rasputin by aristocrats protecting their power
- 1917 The US enters World War I.
October Bolshevik revolution begins in Russia, led by Lenin: 6 November but 24 October on Julian calendar
- 1918 Worst pandemic ever, except for the Black Death / Bubonic plague: over 50 million people die of influenza.
The Russian Tsar and his family are shot. Anastasia may have escaped.
11 November at 11am: fighting of World War I stops
- 1919 Civil War in Russia. Mostly ends in 1923, won by the Bolsheviks and the Red Army.
Stainless steel, non-rusting patented by Elwood Haynes, USA
- 1922 The Permanent Court of International Justice is opened at The Hague, Holland.
Benito Mussolini and his black shirt Fascists march on Rome, Italy
The Irish Free State is established.
- 1923 Adolf Hitler's unsuccessful attempt to take over local government in Munich, Germany.
He is sentenced to five years in prison but serves only five months
- 1925 Frozen food process: Clarence Birdseye, USA
- 1926 Mussolini assumes total power in Italy.
John Logie Baird, Scotland, demonstrates grayscale television at Royal Institution
- 1927 Charles Lindbergh, US, completes the first non-stop transatlantic flight.
- 1928 John Logie Baird, Scotland, demonstrates colour television
John Flynn, Presbyterian minister, Australia: the world's first air ambulance, Royal Flying Doctor Service
Alexander Fleming, UK, makes the first clinical use of penicillin.
- 1929 Share market crash Wall Street, US, has global repercussions: the Great Depression
- 1930 The jet engine: Frank Whittle, air force engineer, UK
- 1933 Hitler's party becomes largest following an election: last contested election until after WW II
The Nazis open the first concentration camp in Germany at Dachau
- 1934 Mao Tse Tung leads Communist followers on the Long March in China: 10 000km
- 1935 Nylon: Wallace Carothers, US, at DuPont
Radar: Robert Watson-Watt, UK
- 1936 Joseph Stalin, USSR, liquidates his enemies in purge lasting two years and killing 1 million
- 1937 The Spanish Civil War: the rebel General Franco is supported by German bombers.
Buchenwald concentration camp opens: in 8 years 56 600 die from starvation and other forms of killing
- 1938 Major anti-Jew *Kristallnacht* riots. 30 000 Jews carried off to concentration camps.
Coelacanth lobefin fish discovered, thought to be extinct (see 418 million yrs ago)
Teflon: Roy Plunkett, USA
- 1939 Spanish Civil War ends
World War II begins as Germany invades Poland
Electron microscope: Vladimir Zworykin, Russian American
- 1940 War II going badly for the British / French / Australian allies.

- Dunkirk evacuation of 340 000 troops across the English Channel.
The Battle of Britain: mainly British Spitfires fight off mainly German Stukas
- 1941 Germany invades Russia.
Japan attacks the US at Pearl Harbour, Hawaii. The US enters World War II
- 1942 The Battle of Stalingrad, Russia: estimated total casualties over 1 million
Japanese planes bomb Australia and shipping many times over two years
- 1943 Mussolini resigns under pressure
- 1945 Auschwitz death camp, Germany, liberated. Over a million people killed there
Soviet and US armies meet at the River Elbe, Germany.
US bombers raid Tokyo, Japan, killing 124 000 civilians.
Dietrich Bonhoeffer hanged on the express orders of Adolf Hitler
Mussolini and 12 associates executed, Italy. The news of this unnerves Hitler.
Two days later Hitler commits suicide, as do others. Germany surrenders.
The atomic bombs dropped on Japan kill 175 000 outright and similar number later.
End of World War II: 80 million people have died, many injured, at least 40 million displaced
- 1946 Discovery of the first of the Dead Sea Scrolls in a cave at Qumran, on the West Bank.
The United Nations General Assembly has its first meetings in London.
The Nuremberg trials: 12 leading Nazis are sentenced to death.
Electronic computer: JP Eckert and JW Mauchly, USA
- 1946 Radiocarbon dating of fossils possible up to 60 000 yrs old: William Libby, USA
- 1948 Basic oxygen steelmaking, blowing oxygen into molten pig iron: Robert Durrer, Swiss.
The transistor: J Bardeen, W Brattain, W Shockley, USA
- 1950 Apartheid laws in South Africa cause riots and general unrest.
North Korea invades South Korea: the start of the Korean War, which ends in 1953
- 1952 Crystallised DNA fibres photographed: Rosalind Franklin, UK
- 1953 DNA double helix structure described, genetic basis of life: James Watson, Francis Crick, UK. See 1869
- 1954 The *Nautilus* (US), the world's first nuclear powered submarine.
The world's first nuclear power station, at Obninsk, near Moscow.
The contraceptive pill: Gregory Pincus, USA
- 1956 The hovercraft: Christopher Cockerell, UK
- 1957 First man made satellite goes into orbit: *Sputnik*, USSR
- 1958 Mao Tse Tung's Great Leap Forward, China: 500 million peasants into communes.
- 1960 During the year 17 European colonies in Africa gain their independence
World population reaches 3 billion
- 1961 The Berlin Wall is built, dividing East and West Germany
- 1962 Vatican II of the Roman Catholic Church: 1962 to 1965
- 1963 Martin Luther King: "*I have a dream ...*"
President JF Kennedy, US, is assassinated in November
- 1965 The Vietnam War begins. It ends in 1975
- 1967 Referendum: 91% approve counting of aboriginal people as a part of the population.
(Aboriginals and all others were 'Australian citizens' rather than 'British subjects' from 1949.)
Aboriginal voting rights followed progressively from 1949.)
The first heart transplant: Christian Barnard, South Africa
- 1968 Martin Luther King is assassinated in April (see chapter 4).
Robert Kennedy is assassinated in June (see chapter 4)
- 1969 People walk on the moon for the first time: Neil Armstrong (USA)
- 1973 An energy crisis grips the developed world as OPEC quadruples the price of oil
- 1974 World population reaches 4 billion
- 1977 Members of the Congregational, Methodist and Presbyterian churches across Australia unite to form The Uniting Church
- 1978 Pope John Paul dies after 34 days. Evidence of foul play against his planned reforms
- 1981 World population reaches 4.5 billion, including 960 million in China
HIV / AIDS noticed in US: possibly from 1920s in Congo: 40 million have died so far
- 1982 McLean vs Arkansas: finds that Creation Science is not science
- 1985 Annual development of a large hole in the ozone layer.
- 1987 Teaching of Creation Science declared unconstitutional in the USA
World population reaches 5 billion
- 1988 New Parliament House, Canberra, opened. Cost \$1.1 billion. Build time 8 years.
- 1989 Demolition of the Berlin Wall
- 1990 Nelson Mandela released from prison. Assists agreement between blacks and whites
- 1992 The Australian High Court upheld the claim of Eddie Mabo, ruling that *the lands of this continent were not Terra Nullius when European settlement occurred*
Kyoto treaty on cutting global emissions of greenhouse gases
- 1993 Native Title Act 1993
The Australian Parliament acknowledges that the land was not vacant in 1788.
The Second Vatican Council absolves Galileo of heresy. See 1633.
The Second Vatican Council now encourages Bible study by laity, and in local languages
- 1997 Creation Science Foundation renamed Answers in Genesis
- 1999 Concerns about K2000: new millennium approaching, possible computer problems
World population reaches 6 billion

- The Concorde supersonic airliner crashes outside Paris. All on board killed. Concorde ceases
- 2000 Summer Olympic Games in Sydney, Australia
 - 2003 Human Genome project: over 20 000 genes identified
 - 2004 Boxing Day Tsunami, Indonesia, the deadliest in recorded history, killing over 230 000 people
 - 2005 Launch of Youtube, bought by Google a year later for \$1.6 billion
 - 2006 Apple releases the first iPhone
 - 2007 Severe drought in Australia causes the wheat crop to fail and prices to increase around the world
 - 2008 CERN's Large Hadron Collider, a circular particle accelerator 27km circumference commences, Switzerland
 - 2010 Apple releases the first iPad
 - 2011 A tsunami strikes Fukushima, Japan, terminally damaging the nuclear power plant
 - 2012 Xi Jinping elected as President of China
 - 2013 Middle East uprising: Arab Spring protests
Nelson Mandela, anti-apartheid activist Methodist, Sth Africa President dies aged 95
World population reaches 7 billion
 - 2014 Scotland votes to remain a part of the United Kingdom
 - 2015 Paris climate accord on greenhouse emissions
 - 2016 Britain votes to leave the European Union
 - 2017 Donald Trump becomes President of the USA, denies climate change evidence, encourages division
 - 2020 COVID spreads from China and kills 2 million by year's end
 - 2021 COVID vaccines used but the spread continues
Working from home due to COVID initiates permanent worldwide change in work practices and society
 - 2022 Vladimir Putin stages Russian unprovoked invasion of Ukraine.
World population reaches 8 billion

A question for short day Creationists, most of whom believe that the creation took place in 4004 BCE: *Where do you draw the line on what is acceptable, all earlier dates therefore becoming wrong?*

A question for long day Creationists, who believe that creation took a bit longer, where *a day is as a thousand years* (actually a misapplication of 2 Peter 3:8): *Where would you place Adam and Eve on this timeline?*

Appendix 2 References and additional notes

1. The Parables of the Kingdom are found in various forms in the gospels: Matthew, Mark, Luke and John. There are more than 40 parables, including Faithful and Unfaithful Servants (Matt 24:45-51 and Luke 12:42-46); Hidden Treasure and the Costly Pearl (Matt 13:44-46); Labourers in the Vineyard (Matt 20:1-16); the Lost Sheep, Lost Coin and Prodigal Son (Luke 15); and The Sower (Matt 13:2-8). {Mentioned in Ch 1}
2. The Beatitudes are found in Matthew chapter 5 and form a part of The Sermon on the Mount: chapters 5, 6 and 7. {Mentioned in Ch 1}
3. The parable or discourse of the Sheep and Goats (Matt 25:31-46). {Mentioned in Ch 1}
4. The Apostles and Nicene Creeds. {Mentioned in Ch1} The English Language Liturgical Consultation English Language Liturgical Consultation (ELLC) is an international ecumenical group whose primary purpose is to provide ecumenically accepted texts for those who use English in their liturgy.

The 1988 translation of the **Apostles' Creed**, which developed in the 4th and 5th centuries, avoids the use of the word "his" in relation to God.

I believe in God, the Father almighty, creator of heaven and earth.

I believe in Jesus Christ, God's only Son, our Lord, who was conceived by the Holy Spirit, born of the Virgin Mary, suffered under Pontius Pilate, was crucified, died, and was buried; he descended into hell.

On the third day he rose again; he ascended into heaven, he is seated at the right hand of the Father, and he will come to judge the living and the dead.

I believe in the Holy Spirit, the holy catholic Church, the communion of saints, the forgiveness of sins, the resurrection of the body, and the life everlasting. Amen.

The **Nicene Creed** was developed in 325 and 381 CE.

We believe in one God, the Father, the Almighty, maker of heaven and earth, of all that is, seen and

unseen.

*We believe in one Lord, Jesus Christ, the only Son of God,
eternally begotten of the Father,
God from God, Light from light, true God from true God, begotten, not made.
Of one being with the Father; through him all things were made.
For us and for our salvation, he came down from heaven.
was incarnate of the Holy Spirit and the Virgin Mary, and became truly human.
For our sake he was crucified under Pontius Pilate, he suffered death and was buried,
On the third day he rose again in accordance with the Scriptures;
he ascended into heaven, and is seated at the right hand of the Father.
He will come again in glory to judge the living and the dead, and His Kingdom will have no end.
We believe in the Holy Spirit, the Lord, the giver of life,
who proceeds from the Father, who with the Father and Son is worshipped and glorified,
who has spoken through the prophets.
We believe in one holy catholic and apostolic church.
We acknowledge one baptism for the forgiveness of sins.
We look for the resurrection of the dead, and the life of the world to come. Amen.*

5. In 1977 members of the Congregational, Methodist and Presbyterian Churches united to establish the Uniting Church in Australia. The document upon which this union was established is the Basis of Union of the Uniting Church in Australia, a visionary and inspiring statement. (<http://assembly.uca.org.au/basis-of-union-1971-1992>) What follows is a portion of it referring to the Creeds.

The Uniting Church enters into unity with the Church throughout the ages by its use of the confessions known as the Apostles' Creed and the Nicene Creed. The Uniting Church receives these as authoritative statements of the Catholic Faith, framed in the language of their day and used by Christians in many ways, to declare and to guard the right understanding of that faith. The Uniting Church commits its ministers and instructors to careful study of these creeds and to the discipline of interpreting their teaching in a later age. It commends to ministers and congregations their use for instruction in the faith, and their use in worship as acts of allegiance to the Holy Trinity. {Mentioned in Ch 1}

6. Buddha's non approval of statues of him: Martin Palmer *The Jesus Sutras* Piatkus 2001 {Mentioned in Ch 1}
7. Stephen Batchelor in *Confession of a Buddhist Atheist* available in print or audiofile. Batchelor is a Secular Buddhist whose basic claim is that the belief in rebirth doesn't have sufficient evidence behind it, and it actually takes away from the core practices and teachings of the Buddha. Agnosticism and atheism Batchelor claims can be integrated together into what he calls an "ironic atheism." {Mentioned in Ch 1}
8. Neil Ormerod *Grace and Disgrace* Dwyer 1992 {Mentioned in Ch 2 and Ch 7}
9. Ian Plimer *Telling Lies for God* Random House 1994 {Mentioned in Ch 2 and Ch 8}
10. The genealogy of Jesus according to Matthew (Matt 1:1-17) {Mentioned in Ch 3}
11. The genealogy of Jesus according to Luke. (Luke 3:23-38) {Mentioned in Ch 3}
12. William Barclay *The Plain Man Looks at the Beatitudes* Fontana 1963 {Mentioned in Ch 4}
13. M Scott Peck *The Road Less Travelled* Arrow Books 1990 p80 {Mentioned in Ch 4}
14. Davis A. Young *The contemporary relevance of Augustine's view of creation*, Dept. of Geology, Calvin College, Michigan asa3.org/ASA/PSCF/1988/PSCF3-88Young.html referring to *The Literal Meaning of Genesis* as written by Augustine translated by John Hammond Taylor (Newman Press, New York 1982) {Mentioned in Ch 6}
15. Sir James Jeans *The Universe Around Us* Cambridge 1929 {Mentioned in Ch 7}
16. Ernest Becker *The Denial of Death* Simon and Schuster 1973 {Mentioned in Ch 7}
17. John Gribbin and Mary Gribbin *Children of the Ice* Blackwell 1990 {Mentioned in Ch 8}
18. Alain de Botton *Status Anxiety* Penguin 2004 p 258 {Mentioned in Ch 11}
19. Carl Jung *Modern Man in Search of a Soul* RKP 1933 {Mentioned in Ch 11} Quoted in Roger F Hurding *Roots and Shoots: a guide to counselling and psychotherapy* Hodder and Stoughton 1986 p 273
20. As noted in Neil Ormerod *Grace and Disgrace* Dwyer 1992 p34 {Mentioned in Ch 11}
21. William Loader *Finding Faith in Fact and Fiction: Making Sense of the New Testament while Maintaining our Integrity and the Integrity of the Text*. See his website. Paper delivered to the Progressive Christian Network of Victoria, November 2007 {Mentioned in Ch 11}

21. M Scott Peck *People of the Lie* Arrow Books 1990 p237 {Mentioned in Ch 12}
22. Robert Bakker *The Dinosaur Heresies* Longman 1986 {Mentioned in Ch 2 and Appendices: Archaeopteryx}
23. Walter Brueggemann *Genesis: Interpretation: A Bible Commentary for Teaching and Preaching*. Atlanta: John Knox Press 1982 {Mentioned in Ch 6}
24. Soren Kierkegaard *The Present Age and the Difference Between a Genius and an Apostle* Fontana 1962 p 40 {Mentioned in Ch 7}
25. Pierre Teilhard de Chardin *The Phenomenon of Man* tr. Fontana Books 1965 p 289 {Mentioned in Ch 14}
26. Friedrich Nietzsche *The Gay Science: the Parable of the Madman* (1882, 1887) para. 125 Vintage, 1974 pp181-82 {Mentioned in Ch 14}
27. Bruce Sanguin *Evolving Prayer*, excerpt from *If Darwin Prayed: Prayers for Evolutionary Mystics* <http://wisdom-magazine.com/Article.aspx/2341/> {Mentioned in Ch 14}
28. Denis Lamoureux quoted in evolutionarychristianity.com/blog/category/general/page/28/ {Mentioned in Ch 14}
29. Jim Burklo quoted in michaeldowd.org/media/files/a63079d5fa9df7c453548763daa3f832-75.php {Mentioned in Ch 14}
30. John Shelby Spong quoted in evolutionarychristianity.com/blog/john-shelby-spong-christianity-continuing-to-evolve/ {Mentioned in Ch 14}
31. Kenneth R. Miller quoted in michaeldowd.org/media/files/a63079d5fa9df7c453548763daa3f832-75.php {Mentioned in Ch 14}
32. Michael Morwood quoted in evolutionarychristianity.com/blog/michael-morwood-for-pope/ {Mentioned in Ch 14}
33. Richard Rohr as written in myemail.constantcontact.com/Daily-Meditation--Incarnation-Makes-Evolution-Inevitable---Frame---May-23--2013.html?soid=1103098668616&aid=owKdNAKZnTQ {Mentioned in Ch 14}
34. John Polkinghorne quoted (with many other interesting quotes from him) at bqotd.com/john-polkinghorne/i-also-think-we-need/ {Mentioned in Ch 14}
35. Bruce Sanguin as written in brucesanguin.com/christmas-eve-the-preachers-nightmare-and-greatest-opportunity/ {Mentioned in Ch 14}
36. John Sanford *Dreams: God's Forgotten Language* (1968,1989) Harper, San Francisco

Appendix 3 Recommended reading

1. The Bible in a good modern translation such as the New International Version, New Revised Standard Version, or the New Jerusalem Bible (annotated) rather than paraphrases such as The Living Bible, or The Message
2. The Answers in Genesis website (young earth Creationism, and anti natural selection) www.answersingenesis.org/
3. The No Answers in Genesis website (secular, and pro natural selection) www.noanswersingenesis.org.au
4. The Answers in Creation website (old earth Creationism, and pro natural selection) www.answersincreation.org/
5. Lectionary based Old Testament commentary by Rev Prof Howard Wallace <https://hwallace.unitingchurch.org.au/index.html>
6. Lectionary based New Testament commentary by Rev Emeritus Prof William Loader <https://billloader.com/lectionaryindex.html>
7. For further information about what the science really shows about whether the speed of light is slowing, and the non scientific nature of creationist thinking, see <http://www.fsteiger.com/light.html>
8. 29+ Evidences for Macroevolution www.talkorigins.org/faqs/comdesc/section1.html#Thewissen_etal2001
9. *In The Blood: God, Genes and Destiny*, Steve Jones, Flamingo / HarperCollins, 1997

10. Peter Hitchens *The Rage Against God* Zondervan 2010 Peter and his brother Christopher were Trotskyists at times. Christopher remained a controversial 'antitheist'. This book describes Peter's rage and his return to Christianity.
11. Richard Rohr *The Naked Now: Learning to See as the Mystics See*
12. Robinson, Barry "Keeping The Faith in Babylon... is a word of hope from a pastor in exile to those still serious about discipleship in a society (and, too often, a church) that has lost its way".
13. Marcus Borg and NT Wright *The Meaning of Jesus*. These leading Liberal and Conservative Jesus Scholars present the heart of the Historical Jesus debate. These two men were also good friends. Excellent book and well worth reading. Very readable.
14. Mahoney, J *Christianity in Evolution*, Georgetown University Press.
15. William Loader, Murdoch University, Perth, completed a five-year Australian Research Council Professorial Fellowship Project (2005-2010): Attitudes towards Sexuality in Judaism and Christianity in the Hellenistic Greco-Roman Era. Bill is a Minister of the Uniting Church in Australia. His online *First Thoughts* comments on lectionary readings have been very helpful for lay and clergy, and have an international following. Bill's many publications are well written, readable and are listed on his website <https://billloader.com/lectionaryindex.html> and include
 - *Making Sense of Sex: Attitudes towards Sexuality in Early Jewish and Christian Literature* Grand Rapids Eerdmans, 2013
 - *The New Testament on Sexuality* Grand Rapids: Eerdmans, 2012
 - *Philo, Josephus, and the Testaments on Sexuality: Attitudes towards Sexuality in the Writings of Philo, Josephus, and the Testaments of the Twelve Patriarchs* Grand Rapids: Eerdmans, 2011
 - *The Pseudepigrapha on Sexuality: Attitudes towards Sexuality in Apocalypses, Testament, Legends, Wisdom, and Related Literature* Grand Rapids: Eerdmans, 2011
 - *Sexuality in the New Testament: Understanding the Key Texts* London: SPCK; Louisville: Westminster John Knox, 2010
 - *The Dead Sea Scrolls on Sexuality: Attitudes towards Sexuality in Sectarian and Related Literature at Qumran* Grand Rapids: Eerdmans, 2009
 - *The New Testament - with Imagination: A Fresh Approach to its Writings and Themes* Grand Rapids: Eerdmans, 2007
 - *Sex, Then and Now. Sexualities and the Bible:* Eugene: Cascade Books, 2022
16. John Sanford *Dreams: God's Forgotten Language* (1968,1989) Harper, San Francisco

Highly recommended viewing

1. *Evidence for Human Evolution*. The Smithsonian National Museum of Natural History www.humanorigins.si.edu and go to *Evidence for Human Evolution* Dr Rick Potts (4 min 23 secs)
2. *The history of the world to now in 18 minutes with David Christian*

Appendix 4 Glossary of terms used

Adam: According to a literal use of Genesis chapter 2, the first man. Non literally it means humankind: Adam from the Adamah (earth).

Adamah: A word in Genesis translatable as ground or earth.

Adaptation: A property of a population, not a property of an individual member of it, and providing survival advantage in a particular environment

AD / CE: AD is Anno Domini "year of our Lord" (Jesus Christ) and CE is Common Era, a replacement for AD.

Agnostic: An agnostic is a person who believes that the existence of a greater power, such as a god, cannot be proven or disproved. Agnostics recognise that they cannot know everything.

Anglican Church: A traditional Christian Church consisting of the Church of England and churches which are historically tied to it or have similar beliefs, worship practices and church structures. It separated from the Roman Catholic Church in 1534

Anthropomorphism: Giving something non human the qualities or characteristics of being human

Apocrypha: Books not considered by some Christians to be the fully inspired word of God: a 'B team', including books such as Tobit, Maccabees and Wisdom.

Apostles' Creed: An early statement of Christian belief from the 4th century and refined in following centuries. For the current version see *Appendix 3. References and Additional Notes*.

Atheist: Literally: *without theism*. The rejection of belief in the existence of deities, such as God.

Baptist Church: Autonomous congregations which believe that baptism should only be available as immersion for adult professing believers.

BC / BCE: Before the Common Era; earlier referred to as BC: Before Christ.

Beatitudes: Sayings from Jesus which are about happiness or bliss, describing both a condition for bliss to happen and the result. They are Christian ideals for focusing on love and humility rather than force or rules. See chapter 4: The Jesus Approach

Bible: A collection of texts written over a period of more than a thousand years by more than 100 persons. Christians use the Hebrew Bible (or Old Testament), and the New Testament (written in the 70 or so years after the death of Jesus). See *Appendix 1. Timeline*

Bibliolatry: Worship of the Bible rather than worship of the God of whom it speaks

Canon: A list of books considered by a particular religious community to be authoritative.

Catholic: when its initial letter is a small 'c' (except at the beginning of a sentence) it refers to the worldwide group of Christians of all denominations. In this way *catholic* means *all*. The term *Catholic Faith* in the Uniting Church's *Basis of Union* means the faith of all Christians.

Catholic Church: The world's largest Christian denomination, with about 1.2 billion members, and claiming an unbroken link through the current Bishop of Rome (the Pope) to Peter (claimed to be the first Pope) and Jesus. It separated from the Orthodox Church in 1054 CE.

CE / AD: Common Era; earlier AD: Anno Domini (in the year of Our Lord)

Children of Israel: Hebrew speaking people who from about 1500 BCE lived in Canaan (modern day Israel, Palestine, Lebanon, and parts of Jordan and Syria). The name started with Jacob, renamed Israel by God (Genesis 32:24). *Israel* also means the people about whom the Bible speaks, whether taken literally and geographically, or in the wider sense to include Christians as the new Israel.

Communion or Eucharist or Lord's Supper: Re-enactment of the last meal which Jesus had with his disciples, before his crucifixion, giving them bread and wine as symbols of his body and blood. It is a meaningful central ritual in most Christian churches.

Concupiscence: Selfish human desire, usually sensual, for an object or person or experience.

Congregational Church: Robert Browne's theory of union helped to start The Congregational Church late in the sixteenth century.

Constantine (272 – 337 CE): First Roman Emperor to convert to Christianity. He decreed religious tolerance throughout the empire, and called the first Council of Nicaea. See *Nicene Creed*.

Creationism: The belief that the world was created according the sequence and timing of Genesis, described in chapter 1, at nightfall on the Sunday preceding October 23 4004 BCE (Bishop Ussher's version). This date is now widely rejected. Creationism and its associated ideas are not supported by the claimed evidence, by most Biblical scholars or by scientists

Deuteronomic: the third written strand of the Torah, weaving the stories of Judah and Israel together after the fall of the northern kingdom of Israel to the Assyrians in 721 BCE. Composed in the late 7th century BCE, it consists of the book of Deuteronomy and a general editing. See also Y, E, P.

Diaspora: The dispersion or scattering of a population of common origin from an area e.g. the diaspora of Jews in 135 CE

Eastern Orthodox Church: The world's second largest Christian church, with about 300 million members. It has many churches with national identity, such as Russian Orthodox, and claims an unbroken link through the current Bishops to Peter and Jesus. It separated from the (Roman) Catholic Church in 1054 CE.

Ecumenical: Representing a number of Christian Churches

Elohim: One of the names of God as used in the Hebrew Bible (Old Testament) and relates to the Priestly view that God did not reveal his name as Yahweh before the time of Moses. Elohist writings are from the 9th century BCE and reflect the national history of the northern kingdom of Israel. The term 'Elohim' is used where we would usually say 'God'. See also Y, D, P.

Epistemology: A study of what knowledge is and how it can be known.

Eschatology: The study of end times of an individual or an age or the world.

Eucharist or Communion or Lord's Supper: Re-enactment of the last meal which Jesus had with his disciples, before his crucifixion, giving them bread and wine as symbols of his body and blood. It is a meaningful central ritual in most Christian churches.

Eunuch: A castrated man (or at least impotent or celibate) and therefore excluded from some aspects of Jewish life.

Eve: According to a literal use of Genesis chapter 2, the first woman. Non literally it Eve means life.

Evolution: The change in the inherited characteristics of biological populations over successive generations.

Exile (The): The deportation of many Jews from Judah to Babylon in 597 BCE, 587 BCE and 582 BCE, and ending with the return of some of them in 538 BCE. This was a crucial and formative time for Jewish people.

Existentialism: The view that people make decisions based on subjective meaning rather than rationality. Each individual (not religion or society) is responsible for giving meaning to life and living it authentically.

Exodus (The): An event of the thirteenth century BCE in which Moses led enslaved people of Israel out of Egypt and back to the land given to Abraham. The Exodus has become a metaphor for the lives of Jews and Christians since, whether it happened as described or not.

Expiation (or propitiation): The act of making someone feel well disposed. For Christians it means an action which brings God's favours and therefore avoidance of judgement.

FSM: Flying Spaghetti Monsterism, or Pastafarianism, is a parody religion demanding equal time for the teaching of its beliefs, and opposes the teaching of Creationism or Intelligent Design in schools.

Fundamentalism: The requirement of strict adherence to literalist and ultra conservative beliefs. Christian fundamentalism grew rapidly in the early twentieth century.

Gentile: A person who is not Jewish.

God: The supreme being, and object of faith.

Gospel: Literally means Good News about something. For Christians this refers to the Good News of the life, death and resurrection of Jesus and the new relationship which comes between us and God.

Gospels - Matthew, Mark, Luke and John: the first four books in the New Testament.

Grace: God's grace is that aspect of God's activity which adds to whatever we are to make us complete. When it comes to us through others it is mediated grace.

Gregorian calendar: Our common calendar, replacing the Julian calendar in 1582 and progressively adopted by most countries. The Julian calendar is currently 13 days behind the Gregorian calendar, and is still used in Eastern Orthodox churches and some countries.

Hebrew language: Written Hebrew dates back to about 1000 BCE and is the language of the Torah and most of the books of the Hebrew Bible or Old Testament. Modern Hebrew is one of the two official languages of modern Israel: the other is Arabic.


Hebrew people: The original name for people we now call Jews.

Hebrew Bible: The collection of Jewish texts, originally written in Hebrew and Aramaic, and generally referred to by Christians as The Old Testament. See *Bible*.

Hellenism: Devotion to or imitation of Greek thoughts, customs or styles.

Heretic : A person who holds controversial opinions, especially if they oppose the official position of a body such as a church.

Homophobia: Negative attitudes and feelings toward homosexuality or people who are considered to be lesbian, gay, bisexual, transsexual or intersex.

Ichthus : An acronym in which the initial letters of the earliest statement of faith in Greek, *Iesous CHristos THEou Yios Soter* (Jesus Christ, God's Son, Saviour) spell the word ichthus  which is Greek for fish. The fish symbol became a secret code amongst Christians.

Israel or Northern Kingdom: It has been important to Jewish people since early Biblical times. See *Children of Israel*. It can also refer to the modern state of Israel

Jehovah: A term from as late as 1100 CE, a thousand years ago, as a means of pronouncing the letters JHVH as used in the earliest Biblical literature. Also written Yahweh.

Jesus: The central human figure in Christianity. Believed to be the Son of God, and the Messiah of the Old Testament, revealing God to humankind. Jesus was the peak prophet of God who was both the message and the messenger.

Jew: A person whose religion is Judaism, or who can show by descent or conversion that a link exists to the Hebrews of the Hebrew Bible / Old Testament.

Judah or Southern Kingdom: With the Northern Kingdom of Israel it can be referred to as a part of Israel, established as a gift from God to Abraham and his descendents.

Julian calendar: A redesigned Roman calendar, introduced by Julius Caesar in 46 BCE and progressively replaced from 1582 CE by the Gregorian calendar.

Just War: St Augustine (354 – 430 CE) and others since have proposed that a Christian can be a soldier, and can serve God and country honourably.

Lay person: A person in a church who is not ordained. The group noun is The Laity.

Lectionary: A listing of scripture readings appointed for Christian or Judaic worship for particular days or occasions.

Letters (The): These letters from Paul and others to persons and faith communities form a major part of the New Testament.

Levirate marriage: The obligation on the part of the brother of a deceased man to marry his brother's wife, and the obligation on the widow to marry this brother-in-law.

LGBTQI: Lesbian, Gay, Bisexual, Transsexual, Queer, Intersex. A relatively recent term to describe all persons who are not exclusively heterosexual in their appearance, and/or self-image and/or behaviour.

Light year: The distance which light travels in a year: 9.46×10^{15} metres or almost 10 trillion kilometres.

Literalism: Adherence to the strict literal sense. The text is taken only at face value.

Lord's Supper or Communion or Eucharist: Re-enactment of the last meal which Jesus had with his disciples, before his crucifixion, giving them bread and wine as symbols of his body and blood. It is a meaningful central ritual in most Christian churches.

Methodist Church: Began as a conference of preachers in 1784, brought together by John Wesley, an Anglican priest leading a holiness movement.

Mitochondrial Eve: The most recent common female ancestor of all modern humans. She lived about 150 000 years ago, or more.

Modernism: The rejection of all religious and moral principles as the means of obtaining social

progress. The certainty of scientific or objective efforts to explain reality.

Natural Selection: The gradual natural processes by which biological features of a population become more or less common as a result of a population's interaction with the environment.

New Testament: The second part of The Bible, dealing with Jesus, first century Christianity, and the new covenant or relationship with God.

Nicene Creed: Written in the fourth century CE in an attempt to unify the Christian Church under the Emperor Constantine. For the current version see *Appendix 2. References and Additional Notes*.

Northern Kingdom or Israel: Established as a separate kingdom after the separation from the Southern Kingdom or Judah in about 930 BCE, and overrun in about 720 BCE by Assyria.

Occam's razor: Amongst competing hypotheses, the hypothesis with the fewest assumptions should be selected.

Old Testament or Hebrew Bible: The collection of Jewish texts, originally written in Hebrew and Aramaic, and generally referred to by Christians as The Old Testament rather than the Hebrew Bible.

Ontogeny: The development of an individual from embryo to adult.

Ordained: The process whereby individuals are set apart or consecrated as clergy to perform religious rites and ceremonies.

Orthodox: Right or straight belief. Adherence to accepted norms or creeds.

Orthodox Church: See *Eastern Orthodox*.

Pastafarianism: See *FSM*

Phylogeny: The history of the evolution of a species or group.

Post-modernism: Thorough criticism of all areas of life, particularly theology and religion which had previously escaped such analysis. A move beyond the predictability of modernism.

Priestly: One source of the Torah or first five books (Genesis, Exodus, Leviticus, Numbers, Deuteronomy) of the Hebrew Bible or Old Testament. This was editorial commentary applied to the whole faith story during the Babylonian Exile somewhere between 586 and 450 BCE. See also Y, E, D.

Presbyterian Church: Began in 1559 in Scotland as a part of the Reformation and was influenced in particular by John Knox (and John Calvin, Geneva).

Prophecy: A process where one or more messages which have been communicated to a prophet are communicated to others. It also refers to an interpretation of how God has acted in the past and is acting now, and occasionally comments on the future.

Prophet: A person who has been contacted by God to speak for him / her.

Proselyte: A new convert to any religion or doctrine

Protestants: Christian denominations which deny the authority of the Pope. The Bible is the sole source of revelation.

Reed Sea or Red Sea: There is debate about where it was, but it marked the point of departure from Egypt of the Children of Israel: the Exodus led by Moses, in the thirteenth century BCE

Redemption: Forgiveness or absolution for past sins or errors.

Reformation: The split in the western church (Roman Catholic Church) from about 1517 and initiated by Catholic priest Martin Luther. A part of the *Renaissance*.

Renaissance: A cultural rebirth of Europe from approximately the fourteenth to seventeenth centuries.

Roman Catholic: See *Catholic Church*.

Sacrament: A sacred rite of particular importance to a church. In the Uniting Church there are two sacraments: baptism and communion (eucharist). In the Roman Catholic Church there are seven

sacraments: baptism, eucharist, reconciliation (penance), confirmation, marriage, holy orders and anointing the sick (last rites, extreme unction).

Sanctify: To set apart, or declare holy. To consecrate.

Salvation Army: Christian denomination and charitable institution founded in 1865 by Methodist minister William Booth and his wife Catherine. It is similar to Methodism, but does not celebrate the sacraments.

Science: The systematic building and organization of knowledge, in the form of testable explanations and predictions about the universe.

Shalom: A Hebrew word meaning active peace (not just the absence of war), completeness, prosperity, welfare.

Simplistic: Excessive simplification of complex issues and problems as if they were much simpler than they really are

Son of God: Jesus, and any other person having a close relationship with God. The term does not always mean a biological link.

Southern Kingdom or Judah: Established as a separate kingdom after the separation from the Northern Kingdom or Israel in about 930 BCE, and overrun by Babylon in 597, 587 and 582 BCE. See *Exile*.

Substitutionary sacrifice or substitutionary atonement: The belief that Jesus died as a substitute for us, so that we may be righteous in the eyes of God.

Theism: The belief that God exists, or that gods exist.

Torah: The first five books of the Hebrew Bible / Old Testament, and the commentaries on it, and even the totality of Jewish teaching and practice.

Uniting Church in Australia, the UCA: The third largest denomination in Australia, about 240 000 members in 2500 congregations, and formed in 1977 by the union of members from Congregational, Methodist and Presbyterian churches.

Y chromosome Adam: The most recent common male ancestor from whom all modern humans have descended. He lived about 142 000 years ago, or more.

Yahweh: A term from as late as 1100 CE, a thousand years ago, as a means of pronouncing the letters JHVH as used in the earliest Biblical literature. Also written Jehovah. Yahwist writings are the first written strand of the Torah, written in the 7th to 10th century BCE. They reflect the national history of the southern kingdom of Judah, and use 'Yahweh' or 'Jehovah' where we would usually say 'God'. See also E, D, P.

1. Believe the Bible literally, in this case the birth stories of Jesus as recorded in Matthew and Luke: the star stationary over Bethlehem, the visit of wise men from the East, the flight into Egypt.
2. See Jesus only as a redeemer, in the sense of redemption from personal sin; his whole purpose being to be sacrificed in our place to placate God and make us acceptable.
3. Find out more about the culture and pressures of the time: the frequent revolts against the Roman occupiers, the destruction of the Temple in 70 CE (never rebuilt), the perception that Jesus would be a conquering hero, and would lead the Jews in a massive uprising against Rome.
4. Understand in context the simple message of Jesus, as defined in the Beatitudes (Matthew 5), and the sheep and goats parable (Matthew 25). The kingdom of heaven is a present reality (Luke 9: 9-11), very near to us.
5. Start to see that the message of Jesus is subversive. It was about the overthrow of the dominant way of life, but not by armed revolt against Rome and the Temple establishment. We too are called to live a different way of life, embodying inclusive unconditional love regardless of what someone has done (as in the Luke 15 parable of the Prodigal Son: a shocking story for a Jew to hear).
6. See that the Gospels are not histories: they do not record in a diarised fashion the activities of Jesus. The four surviving Gospels are theological statements about God and Jesus as remembered by some of his faithful disciples Mark (and Peter), Matthew, Luke and John (and his followers). Only Matthew and Luke have birth stories, and they differ from each other. Paul does not record birth stories of Jesus.

When we accept that the Gospels are theological statements rather than diaries, a wonderful and liberating new world opens up. The early parts of Matthew and Luke become far more than simply birth stories. They are the overtures to the main event, which includes the life, teaching, death and resurrection of Jesus. But an overture is itself part of the main event. The surprising genealogy in Matthew, and the birth stories, are tastes of the attitudes and lifestyle of Jesus the adult, and written from a perspective seen from decades beyond the death and resurrection of Jesus. {The Gospels were written from about 70 CE (Mark) to as late as 110 CE (John)}

7. Start to understand the imagery. The Matthew genealogy included women, and women who were not “nice”. God used even women like these, and can use even you and me. Jesus was the greatest example ever of the Godly life (he was “Son of God”) as well as fully human (he was “Son of Man”). His greatness was such that even the universe bowed before him (stationary star), as well as the wisest of the wise (astrologers came to see him), and he was taken unwillingly to Egypt but returned to lead his people into new life, a new exodus (paralleling Joseph taken to Egypt and the subsequent exodus).
8. Believe the birth stories in Matthew and Luke in the way the writers wanted us to believe them: yes, even the heavenly choirs and angels with wings, as a mystical explanation of cosmic realities.

We have come almost full circle.

Index

Acetophenone	87
Adam / Adamah	9, 12, 13, 15, 17, 18, 20, 40, 41, 43-45, 49, 50, 59, 60, 65, 66, 70, 85, 95, 124, 131, 141
Adenosine triphosphate	3, 35, 104-107
Anonymous	24, 48
<i>Answers in Genesis</i>	8, 12-17, 35, 52, 54, 119, 138, 140
<i>Answers in creation</i>	15, 17, 36, 140
Archaeopteryx	116, 117, 135
Ark Encounter	8
Atonement	29, 31, 51, 83, 146
ATP	3, 35, 104-107
Augustine	9, 39-41, 49-50, 64, 77, 88, 128, 139, 144
Ayers Rock / Uluru	112, 119-120
Barclay, William	24, 139
Barth, Karl	67
Beatitudes	7, 24-27, 29, 32, 76, 138-9, 142, 147
Becker, Ernest	50, 139, 148
Bible structure	37-44
Big Bang	4, 17-18, 72, 89, 125
Black Death, Plague	11, 73, 126-130, 132, 135
Bonhoeffer, Dietrich	79, 136
Borg, Marcus	67, 140
Botton, Alain de	66, 139
Broglie, Louis de	88
Brueggemann	44, 139
Buddha	8, 127, 139
Bultmann, Rudolph	67
Burklo, Jim	84, 139
Bunyan, John	79
Catechism, R/Catholic	10
Cell structure	3, 36, 101-2
Celtic Thunder	98
Chardin, Teilhard de	77, 81, 139
Cheese-mites	47
Christian, David	93, 141
Chrysostom, John	2, 35, 77, 124
Clergy letter, The	18
Coelacanth	3, 36, 107, 96, 125, 138
Communion	10, 26, 28, 31-2, 95, 138, 142
Conception, immaculate	50, 135
Continental Drift	33, 112, 121, 123-4, 133
Copernicus, Nicolaus	11, 33, 84, 131
Council of Toulouse	10, 129
Counter Reformation	9, 11
Corinthians, missing	20, 21, 77
Creationism Museum	8, 14-16
Crossing of self	96
Cyrus the Great	5, 127
Cytochrome c	34, 110
Darwin, Charles	3, 9, 11, 12, 33, 34, 39, 44, 76-79, 83-87, 91, 111, 116, 135, 139
Death of God	83
Decay, atomic	17, 114
Descartes, René	46, 48, 97
Deuteronomic	40, 142
Dinosaurs	16, 17, 112, 116, 125

Docetists	67
Dowd, Michael	83, 139
Dreams	71, 85, 95, 97, 140
Eckhart, Meister	71, 81, 130
Edwards v Aguillard	16
Einstein, Albert	3, 67, 87, 89, 90, 93, 97, 100, 135
Elohist	40, 142
Emasculated	5
Erasmus	8, 9
Eunuch, Ethiopian	31, 142
Existentialism	46, 143
Ezra	5, 39, 56-8, 72, 127
Fair Trading Act	14
Feeding 5000	30
Flying Spaghetti Monster	45-6, 143
Funk, Robert	67
Galileo verse	24, 33, 84, 88, 132, 137
Genealogy of Jesus	20-1, 64, 139, 147
Gilgamesh Epic	51
Goliath of Gath	23, 55-6, 118
Good Samaritan	6
Great Exhibition 1851	11, 135
Gutenberg, Johannes	10, 130
Ham, Ken	8, 12, 15, 54, 112-3
Hearing, evolution of	112, 117
Heisenberg, uncertainty	3, 47-8, 67, 87-91, 99
Hell, photo of	80
Homosexuality	13, 59, 61, 63, 68, 74, 143
Hovind, Kent, Eric	18
Ice Ages	11, 33, 52, 125, 132
Idealism	47-8
Industrial Revolution	11, 114-5, 133-4
Intelligent design	16, 45, 84, 87, 111, 143
Jeans, James	47, 67, 97, 139
Jesus Seminar	67
Jonah	3, 5, 8, 12, 32, 55-7, 59, 66, 69, 127
Jung, Karl / Jungian	26, 71, 81, 97, 139
Kennedy, Robert	28-9, 137
Kierkegaard, Søren	46, 139
King, Martin Luther	26, 28-9, 137
Kitzmiller v Dover	16, 118
Knox, John	9, 11, 48, 131, 145
Knox, Baptist Standard	19
Lamoureux, Denis	84, 139
Lewis, CS	67, 87, 98
Light, velocity	88-9, 112-114, 140, 144
Loader, William	4, 21, 40, 60, 61, 64-6, 72, 139, 140
Luther, Martin	8, 9, 65, 73, 99, 131, 151
Marriage	13, 32, 50, 58, 61-5, 72, 84, 113, 131, 144
McLean v Arkansas	16, 137

Midrash	20, 69
Miller-Urey experiment	35
Miller, Kenneth	84, 87, 111, 139
Moore, Sebastian	26, 71
Morris, John	112-114
Morwood, Michael	85, 139
Mount Isa ore-bodies	112, 118-120, 125
Mutations	34, 113- 115
Natural selection	3, 12, 18, 33-4, 36, 45, 52, 56, 76-7, 82, 94, 116, 140, 144
Nebuchadnezzar	5, 95, 127
Nehemiah	56-8, 127
Nephilim, giants of	111, 117
Newton, Isaac	33, 84, 88, 90, 92, 132-3
Nicene Creed	7, 26, 49, 128, 138, 142, 144
Nietzsche, Friedrich	46, 83, 139
Nine plus two pattern	110
Noah / Noah's ark	3, 8, 12-14, 17-8, 32-3, 40, 42, 51-6, 61, 66, 101, 111-3, 118-9, 120-2, 126
No answers in Genesis	15, 140
Origen	9, 35, 77
Ormerod, Neil	12, 49, 139
Origin of Species	11, 35, 44, 77, 105, 115-6, 135
Parables	7, 19, 21, 27, 55, 67, 137
Particles / waves	70, 71, 88, 99
Pastafarians	46, 143
Paul / Saul	7, 20-1, 23, 40, 44, 49, 59, 61, 63, 66, 69, 70, 77-8, 96, 127, 143, 146
Peck, Scott	26, 75-6, 99, 139
Phagocytosis	37, 74, 102
Pharisees	3, 5, 72, 74-6, 127
Photosynthesis	35, 77, 102, 109, 110
Pigmentation, human	115, 125
Plague, Black Death	11, 73, 126-130, 132, 135
Plimer, Ian	14, 52, 139
Pope	10, 39, 50, 81, 84, 95, 128-131, 133-135, 137, 142
Polkinghorne, John	85, 140
Porphyrins	3, 36, 108-110
Priestly source	40, 51, 53, 72, 112, 144
Prophecy, Biblical	69, 82, 127, 151
Reject your wives	5, 58, 62-3, 72
Reformation	8-11, 40, 65, 73, 77, 82, 131, 145
Renaissance	11, 130, 131, 145
Respiration	103-104
Rinkart, Martin	73
Roberts, Allen	14, 15
Robinson, Barry	42, 65, 140
Rohr, Richard	71, 85, 91-2, 99, 139, 140
Ruth	3, 5, 20, 23, 32, 55-59, 64, 69, 126
Russell, Bertrand	45
Sanguin, Bruce	84, 85, 139
Sanford, John	26, 71, 139, 140
Saul / Paul	7, 20-1, 23, 40, 44, 49, 59, 61, 63, 66, 69, 70, 77-8, 96, 127, 143, 146
Schweitzer, Albert	67
Second Vatican Council	10, 77, 135
Serial endosymbiosis	3, 36, 102, 103

Seven C's of history	18, 52, 75
Setterfield, Barry	113, 121
Sex and sexuality	3, 13, 17, 21, 23-4, 26, 34, 43, 50, 58-65, 68-9, 74, 115, 140, 143
Shadow, The	71, 75, 83
Sheep and goats	7, 27, 137, 146
Singularity	92-3
Spong, John	21, 54, 84, 139
Symbiosis	3, 33, 91
Timeline of the universe	124-137
Torah	38-40, 141, 143-145
Uluru / Ayers Rock	112, 119-120
Van Helmont	35, 77
Virgin birth	8, 10, 13, 50, 66, 68-71, 127, 137-8,
Wallace, Edmund	see Darwin
Wallace, Howard	4, 39, 53, 57, 69, 139
Warrimoo, SS	9, 48
Waves / particles	70, 71, 88, 99
Wells, HG	28
Whale, evolution of	107-8, 111, 17, 125
Wink, Walter	60-63
Woodmorappe, John	17
Wycliffe, John	10, 129, 130
Yahwist	40, 53, 112, 145