

JÜRGEN'S WORLD

At a house party in Hackney, I found myself sitting next to a man called Jürgen, who was making joints with promising regularity. He asked me what I was doing with my time, and I told him I was writing a book. I hate doing this, it sounds like you are doing nothing, but I said it anyway, and he asked what it was about. I ummed and aahed, but he pressed me, so I told him it was about the history of science, and ayahuasca, and, er, you know, it's, ah, it's about the, ah, the apocalypse. He crossed his legs and asked me if I thought the end was nigh.

'Well yes and no.' I replied. 'The apocalypse is coming... again. As it has several times before.'

Jürgen's brow wrinkled. 'You mean, surely, that the ah, the "apocalypse" has been "predicted" before,' he said, his fingers tickling parentheses in the air.

No, I don't. The apocalypse is, among other things, a process that occurred various times in history, including once 2,000 years ago in Jerusalem, and again 500 years ago as a slow motion wave that swept Europe. It is a local phenomenon that pushes cultures to transcend their borders, geographical, technical, linguistic, and otherwise. The apocalyptic current has pulsed through history, progressively integrating local communities into an expanding network, and today's embryonic global village is facing another apocalypse larger and more profound than ever before.

'Of course, Jesus feared the apocalypse,' reasoned Jürgen, 'and so did many Protestants, but the world has not ended. We are still here.'

He was a self-confessed lover of science, and was sceptical about religion. According to him, our world is a rational, predictable, and reasonable place, and we have no reason to predict great beasts and heavenly trumpet blasts.

I asked him to bear with me as I described what I meant (he interjected whenever I drew breath). The Protestants were part of a religious, social, and intellectual revolution that left Europeans and others with horizons expanded beyond the imagination of any pre-Reformation Catholic. Protestantism began with Luther, Zwingli and Calvin, all of whom were enthusiastic apocalyptics. Religious dissenters suspicious of the clergy and other traditional sources of knowledge studied *The Bible* and the Book of Nature for themselves, drawing their own conclusions. A culture of learning and literacy unprecedented in Christendom grew up outside of established universities still pedalling arcane knowledge virtually unaltered since ancient Greece. Christian 'truths' were openly questioned as never before. Galileo (1564-1642) asked whether the earth really had to be where God had left it. He was a Catholic, though an over-inquisitive one as far as the Inquisitors were concerned; later dissenters were usually Protestant. Kepler (1571-1630), who discovered the laws of planetary motion in the early seventeenth century was a Lutheran. Newton (1642-1727), who denied the Trinity and the divinity of Christ, reframed the universe in terms of particles governed by mathematical laws, and set the billiard balls in motion towards a cosmology of mechanism.

The rethink was not limited to astronomy. Paracelsus (1493-1541) was an early incendiary apocalyptic who questioned and even burned classical medical texts, and charted a course for medicine to follow for the next five centuries. William Harvey (1578-1657) was a more institutionalised Protestant of the Anglican faith, whose fresh look at the body revealed that the heart was responsible for pumping blood around. Anglicanism did not go far enough for the Puritan revolutionary Thomas Sydenham (c.1624-89). For him, theory had 'as much to do with treating sick men as the painting of pictures has to do with the sailing of ships,' and a medic should be a mere 'contemplator of God's admirable wisdom' as it festered in sores and clogged up the lungs of God's children. His radically observational approach developed into statistical and clinical medicine, and modern nosology (disease classification).

Jürgen was a political historian by training, and he was not convinced. He told me I was talking about a paradigm shift, not an apocalypse. According to Thomas Kuhn, a science at any given time is built upon a particular theory, such as the biochemical model in

JÜRGEN'S WORLD

medicine, or Newtonian mechanics in physics. Lines of enquiry are followed and techniques developed to explore the intricacies of the theory, and this theoretical, technical, and also cultural matrix is the paradigm. As it is applied increasingly widely, data inevitably emerge which the theory cannot explain, such as Jupiter's non-geocentric moons. Anomalies punch holes in the paradigm, and as it sinks, a new theory is floated which apparently explains the data better. A crisis ensues as the different camps argue over the same observations. Young scientists who have not yet internalised the traditional techniques and biases generally prefer the new theory, but until they fill the chairs of universities and committees, the new paradigm remains unorthodox. Most old dogs are incapable of learning new tricks; their theory is hardwired into their heads, and the new technology is beyond them. The paradigm shift happens slowly as they retire or die off, taking their threadbare theories to the grave.

Various new ideas did emerge in this period, but the scientific shifts are part of a larger story. As a new type of man emerged from the Dark Ages and the individual became defined apart from his family and parish, he became more responsible for himself, for his education and his soul. Though Kuhn's model scientific revolution was Galileo's story, it does not really make sense to call this a paradigm shift in science, because science as we know it did not exist in his time. The exploration and explanation of the world was a matter of deductive inference, with learned philosophers chin-wagging as they did in the time of Aristotle and his bedfellows, but this method came under scrutiny as a wave of doubt washed over Europe. Descartes (1596-1650) questioned everything except his own existence, and 'I think, therefore I am' was as much as he was willing to concede. In this culture of scepticism, knowledge was approached in novel ways. In 1620, the scientific method was formulated to navigate the uncertainty, and men began to observe nature with instruments they invented, rather than discuss it with the blunt tools of rhetoric.

The father of the scientific method was Francis Bacon (1561-1626), a Puritan apocalyptic, and the first to write about utopia and the progression of society, in *New Atlantis*. The shift in, or rather, the invention of Jürgen's beloved science was only one aspect of the changes England went through in Bacon's generation. In 1620, the year that his *Novum Organum* (New Instrument) outlined inductivism, Puritan pioneers set sail for New Jerusalem in North America. The world map expanded throughout the century as the East India Company pushed east, and the British took Jamaica in 1655. Englishmen began new lives in places which were unheard of a generation before, sending home exotic goods, biological specimens,

and stories to people whose towns or villages were their whole lives. For rural Englishmen in the late Middle Ages, even London was a fantasyland where the streets were paved with gold; what about lands where painted savages and elephants roamed?

When Galileo turned his telescope towards the sky in the early 1600s, he extended man's gaze into the macroscopic scale.³ In 1665 the microscopic scale was also opened up with the first widely circulated book on microscopy.⁴ The imagination entered new realms. Before the microscope, what sense would it make to talk about the events taking place under your fingernails? There was not even a space under your fingernails. Soon Newton's gravity was applied to objects at these new scales, and to every scale imaginable, and his calculus brought maths to movement as well. In one generation, the English mind expanded across the sea into the New World, across space to distant moons, and into the alveoli and capillaries of the body.

As well as the new lens of induction to observe the expanding world, and a new maths to describe it, there was a new language in which to discuss it. Before the sixteenth century, English was the language of commoners; legal affairs were discussed in French and philosophical debates were in Latin. English was transformed in the late 1500s, from Old English to something much more familiar. Marlowe (1564-1593) and Shakespeare (1564-1616) were tasting English life with the new tongue at the turn of the century. The latter personally crafted over 1500 new English words, and his work is still popular today, whereas Chaucer's literature from previous centuries is impenetrable without a translation.

Jürgen wasn't buying it. 'You are talking about a cultural cataclysm, not Armageddon,' he said, passing me a spliff. I like that term 'cultural cataclysm', it is full of l's and c's, and it rolled off his tongue in a sensuously bookish manner (he sounded a bit like Lloyd Grossman splashed with a Teutonic dressing). By contrast, 'the apocalypse' jars in the ears, 'Armageddon' sounds so alarmist. Armageddon is the final battle between the forces of good and evil which precedes the Final Judgement and the coming of a heavenly kingdom. From the perspective of a seventeenth century Puritan, this might not have seemed so wide of the mark. Violent religious upheavals flared up across Europe throughout the sixteenth and seventeenth centuries. In France, thirty-six years of intermittent war were fought, the Dutch revolt dragged on into the Eighty Years War, the Thirty Years War spread to most of Europe. British Catholics were persecuted and burned, and in 1605 one of their number hatched the Gunpowder Plot in revenge. Guy Fawkes failed and was hung, drawn and quartered,

JÜRGEN'S WORLD

whilst Francis Bacon who was inside Parliament at the time lived, but relations between his Puritan brothers and the Anglicans rapidly worsened, leading to the English Civil War and the execution of Charles I. The monarch was not the Corgi loving, cucumber sandwich eating old dear we know and love today. Depending on the roundness of your head, he was either appointed by God Almighty to exercise His divine will on earth, or he was the satanic head of a kingdom of whoredom, obstructing the dream of parliamentary paradise. Regicide was much more serious than, for example, the assassination of a president. It would have heralded the end of the divine (or demonic) order of the world. It also left England in the unprecedented position of being kingless, and therefore headless, for eleven years. William of Orange was eventually crowned, and relations between king and country became far more cucumber. He allowed dissenters the liberty of private worship, reformed the financial system, and replaced an ancient autocracy with parliament, initiating the modern era of party politics, where the fate of the country was subject to the will of at least some of its citizens.

Jürgen demanded that I define my terms right there and then, as academics are wont to do. The apocalypse, as the Greek suggests, happens to a culture when its horizons are expanded in a previously unimaginable direction, when the conscious mind extends into the unknown. Revelation throws the community into a crisis of meaning, which echoes through the culture, redefining everything from art to politics, and clocking up a hefty body count. It is a grim affair, analogous to a fever that purges the body and leaves it both healthier and thinner. The community is reborn into a new era of optimism, freed from the constraints of the past, with new spaces to explore.

To understand the apocalypse, we must go right back to the original times, to the original texts in their original languages, and to the original nutter. *The Apocalypse of John*, along with *The Apocalypse of Adam* and *The Apocalypse of Peter*, is part of a literary movement of 'apocalypses' which Jews and Christians were reading and writing from 150BC to 150AD. These texts describe the coming of a new kingdom amidst catastrophe, war, pestilence, famine, blazing infernos, freezing winters, beasts upon the earth and signs in the sky.ⁱ Upheavals tore through every sphere of life in mid- to late-seventeenth century England, but whilst the political climate was scorching, the weather was freezing. A reduction in sunspot activity caused what is called the

ⁱ The texts are at www.nag-hammadi.com. The politics which lead to these being excluded from the official *Bible* is the subject of one of our final sermons, *Baba-loca-lips*.

'little ice-age' to begin during the English Civil War, leading to a lifetime of bitter winters and poor harvests from 1645 to 1715.

This coincided with an unprecedented number of comets. Comets passed over England in 1664, 1665, 1677, 1680, and 1682, the latter in the same year as a great conjunction of three planets and a solar eclipse. 17th century skies were extremely ominous, with no fewer than 25 comets sighted, and broadsheets described the plagues, famines, and scorched crops left in their wakes.⁵ Like nearly everyone else, astronomers feared the implications. Paracelsus believed they brought bloodshed, Kepler thought they were portentous,¹ and for Newton they were instruments of God's wrath. The first of the five passed in early December 1664, just as the first deaths of the Great Plague of London were reported.⁶ Of course, widespread pestilence was nothing new. The Great Plague was, in fact, the last of the great medieval plagues, and it was spectacular. 80,000 souls, or one sixth of London's population perished at a rate of up to 7,000 per week.⁷ They were still dying in April the following year when another comet passed, and still dying when the Great Fire claimed 'ten thousand homes, all in one flame'.⁸ The stones of St. Paul's Cathedral exploded, and in three days, four-fifths of the city was incinerated.⁹ 'If at any time, the sun peeped forth, it looked red like blood,' commented a diarist of the time,¹⁰ but this was just the beginning of the troubles. Most Londoners lost everything they could not carry, and slept exposed for a freezing winter in camps overrun with thieves.¹¹

An inferno in 1666 would not have surprised a new generation of numerate numerologists, including Newton, who fled Cambridge when the plague struck there in 1665. He later described his two-year retreat as 'the prime of my age for invention',¹² and his work was pivotal for science in England and the rest of the world. As London festered and burned in the midst of a freeze and William of Orange was building a new constitution, the apple dropped for Newton. He discovered gravity

¹ As court astrologer to Emperor Rudolph II, Kepler scoured the sky for signs. He expected new beginnings, as an astrological period of the fiery trigon began in 1603. They came, both on the earth and in the heavens. In 1604, a supernova formed a new star, providing ammunition against Aristotle's concept of the fixed stars and immutable heavens. His mentor Tycho Brahe (1546-1601) had already begun undermining the old model, demonstrating that comets do not exhibit parallax, and are therefore distant enough to be where changeable things should not exist. Tycho was an excellent Dane, a man with a giant moustache and a clairvoyant dwarf under the dinner table, a man who fought a duel over mathematical parabolas. He lost part of his nose as a result, but he lived to undertake the first systematic survey of the heavens.

and invented calculus, bringing the entire universe together for the first time into a mathematically determined whole.

'But it's not exactly the end of the world, is it,' Jürgen protested, his mouth curled to a disagreeable angle.

So shall it be at the end of the world [*sic*]: the angels shall come forth, and sever the wicked from among the just, and shall cast them into the furnace of fire¹³

The 'end of the world' familiar from sandwich boards is from *Matthew*,¹⁴ but the Apostle had something different in mind. The word translated as 'world' is *aeon*, which means pretty much the same as it does in English, an epoch or age, such as the Iron Age or the Medieval Ages.ⁱ It is a period defined by some theme, and its end heralds the beginning of another. 'There shall be wailing and gnashing of teeth',¹⁵ as Matthew continues, but something survives, though it is beyond the imagination. 'Heaven and earth shall pass away,' record *Matthew*, *Mark*, and *Luke* in a rare moment of agreement, 'but my words shall not pass away',¹⁶ and in *Revelation* 'I saw a new heaven and a new earth'.¹⁷

The translation of *aeon* is so bad that it raises a question about why the word 'world' was chosen. The *KJV* was produced in 1611, when the wording of scripture was a serious business. 5,000 Cornish Catholics had perished within living memory in a revolt over a new prayer book, and King James hoped to calm growing religious unrest by commissioning a standard Bible for all Englishmen, as simple, uncontroversial, and non-provocative as possible. Whereas 'the end of the world' is beyond the imagination of all but the dooziest, 'the end of the *aeon*' was exactly what many revolutionary Bible-bashers wanted to bring about. The censorship did not help. 37 years later, James' son lost his throne and his head to Puritan revolutionaries, but we still inherited this chamomile Bible, and 400 years later, with interest in the Good Book at an all-time low in many industrialised nations, most of us

ⁱ In *Revelation*, the physical world, including sometimes the people on it, is 'ge' in Greek, derived from the word for soil. Peace is taken from the *ge* (*Revelation* 6:4), and 'hail and fire mingled with blood' rain down upon it, (*Revelation* 8:7) but it is never destroyed.

are only familiar with sound-bites taken out of context and screamed from street corners.¹

The most common word translated as 'world' in *Revelation* is *kosmos*, meaning arrangement or order:

For God so loved the *kosmos*, that he gave his only begotten Son, that whosoever believeth in him should not perish, but have everlasting life.¹⁸

The apocalypse improves, rather than destroys the *kosmos*:

The kingdoms of this *kosmos* are become the kingdoms of our Lord, and of his Christ; and he shall reign for ever and ever.¹⁹

Both of these verses point to eternity, not finality.

The English apocalypse was part of a wave of transformation that began in the heart of the Old World and travelled slowly across Europe, eventually breaking on the shores of the New World, where it decimated and reoriented the tribes of the prairies and the jungles. The first ripples go all the way back to fourteenth century Italy, where artists began pushing the limits of their artforms. Music became more complex, with polytones and changing rhythms. Dante (1265-1321) wrote the first serious poetry in Italian, standardising the language across the city-states, and also fixing a vision of hell in the bowels of the earth and heaven above, where they have remained ever since. Giotto (c. 1267-1337) left the stylised compositions of medieval art behind, and began to paint realistic windows into other scenes. He took the observer out of the canvas, and his attempt to capture reality in a frame was the beginning of objectivity.

The Renaissance spread north through the Italian states, extending the scope of the imagination. Painters began seeking mathematical relationships in their work, unveiling the proportions of a perfect body, dividing a scene into harmonious ratios. The geometrical treatment of perspective began with Filippo Brunelleschi in 1415, and was mastered by Leonardo da Vinci in *The Last Supper* at the close of the century. Leonardo (1452-1519) was an inquisitive sort, who wrote 'I question' in

¹ Another intentional mistranslation is Jesus' advice in *Matthew* 5:39, rendered as 'ye resist not evil', which sounds like he was counselling passivity. However *antisthenai* means 'to resist' in the sense of 'to revolt' or 'to cause an insurrection'. Here he was counseling a more intelligent form of resistance, to turn your left cheek if someone strikes your right cheek. A strike on the right cheek is a back-hander with the leading right hand, which Roman superiors used with their slaves, women, and other subordinates. Turning the left cheek demands a proper punch, which forces the assailant, if he is still keen, to hit you as an equal, not a subordinate.

his notebooks more than anything else,²⁰ and his insatiable curiosity lead him to the graveyard, where he broke the ancient taboo on dissecting human corpses. Accuracy of observation, mathematical analysis, and the pursuit of knowledge regardless of taboos and taste are central tenets of modern science. Objectivity in science began with objectivity in art, when Aristotle's absolute frame of reference was broken. Galileo applied it to cosmology, taking the observer out of the centre of the solar system, and developing the principle of relativity, whereby motion only means something in reference to something else.

Man was released from his local environment in another sense as well. People used to live local lives, without global consciousness, nor even national consciousness. Many of today's European nations were still collections of city-states, and European peasants rarely travelled more than 15 kilometres from cradle to grave.²¹ In a local world, a world-shattering catastrophe could come at any time, especially with the plague at its peak, decimating some European village every year between 1494 and 1694. Europeans started to move, and capitals became cosmopolitan in a way unknown since the classical period, expanding minds in another direction.

Leonardo and other Italians developed new devices for civil and military life, but it was the firearm first developed in China that revolutionised warfare. It appeared in the Italian wars around the turn of the sixteenth century. The cavalry immediately lost its advantage and suits of armour became obsolete, drastically reducing a soldier's requirements. Whereas aiming a longbow or wielding a pike takes years of training, anyone can fire a musket that is not very accurate anyway. Mercenary forces of tens of thousands were replaced by armies of many hundreds of thousands. National conscription came into effect, and with it national consciousness, as people from villages all over the country came together to fight together. Conflicts grew larger, longer, bloodier, and more devastating, as such armies decimate farms and villages just to feed themselves. The losers usually went bankrupt, whilst political power was concentrated in the hands of the few victorious rulers.

Marco Polo, who was only semi-fictional, was Italian, as were both discoverers of the Americas, Cristoforo Columbo (1451-1506) and Amerigo Vespucci (1451-1512), but it takes more than fancy ice cream and the spirit of discovery to win colonies. The world map was redrawn by Spanish and Portuguese soldiers on a mission. Spain finally kicked out the Moors at the close of the 15th century, and as the newly formed Spanish Inquisition was busy wrecking Islamic and Jewish culture at home, she turned her zeal abroad. She took the Low Countries,

Southern Italy, and parts of central Europe, whilst Cortes and Pizarro trashed and massacred the Aztec and Inca Empires.¹

Coffee, sugar and other new treats from the New World altered the flavour of European life, and so did the syphilis the conquistadors brought home. It changed sexual dynamics as it spread across Europe, called 'the Italian disease' in France, 'the French disease' in Germany,²² 'the Spanish disease' in the Netherlands, 'the Christian disease' in Turkey, as well as 'the German disease', 'the Polish disease', and even 'the British disease' in Tahiti.²³ Conquistadors also returned with enough of Montezuma's gold to destabilise the European economy, and the resulting inflation added to rising tensions between town and country. The mercantile classes were expanding, and the peasant population that had grown dramatically was hit by major crop failures, restricted hunting rights, and tax increases to fund the endless wars of local princes testing out their new weapons. All of this led to periodic revolts, usually resulting in thousands of dead peasants, especially in German speaking Europe. The largest was the Peasant's War, beginning in 1524 as astrologers traded theories over the meaning of the great conjunction above. German peasants refused to bear the extra burden of a ten percent tax of tithes, levied on pain of eternal pain by a decadent papacy on the other side of the continent. Martin Luther (1483-1546), who was heavily influenced by Occam, set the scene for the revolt when he questioned the absolute and god-given infallibility of the Pope in 1519:

Why does not the pope, whose riches are at this day more ample than those of Croesus, build the basilica of St. Peter with his own money rather than with that of poor believers?²⁴

The Reformation was born kicking at the doctors and the clergy, screaming 'The end is nigh!' Protestantism was formally condemned in 1521, by which time Luther's sermons were firing up Wittenberg, and Zwingli (1484-1531) was preaching his own brand of anti-Papist apocalypticism in Zurich. Anabaptist mobs arose in various cities, including Zwickau's prophets, who soon turned their attention from Saxony to Luther's home territory. This anarchistic and frequently riotous band rejected not only transubstantiation, the Pope, and 'the new Pope' of Luther, but also confirmation, the trinity, and the saints.

¹ As the Jewish community came under Christian domination, the nature of Kabbalah changed. Previously oral and guarded wisdom was written down, restrictions against Kabbalah study were lifted, Luria's work was widely circulated, and later incorporated into Hassidic mysticism. It is also around this time that Kabbalistic traditions emerged outside of the Jewish community, partly due to Jesuit interest.

Many also refused to pay tax, to join the army or swear the oath, and recognised neither property nor the church. Others rejected even *The Bible* itself.²⁵

The Protestant movements were steeped in apocalypticism and dripping with Christian blood. When not fighting the forces of the Antichrist Pope and his superstitious empire of idolatry, Calvinists, Anabaptists, Lutherans and other dissenters fought amongst themselves. Borders were shifting, allegiances were forming and breaking, the neighbouring town suddenly fell under the influence of Satan, Strasburg become New Jerusalem. Meanwhile, dark-skinned devil-worshipping Turks waving scimitars came charging out of the mysterious East to attack the civilised world, capturing Belgrade in 1521, and besieging Vienna in 1523. This must have been absolutely terrifying. Muslim fought Christian, Christian fought Christian, and town fought country in gunpowder battles of unprecedented scale, and battles invariably lead to famine and pestilence.

This was the Europe Paracelsus journeyed through, crushing Galen's bones underfoot as he cured the afflicted and afflicted the established. His one-man crusade was an expression of both religious dissent and class tension, a campaign to wrestle medicine away from elite universities perpetuating the pagan blasphemy of Galenic medicine. He felt that academic learning was inspired by Satan, and in the only university post he held, he refused to lecture in Latin and torched the classical texts in front of his students. His medicine was cooked up on the alchemist's bench, and he followed the alchemist's maxim to collect despised matter in his crucible, from 'barbers, cuppers, old women, gypsies, hangmen, and knackers',²⁶ 'sorcerers, wandering tribes, old robbers and such outlaws'.²⁷

Paracelsus agitated vigorously, and distilled a potion to poison a system fifteen centuries old, but he probably burned more medical text than he published. Of the twenty-three tracts released in his lifetime, sixteen were astrological forecasts,²⁸ but his influence was enormous. After his death in 1541, chemistry rose from secret underground furnaces, and his ideas and remedies wafted through the courts and universities of Protestant Europe, and into secret cabals in Catholic states. The shadowy Rosicrucians adopted Paracelsian empiricism, and another Paracelsian was Jan Baptista Van Helmont (1577-1644), whose conception of the body as an alchemical vessel led him to discern the function of stomach acid in digestion. He divided air into its fractions, coined the term 'gas', and performed the first quantitative experiments in history, weighing a tree over five years in an attempt to measure its vital force. He died under house arrest by the Spanish Inquisition, and

never captured the vital fluid (though Wilhelm Reich may have succeeded 300 years later).²⁹

Shortly before his death, Paracelsus published *Prophecy for the Next Twenty-four Years*. He was wrong about the floods, the earthquakes, and the twenty-four years, but he was right about the scale of the carnage. The 1568 Calvinist revolt in the Low Countries developed into the Eighty Years War, which spread to Brazil, the East Indies and Taiwan. The Thirty Years War began as a religious war in 1618, and grew to bankrupt most European powers. In German and Czech states, a third of the population perished (two-thirds in some areas), and tens of thousands of villages and towns were destroyed. Early Modern reformers, however, unlike many of today's doomy crew, expected good things to come from the terrors. It is said that when asked what he would do if the world were ending tomorrow, Luther replied that he would plant a tree.

Luther completed the first widely read vernacular Bible in 1534. As well as doing much to standardise modern German, *The Guttenberg Bible* landed a mighty blow against the priestly monopoly over the meaning of scripture, and hence the meaning of life. The printing press transformed the planet. Before the printed book, it was considered impossible to read without voicing the words, and the rare prodigy who could was suspected of fraud, but silent reading soon became the norm.³⁰ Definitive versions of texts standardised knowledge. The press spread a culture of literacy through emerging parish schools and study groups, and readers could learn from and criticise the fruits of other minds, catalysing the shift from mediaeval superstition to Humanism and study of the humanities. With libraries to mine, the layman could educate himself. The new books were often geared towards practical application rather than aristocratic life, and expounded dissenting rather than establishment ideology. Vesalius (1514-64), for example, printed accurate drawings of dissected human corpses, following Da Vinci's macabre lead and the example of Paracelsus, getting his hands dirty like a common butcher rather than a gentleman physician.

The re-education was not only a Protestant phenomenon. Catholic, Protestant, and freethinker philosophies were brought up and thrashed out on the printed page. Hamlet's friend Horatio travelled to Luther's Wittenberg, but back home Prince Hamlet is troubled by a ghost in purgatory, a realm which had been outlawed by Shakespeare's time. Several key Humanist scholars were Catholic, including Thomas More (1478-1535) who was later canonised. He wrote the book and coined the term *Utopia*, but whilst he advocated church reform, he saw Protestantism as a disease and had Lutherans burned at the stake.

Like Shakespeare, his histories were influential, but they were also narrative, without the critical objectivity that came to characterise Protestant history. In 1534, the Jesuits Society was formed in response to the spread of Protestantism and the corruption in the Catholic Church, building schools and sponsoring scholarship in their missionary work. The founder affirmed 'I will believe that the white that I see is black if the hierarchical Church so defines it',³¹ but Jesuits inevitably uncovered difficult evidence, like the Chinese histories dating from before Noah, raising questions about whether the flood did indeed wipe out everything. Another shock to the system was *The Samaritan Pentateuch*, a variant of the books of Moses discovered in 1645, raising questions about the divinity of the normal Bible.

Before the printed word, few had the opportunity to compare stories and search for truth amongst the tales. Pre-literate reality is completely different. What would a place called Jerusalem mean to someone who passed their life in the village of their birth, without travellers' tales to read? What would 1500 years ago mean to one who could not count beyond their fingers? Stories were passed around the hearth, with acts of Apostles and of grandparents woven into the same legendary time. In Church art, Christ's tormentors wore contemporary clothes. Pre-Reformation history was an oral tradition outside of the monasteries, but even monks barely wrote in some places; 'the Dark Ages' are so called because very few records exist. Though Romans chronicled the glories of their patrons, history as we know it grew out of the efforts of the reformers, often apocalyptic following God's movements in the world through the new texts, searching vernacular Bibles for clues about the Second Coming. The Protestant convert Joseph Scaliger (1540-1609) introduced objectivity into history and rules to historical criticism. He also expanded the range of history beyond the Greek and Roman classics to include Persian, Jewish, Babylonian, and Egyptian texts.

A chronology of 1605 revealed that the birth of Christ had been miscalculated by four years,³² and four became five a century later when veteran Jesuit-baiter Philippe de la Hire (1640-1718), added the year zero. The age of the earth was debated. James Ussher (1581-1656) added up the Biblical life spans and calculated that God's work began at 6pm on Saturday, October 22nd, 4004BC; the vice chancellor of Cambridge argued for 9am the following morning. Father Thomas Burnet introduced science to the debate in 1681. His funky theorising took into account the physical effects of the flood, and as 'one day is with the Lord as a thousand years'³³ the first six days gave him 6,000 years.³⁴ The terms of debate developed, and a century later the Comte de Buffon (1707-1788) was able to disregard *The Bible* completely, and

argue from experiments with molten metal that 74,832 years had passed before the earth had cooled from its original molten state to its present temperature.³⁵

Time shifted in another sense when the Julian calendar year was revealed to be a few minutes short of a solar year. By the late sixteenth century, solstices were arriving ten days early and festivals were drifting out of synch with the planting schedule, so Pope Gregory redrafted the leap years and announced that October 4th would be followed by October 15th. An assumption as basic as the day of the month was revealed as erroneous. Time also became a much more precise with the first pendulum clock in 1652.

In the early sixteenth century, harvests came and went, the weather was hot and cold and hot again, and disease passed through periodically, but then cyclical time became a linear arrow from the fall towards the immanent Second Coming. Space and time were not what they used to be. Science and the humanities had opened up new lines of enquiry, and meaning had been wrestled from the learned few to the increasingly literate plebs. The search for accuracy made the world a more rational place, and the Puritans asserted that the Age of Miracles was over. Printing, gunpowder, and the compass were new miracles which 'changed the whole face and state of things throughout the world',³⁶ as Bacon noted in 1620, and Europe started down the road to the Industrial Revolution. The apocalyptic fury of early Protestantism mellowed, the counter-Reformation pulled Catholic states into line, religious toleration acts were passed. Rationalism conquered the natural philosophy, culture, and politics of a world which was both expanding and shrinking, a world with an international conscience born of international movements such as Calvinism.

The rise of rationalism meant the end of the magick spell. There were hundreds of thousands of witchcraft prosecutions between 1580 and 1650,³⁷ and the insane, the poor, and whoever else did not meet the new standards of the world were persecuted with them. The last of the great apocalyptic mystic-scientists was Swedenborg, born in 1688, but

ⁱ Pre-literate thought lives on in some in the Amazon, where a particularly spiky vine is called *Espinhas dos Judeos* (the spikes of the Jews). When I learned this, I kept my identity as Christ-killer secret, and asked why it had this name. I was told that this was the plant used to make Jesus' crown of thorns. 'No it's not,' I thought, but then again, maybe it is. In Brazil, Jesus means far more in the Amazon than he does in Jerusalem. According to local legend, he was born beneath a holy cashew tree, another species not native to Bethlehem. The Amazon also contains pre-numerate groups, such as the Yanaomami tribe, whose language contains only the numbers one, two and many. Their thought processes must be quite different to ours.

the party wound down in the eighteenth century. Linnaeus was born in 1707, and science began classifying a universe broken down into Newton's particles and Paracelsus' specific causes. The world became disastrously sensible. Protestants proved to be far more moralistic than Catholics, with doctrines such as Calvinist complete depravity in the place of Catholic original sin, and we have been stuck with all kinds of unhappy ideas ever since, such as the Protestant work ethic, derived from the idea that 'Satan finds some mischief still for idle hands to do'.³⁸ The belief that the world is predictable and that one can and should change it gradually developed into various political philosophies of self-determinism, from capitalism, through various socialist movements promising a better deal, to the Communist Manifesto of 1848, born of Marx's historical determinism.

Jürgen passed the joint the other way. He had had enough of me and my sandwich board, but the sandwich continues, my friends, and we are due for another sandwich break. Einstein rethought space-time, national borders have been pierced by the Internet and the airplane, the global village is forming and the future is nothing like the past. Reality limits are being redefined, philosophy is going loopy, and things are taking a twist in a new direction, as we leave behind the constraints of matter and cross the sea of the unconscious. As before, it looks like it might be a choppy crossing, but the other side is a world more beautiful and magickal than we land-lovers can possibly imagine.

The End is Nigh, my brothers and sisters, and so is the beginning.

Ω

Before we come to the present, let us wind back the clock to the first century, and the first apocalypse of the Christian tradition.

1 Quoted in *Divided Legacy: A History of the Schism in Medical Thought* - Harris L. Coulter (North Atlantic Books, 2001) p. 182

2 *Theologia Rationalis* - Sydenham

3 *Sidereus Nuncius* - Galileo Galilei (1610)

4 *Micrographia* - Robert Hooke (London 1664)

5 *Comets and Popular Culture and the Birth of Modern Cosmology* - Sara J. Schechner

6 *The Plague* - in *The Encyclopaedia Britannica*, 10th edition (1902)

7 *London: A Social History* - Roy Porter (Cambridge 1994) p. 84

8 From John Evelyn's journal (exhibited at the Museum of London)

- 9 *By Permission of Heaven: The Story of the Great Fire of London* - Adrian Tinniswood (London 2003) p. 101
- 10 From the Journal of Thomas Vincent, from Museum of London exhibition.
- 11 From Samuel Pepys' Journal
- 12 *Understanding Physics* - David C. Cassidy, Gerald James Holton, Gerald Holton, Floyd James Rutherford, (Birkhäuser, 2002), p. 175
- 13 *Matthew*, 13:49-50
- 14 See *Matthew* 13 and 24
- 15 *Matthew*, 13:42
- 16 *Matthew* 24:25, *Mark* 13:31, *Luke* 21:33
- 17 *Revelation* 21:1
- 18 *John* 3:16
- 19 *Revelation* 11:15
- 20 *The Life and Times of Leonardo* - Paul Hamlyn p. 5 (Feltham, 1968)
- 21 *The Devil's Doctor* - Philip Ball
- 22 *Syphilis sive morbus gallicus* - Girolamo Fracastoro
- 23 *Origins of Syphilis* - Mark Rose in *Archeology* vol. 50 no. 1, Jan./Feb. 1997
- 24 *Ninety-five Theses* - Martin Luther (1517), no. 86
- 25 Ball p. 133-134
- 26 Quoted in *The Goldmakers* - K. K. Doberer
- 27 Quoted in *The Philosophical Diseases of Medicine and Their Cure: Philosophy and Ethics of Medicine* - Josef Seifert (Springer, 2004) p. 28
- 28 p. 286
- 29 p. 392
- 30 *Marshall McLuhan: Cosmic Media* - Janine Marchessault (SAGE, 2005) p. 134
- 31 *Knowledge, cause, and abstract objects: causal objections to Platonism* - Cheyne Colin (Boston 2001), p. 214
- 32 *Kepler* - Max Caspar, Clarisse Doris Hellman, Owen Gingerich (Courier Dover, 1993) p. 156
- 33 2 *Peter* 3:8
- 34 *The Sacred Theory of the Earth* - Thomas Burnet, 1691
- 35 *Epochs of Nature* - George-Louis Leclerc, Comte de Buffon (1778/9).
- 36 *Novum Organum*, Book 1, CXXIX
- 37 *The Witchcraft Reader* - Darren Oldridge (Routledge, 2001) p. 109
- 38 *Divine Songs* - Isaac Watts, Song 20