Chapter 2

Evangelicals, the Bible, and Science

With evangelicals being people of the Book, it is inevitable that they wish to reconcile science with the Bible. At a popular level, evangelicals adopt a *default* literalism and "follow" the plain meaning of scripture rather than "interpret" it. Thus many interpret early Genesis literally and accept YEC (Young Earth Creationism) by default. A similar process occurs with prophetic books and Revelation, whereby many adopt Dispensationalism, evidenced by the popularity of the *Left Behind* series of novels on the Rapture.

The second concern is "suffering and death before the Fall," and one of the main attractions of YEC is that it denies even animal death before the Fall (Morris and Whitcomb, 1961, pp. 454–489, Sarfati, 2004, pp. 195–225). As God surely made Creation "very good" with an absence of suffering and death then these entered the world as a result of the sin of Adam and Eve in Eden (Genesis 3). Thus suffering is part of the "curse" due to the Fall. Further many believe that salvation comes through Jesus's death on the cross, when He conquered death, which is the result of sin. Hence billions of years of death before Adam nullifies the Christian Faith, especially the atonement. Many YECs make this the basis of the biblical and evangelistic appeal of YEC.

As Evangelicalism is centered on the Bible, much of the controversy of Evangelicalism and science soon returns to these two points. Thus to understand this, we need to consider how evangelicals approach the Bible, and have done since 1730, in respect of its authority, its nature as inerrant or not, its interpretation and how evangelicals interpret the Bible today, with a focus on Genesis 1–11.

THE AUTHORITY OF THE BIBLE

As Bebbington(1987) demonstrated, the Bible is one of the four distinguishing marks of Evangelicalism, as the Bible is the authoritative Word of God. To say that the Bible *is* the Word of God emphasizes that evangelicals consider the Bible to be revelation and thus communication from God. Here they differ from liberal Christians who see the Bible as *containing* the Word of God, or a record of man's experience of God. In doctrine and ethics, evangelicals appeal to the Bible. The problem comes in assessing what the Bible says, especially with regard to science. The popular perception is that evangelicals are literalist and insist on a six-day creation. The prominence of YECs gives credence to that, but in fact, until twenty years ago most evangelicals have not been literalist. Since 1730 there has been a great variety in the ways that different evangelicals appeal to the authority of the Bible. All emphasize its historical reliability particularly on miracles, but they differ on whether the Bible is *inerrant* or should be interpreted literally. Early Genesis has been a focus of attention.

THE PROTESTANT DOCTRINE OF SCRIPTURE INHERITED IN THE 1730s

As evangelicals emerged from orthodox Protestantism in the eighteenth century, they adopted the same understandings of the Bible. These included its final authority in any matter of faith and doctrine, with church tradition subordinate to Scripture, hence *sola scriptura. Sola scriptura* was a reformation slogan to emphasize the Bible's final authority, rather than the *only* authority. Some evangelicals take this to mean the *only* authority and thus reject any interpretation based on "non-biblical knowledge." The Reformers with their Humanist/Renaissance heritage had a wider perspective and as heirs of the catholic tradition also valued church tradition and the early church Fathers like St. Augustine. This is particularly seen in the work of John Calvin.

As most early evangelicals were of English origin, their main doctrines, except for ministry and church order (and baptism for Baptists), derived ultimately from the Anglican teaching of Cranmer and the Edwardian Reformation of 1547–1553. The official view of the Anglican Church from which all Anglo-Saxon churches were hewn, is found in the *Thirty-nine Articles* of 1559, which were reaffirmed in 1662 in the *Book of Common Prayer.* These articles summarize the Christian Faith and Article VI deals with the Bible.

> Holy Scripture containeth all things necessary to salvation: so that whatsoever is not read therein, not may be proved thereby, is not to be required of any man, that it should be believed as an article of Faith, or be thought requisite of salvation.

The fact of its inspiration and authority were assumed, as it was common ground with Roman Catholics.

The following century under Cromwell, the Church of England was suppressed and the Westminster Confession written in 1644. After 1660 this became the doctrinal standard of English speaking Presbyterian churches. The confession was produced in question and answer form and Question 3 reads:

> Q. 3. *What is the Word of God?* A. The Holy Scriptures of the Old and New Testament are the Word of God, the only rule of faith and obedience.

Neither statement makes any reference to inspiration or inerrancy. In view of later developments it is often thought that the Reformers laid the foundation of inerrancy and a literalist interpretation, with the Old Testament as of great importance as the New. Thus an obscure law in the Old Testament (e.g. Lev 19.27) is as important as the Sermon on the Mount. In fact, the Reformers recognized both *Discontinuity* and *continuity* between the Testaments and that the New is superior to the Old (McGrath, 2001, p. 164).

The thirty-nine articles mentioned Creation in passing but the Westminster Confession was far more explicit, referring to Creation in six days:

> Q. 15. *What is the work of creation?* A. The work of creation is that wherein God did in the beginning, by the Word of His power, make of nothing the world, and all things therein, for Himself, within the space of six days, and all very good.

The first confession of faith to mention explicitly the six days of creation were the Irish Articles of the (Anglican) Church of Ireland of 1615. These 104 articles were drawn up by James Ussher (1581–1656), later the Archbishop of Armagh, while he was Professor of Divinity at Trinity College, Dublin. They were largely based on the thirty-nine articles and later formed the basis of the Westminster Confession. The eighteenth article deals with creation;

> Article 18. In the beginning of time when no creature had any being, God by his word alone, in the space of six days, created all things, and afterwardes by his providence doth continue, propagate, and order them according to his own will.

The most well known of Ussher's works was *Annales Veteris Testamenti* (1650), which was a solid piece of chronological scholarship in which he argued from historical grounds that Jesus was born in 4 BC. But he is remembered for his date of creation—4004 BC. Despite popular representations, he did not arrive at this figure from arithmetic applied to dates

of patriarchs and other Old Testament figures. To Ussher there were six Chiliastic days of 1,000 years apiece followed by the seventh day of the millennium. There were four Chiliaistic days before Christ and thus Creation took place in 4004 BC, on the night before October 23. Adam was created on October 28. However, this is good seventeenth century historical scholarship. He dated the sack of Jerusalem by the Babylonians described in II Kings 25 in 588 BC, close to today's accepted date of 587/6 BC. His dates earlier than King David are rejected by all except the most conservative evangelicals, for example Exodus in 1491 BC, the departure of Abraham from Ur in 1921 BC and the Noachian Deluge in 2468 BC.

In 1704 Ussher's dates were printed in many editions of the Bible. This gave the impression that these were the official biblical dates. It has also resulted in Ussher becoming a figure of fun. Yet this was not part of the Reformers' heritage, nor was it the belief of most educated Christians from 1660 to the end of the eighteenth century when geologists made the vast age of the earth manifest (Roberts, 2007).

The Reformers' interpretation of Scripture developed from the new learning of the Humanists, such as Erasmus, and the way they studied all ancient texts, whether divine (hence *divinity*) like the Bible, or human (hence *humanist*) like Classical literature. Calvin's own study of the Bible was based on his humanist background as is seen in his commentary on Seneca. The Reformers appealed to the *literal* sense of Scripture and rejected the mediaeval methods of allegorization. The word *literal* means the plain sense of scripture rather than slavish literalism, which plagues popular Evangelicalism. It was a *literal* exegesis rather than allegorical. An irony is that the popular hermeneutic of today stemming from Dispensationalism, which claims to be literal, ends up as *allegorical* as any medieval exegesis.

ACCOMMODATION

The refusal to adopt a slavish literalism is seen best in Calvin's understanding of the *accommodation* of Scripture, which he based on earlier theologians including Augustine. In 1554, eleven years after Copernicus published *De revolutionibus*, Calvin published his commentary on Genesis. Calvin made no reference to the Copernican theory and stressed that *Genesis* was not written to teach astronomy. As he dealt with the Mosaic description of the firmament of Genesis 1 vs 6 he wrote, "He, who would learn astronomy and other recondite arts, let him go elsewhere" (Calvin, 1847, p. 79). He considered the firmament not to be the solid dome, which is implied by Egyptian astronomy, but a representation of rain clouds, because "nothing is here treated of but the visible form of the world." Calvin was wrong at this point as most ancients considered the *firmament*

to be a solid dome (Seely, 1991, 1992). In other words Moses *accommodated* himself to the limitations of human thought and as Calvin commented on chapter 1 vs 15, "For as it became a theologian, he had respect to *us* rather than the stars." Calvin approached his task with Ptolomean assumptions of a spherical earth and did not question a 6,000-year-old earth or a universal flood. His accommodating interpretation eased the path for many to accept Copernicanism, which some Roman Catholics called the "Calvino–Copernican" theory. In the following centuries Calvin's doctrine of *accommodation* allowed Protestants to accept the findings of science without rejecting the authority of scripture (Hooykaas, 1972, pp. 117–124). McMullen argues that *accommodation* goes back to Augustine and that Galileo took over his ideas at a time when both Protestant and Catholic had become more literalist (McMullen, 1998).

In the eighteenth century many writers, both Catholic (Fr J. Needham and Buffon) and Protestant (de Luc), utilized a form of *accommodation* to incorporate long geological time in Genesis One (Roberts, 2007). A recent study of de Luc by Martin Rudwick (Rudwick, 2001) demonstrates that de Luc developed Ussher's historiography to include geological time. Lutherans were more literalist than Calvinists and less inclined to adopt *accommodation* and thus more opposed to Copernicanism.

THE CHAOS OF GENESIS 1 VS 2

Alongside this literal exegesis, tempered by *accommodation*, many writers considered the earth being created "without form and void" to be paralleled by many classical writers, such as Ovid and Heisiod, who wrote of the formation of an original *chaos*. Calvin, who surprisingly for a classical scholar, made no reference to these writers, referred to the earth being a "rather shapeless chaos (on Genesis I vs 2). Many Reformation and Renaissance writers were more explicit and Williams states that "[f]ew commentators could refrain from quoting the opening lines of the [Ovid's] *Metamorphoses* . . . " (Williams, 1948, p. 49). Thus Genesis One was interpreted as God first creating *chaos (*i.e. without form and void*)* and then subsequently re-ordering this chaos in six days. This, in fact, opened up the way for a longer time span of creation, as the duration of Chaos was undefined. Up to about 1650 Genesis could not be interpreted in the light of geological evidence concerning the age of the earth.

The Church Fathers of the first five Christian centuries had varied approaches to Genesis. Some like Theophilus of Antioch in about 180 AD interpreted it literally at calculated the Creation at 5515 BC (Theophilus, 1970). Augustine of Hippo was ambivalent seemingly both hold a figurative sense of day and a literal one. Other Fathers were clearly figurative (Van Till, 1996). The period of the Reformation resulted in a more

rigorous biblical interpretation with an emphasis on the literal rather than allegorical meaning. This inclined most theologians to understand the day of Genesis as of twenty-four hours and thus many writers, Protestant and Roman Catholic, reckoned the earth to have been created in about 4000 BC.

THROUGH THE SEVENTEENTH CENTURY INTO THE 1730s

During the Renaissance all knowledge was considered a unified whole and thus "Biblical History" was related to other spheres of knowledge both classical and modern. Genesis was considered with reference to classical writers who spoke about chaos. This is seen in many writers of the early seventeenth century: Grotius, Mersenne, Bacon, and Descartes. Grotius in *The Truth of the Christian Faith in Six Books* argued that "the most antient tradition among all Nations [Phonecian and Greek] is exactly agreeable to the Revelation of Moses" (Grotius, 1719, section XVI) and his work was translated and used throughout Europe. Many later writers, like Chalmers, cited Grotius in support of a chaos of undefined duration.

A few decades later in 1656 Ussher published *Annales Veteris Testamenti*. Although his chronology from the first humans in 4004 BC to the time of Christ was widely accepted, his strict understanding of six days was not, and was almost a minority opinion over the next 150 years. His influence on the churches is grossly exaggerated and during the next century many writers passed over him in silence. But the date of 4004 BC in the margins of many English Bibles gave the impression that this was orthodox belief on the date of creation.

Toward the end of the seventeenth century many *Theories of the Earth* were published in Britain by such writers as Burnett, Whiston, Woodward, Ray, and Hobbes. These are often considered to be an attempt to rationalise the early history of the earth into six days, but, in fact, all writers allowed an indefinite time for *chaos* and melded Genesis, classical writers, scientific observation, and speculation into a seamless whole. Burnett wrote of indefinite chaos, "so it is understood by the general consent of commentators" and the commentator Bishop Simon Patrick wrote of the duration of chaos that "(I)t might be a great while"(Roberts, 2002, pp. 145–148).

The chaos-restitution interpretation was adopted by most commentators in the eighteenth century—including the evangelicals Wesley, Gill, and Pantycelyn (writer of *Guide me o thou Great Redeemer*) (see Chapter 3). Many did not refer to the duration of chaos. This interpretation formed the basis for a libretto for a planned oratorio by Handel, which Haydn acquired in 1792 and used in *The Creation*. The whole schemata of original chaos followed by development was an essential part of the eighteenth-century worldview, whether Christian or not and was bequeathed to the evangelicals and forms the historical background to the ways evangelicals

and other Christians have understood Genesis and geology since 1800, particularly in the development of the "Gap Theory."

By 1730 heliocentricity was long resolved almost all educated Protestants were Copernicans and except for a few eccentrics the matter was closed, as all had accommodated their understanding of scripture to heliocentricity.

This summarizes the consensus of Protestant biblical understanding in the 1730s when the Evangelical Revival began. Obviously, evangelicals strenuously rejected the interpretations of the Deists and the scatological biblical criticism of the coffee shop atheists of London. Many early evangelicals were highly educated, whether from Yale or Oxford, so that their background was orthodox Protestantism, whether Congregationalist or Anglican and full of the learning of Newton and Locke. Thus, the early evangelicals accepted both the Bible as the ultimate authority *and* Newtonian science, which provided the second book of revelation, God's Works, augmenting the book of God's Word. This commanded almost universal acceptance, except for the few, who adopted Hutchinson's Mosaic science. To my knowledge no evangelical until the late twentieth century questioned Copernicanism, except for late nineteenth century American German Lutherans, and some devotees of Frances Turretin, the seventeenth-century Calvinist.

EVANGELICAL INTERPRETATION FROM 1750 TO 1850

As the growth of Evangelicalism resulted in theological diversification it was inevitable that as new sciences impinged on biblical interpretation, it would open up diverse interpretations of the Bible. Some were more accommodating than others leading to some controversy over geology in the nineteenth century. During the eighteenth century evangelicals, like most Protestants, were either literalist or semiliteralist in interpretation, but allowed some "accommodation." After 1770 geologists like de Luc, de Saussure, Hutton, Smith, Werner, Cuvier, and others started to demonstrate the antiquity of the earth, Christians rethought their position (Rudwick, 2004; Roberts, 2007). Because of the popularity of the Chaos-Restitution and Day-Age interpretations a radical rethink was unnecessary for those familiar with the natural philosophy of the day. Those without the knowledge of natural philosophy were more liable to take the Bible at face value, and adopt a literal hermeneutic. However, attacks on the possible heresy of those who accepted a vast age were rare and attacks were usually confined to the possible deism of writers like Hutton, rather than against a more elastic view of Genesis. Thus de Luc and Kirwan attacked Hutton not for accepting deep time but almost allowing the earth to be of an infinite age.

I can think of no example of evangelicals before 1800 criticizing geology on theological grounds, though some, for example Thomas Scott, Charles

Simeon, Andrew Fuller, and John Newton simply ignored the question. Some did defend "Genesis" against the geologists, notably the Roman Catholic Chateaubriand (1768–1848) in France[1] and the High Church Hutchinsonians in England, who dissociated themselves from evangelicals, but these were minority views among educated Christians. The sequence of the *Theories of the Earth* with God first creating Chaos, reordering Creation with man being created in about 4000 BC and then the Deluge evolved into a vastly extended Chaos, which encompassed a multiplicity of Deluges, with Noah's Flood being the last of many. Theologians quietly slipped geology into the Chaos. The first theologian who is *known* to have done this was Thomas Chalmers at St. Andrews in the winter of 1802 (Hanna, 1852, vol. 1, pp. 79–80).[2] This was before Chalmers became an evangelical in 1811 but his understanding of geology and Genesis remained unchanged. Many writers, notably Henri Blocher and Weston Fields, wrongly credit Chalmers with a novel interpretation. Blocher wrote that Chalmers "was seeking to reconcile Genesis with the new discoveries about the age of the earth" (Blocher, 1984, p. 41), but Fields reckoned that "Chalmers deemed it *necessary* to harmonise the Scriptures and science in order to save Christianity from the onslaught of atheism!" (Fields, 1976, p. 40).

A few years later in 1816 a future Archbishop of Canterbury, the evangelical John Bird Sumner (1780–1862) published *A Treatise on the Records of Creation*. Much was on political economy but the appendix was on the relationship of Christianity and Geology, which followed the Chaos-Restitution interpretation (Sumner, 1833, vol. II, pp. 339–359). Chalmers and Sumner were largely responsible for forging a new geologico-theological consensus by modifying older interpretations. Most Protestants on both sides of the Atlantic accepted this reconciliation of Genesis and geology in the 1810s and 1820s, especially by clerical geologists. Conybeare and Phillips' (1822) *Outline of the Geology of England and Wales* was the most widely read book on British geology of that era.[3] The introductory chapter, presumably by Conybeare (1787–1857), later Dean of Llandaff, who was on the fringes of Evangelicalism, contains a long section on the theological implications of geology. Conybeare wrote that

> Two only points can be in any manner implicated in the discussions of Geology.
> I. The Noachian Deluge
> II. The Antiquity of the Earth (Conybeare and Phillips, 1822, p. lvi).

As a Diluvialist the former was no problem to Conybeare. On the latter, Conybeare followed Sumner. Human antiquity was the 6,000 years indicated by a strict reading of the Bible—something which was not questioned for a decade. He gave three hypotheses "With regard to the time

requisite for the formation of the secondary strata." The first is a literal six days, which he does not expressly exclude, the second the Long Day, which was forcibly expounded by the evangelical G. S. Faber (Faber, 1823, pp. 111–165) (1773–1854), and the third Chaos-Restitution. Conybeare avoided recommending any of the three, but his preference is implicit in a long footnote citing Sumner on the *Records of Creation* (Conybeare and Phillips, 1822, p. lxi).

William Buckland (1784–1856) devoted part of his Inaugural Lecture *Vindiciae Geologicae* at Oxford in 1819 to the relationship of geology and "the Mosaic Records," adopting the Chaos-Restitution hypothesis citing Sumner, Horsely, and Buffon for support (Buckland, 1820, pp. 25–28). Buckland returned to this in his Bridgewater Treatise (Buckland, 1836) where the second chapter considered the *Consistency of Geological discoveries with sacred History*. That chapter offended a few for espousing an ancient earth, and thus his Bridgewater was followed by several anti-geologies condemning "infidel" geology in the late 1830s. Buckland rejected any notion of "a detailed account of geological phenomena in the bible," and rejected that all strata were laid down in the Flood and had reservations over a "Long Day." To support his case Buckland referred to Chalmers, Pusey, Burton, Horsely, Sumner, and others, a cross-section of conservative theologians. He also cited Adam Sedgwick's (1785–1873) *Discourse on the Studies at the University of Cambridge* (Sedgwick, 1834/1969) and the long discussion on geology in the *Christian Observer* in 1834.

A good example of a slow shifting away from a nondogmatic literalism can be seen in the writings of G. S. Faber (1773–1854). Faber was a prolific evangelical writer, writing many volumes on prophecy and other theological themes. Among these are many references to geology and Genesis. His Bampton Lectures *Horae Mosaicae* refers once to geology "while the bowels of the earth are ransacked to convince the literary world of the erroneousness of the Mosaical Chronology." (Faber, 1802, p. viii.), implying hostility. By 1816 Faber demonstrated his acceptance of geology in *The Origin of Pagan Idolatry*. Tucked away in volume two are a few pages referring to de Luc's geology. He continued his interest in geology in *A Treatise of the Three Dispensations* of 1823 and *The Difficulties of Infidelity* of 1824, and cited Cuvier, Dolomieu, and de Luc in support of a devastating Deluge, thus indicating the influence of Buckland. According to Rupke, the Oxford geologist William Buckland had three theological advisors and supporters, Faber, J. B. Sumner and Shute Barrington, the first two being evangelicals (Rupke, 1983, p. 14).

A survey of contemporary theological writings show that Chaos-Restitution was the most widespread "reconciliation" of geology and Genesis in the period 1810–1850 and that the biblically literalist anti-geologies, such as Cockburn, Fairholme, Fitzroy, and others were in the minority,

even among evangelicals (Roberts, 1997, pp. 247–250). It is easy to regard the Chaos-Restitution interpretation of Genesis as special pleading and a forced exegesis, but it was widely held until mid-century. Hugh Miller (1802–1856) questioned it in a footnote in *Footprints of the Creator* (Miller, 1881, p. 332), his antievolutionary critique of the *Vestiges* in 1847. This he expanded in his posthumous *The Testimony of the Rocks* (Miller, 1857), both in the Preface and in two chapters on Genesis and geology. He explained why he felt it necessary to reject Chalmers' Gap Theory, which had been widely held for fifty years in favor of his concept of *The Mosaic Vision of Creation.* In the preface, Miller spelled out the geological reasoning behind this change. He wrote, "I certainly did once believe with Chalmers and with Buckland that the six days were simply natural days of twenty-four hours each . . . and that the latest of the geologic ages were separated by a great chaotic gap from our own" (Miller, 1857, pp. x–xi). This was reasonable to Catastrophists, who reckoned that each geological era was closed off by a catastrophe. Miller explained that there was no problem with "the Palaeozoic and Secondary rocks," but there was with recent strata. He continued, "During the last nine years (written in ca. 1856), however I have spent a few weeks every autumn in exploring the later formations." From his study of the Pleistocene, he concluded that many of our "humbler contemporaries" especially molluscs existed long before man. Thus "No blank chaotic gap of death and darkness separated the creation from which man belongs from that of the old extinct elephant . . . and hyaena, or for familiar animals . . . lived throughout the period which connected their times with our own." As a result Miller rejected the whole idea of Chaos then Restitution and adopted the view of six *prophetic* days of creation. Chalmers' ideas were more congenial to Catastrophismt than to Uniformitarian geology, with its seamless geological development throughout time.

Within a few years Gilbert Rorison was arguing for a totally poetical exegesis of Genesis in Wilberforce's *Answers to Essays and Reviews* (Wilberforce, 1861, pp. 281–286) and the Chaos-Restitution interpretation rapidly went out of fashion. Archdeacon Josiah Pratt of Calcutta (Pratt, 1871) was one of the last serious writers to expound it. The Day-Age interpretation gained ground among the more "intellectual" conservatives, most notably by J. W. Dawson (Dawson, 1877). By the end of the nineteenth century the Chaos-Restitution interpretation was given a Dispensationalist twist as the "Gap Theory" first by George Pember and then enshrined in the *Scofield Reference Bible*. This allowed "fundamentalists" from 1890 to 1970 to accept geological science, if not evolution. However following the rise of YEC after 1961, the Gap Theory has now been almost completely discarded (Fields, 1976). YECs like Morris, Ham, and Sarfati reject it with virulence. From a later vantage point, whether the late nineteenth or even

early twenty-first century, it is difficult to conceive that this interpretation *made sense at the time* whether for theological or scientific reasons, or both. It was considered to be a careful well-thought theological understanding and biblical interpretation, which both took earlier understandings into account (tradition) and understandings of science especially geology (reason).

LATE NINETEENTH CENTURY DISPENSATIONALIST AND POPULAR EVANGELICAL INTERPRETATION

Form the late nineteenth century until about 1950, moderate evangelicals tended to adopt a Day-Age interpretation, which allowed for a generalized *concordism* parallel between Genesis One and geology. The more conservative evangelicals, who tended to be Dispensationalist, were more literalist and preferred the Gap Theory which enabled them to accept geological time. Dispensationalism had many attractions. It gave a seemingly coherent and accessible scheme of biblical interpretation, and appealed to the popular evangelical belief anyone can interpret the Bible. It gave great authority to the Bible and interpreted it in the most obvious, and literal, way. "Interpret" is not the best word, as Dispensationalists claimed to take the Bible at its word rather than interpret it. This has resulted in the ambivalence of the heirs to fundamentalism since 1945. Many evangelicals almost have a "default literalism" and this may explain why many evangelicals rejected the Gap Theory as the YEC movement got under way in the 1970s. Since about 1970, a literal interpretation of Genesis has become more common among evangelicals throughout the world, thus reversing the trend of two centuries since 1770.

EVANGELICAL BIBLICAL INTERPRETATION FROM 1950

The postwar revival of Evangelicalism resulted in a renaissance of theological scholarship. Many students went to mainstream universities in the United States and Europe for a doctorate. A proportion broadened out theologically and often were regarded to have gone liberal. Marsden has made a good case study on this in his study of Fuller Theological Seminary *Reforming Fundamentalism* (Marsden, 1987). In 1949 the *Evangelical Theological Society* was founded in the United States, which insisted on inerrancy for membership and at about the same time the *Theological Students Fellowship* and the *Tyndale Fellowship* were founded in Britain, which significantly did not.

Whereas in 1950 there were few notable evangelical biblical scholars, there are now considerable numbers as well as innumerable Ph.Ds in theology. As a result an immense volume of evangelical theology of varying

quality is published. Some theologians drifted away from Evangelicalism and at times made a name in the scholarly world, as have James Barr and Maurice Wiles in Britain and Bart D. Ehrman in the United States. Of the many who remained in the evangelical fold, their theological perspectives vary greatly. The more liberal, who adopt a conservative critical approach, are often indistinguishable from conservative non-evangelical scholars. An example is Bishop Tom Wright the New Testament scholar. At the other extreme some have scarcely moved from a fundamentalist perspective with an insistence on fanciful typology, an Ussher chronology and a literal Genesis. Hence today there is a great diversity of Old Testament interpretation, with an immense diversity on how Genesis should be understood.

CONTEMPORARY EVANGELICAL BIBLICAL SCHOLARSHIP

Over the last fifty years there has been a growing number of competent evangelical biblical scholars. New Testament scholars have been far more numerous than Old Testament scholars and include F. F. Bruce, I. H. Marshall, R. Baukham, R. P. Martin. J. D. G. Dunn and N. T. Wright (now Bishop of Durham) from Britain and G. E. Ladd, Ward Gasque, Joel Green, G. Fee, and T Schreiner from across the Atlantic. Fewer Old Testament scholars have gained distinction in Old Testament studies. This is because the text and the history of the Old Testament are not as straightforward as the New Testament. The Old Testament text itself is often unclear and any translator or exegete has to cope with that, along with questions of historicity and authorship. This means that it is harder to regard the text as authoritative and inerrant. Consequently Old Testament scholars often find that they cannot subscribe to an evangelical basis of faith about the Bible. Even so there are numbers of evangelical Old Testament scholars publishing competent work. These contribute to the commentary series such as the Tyndale and Word Old Testament commentary series and the multivolume IVP Dictionary of the Old Testament.

There is no one evangelical perspective of the Old Testament. The most conservative insist on the Mosaic authorship of the Pentateuch, that the OT history is precise and retain Ussher's 1656 chronology of the Old Testament with the Flood occurring in 2473 BC, the unity of Isaiah, etc. At the other extreme the more liberal evangelical accept that the Pentateuch was compiled centuries after Moses, the OT is only generally historical, the Flood was local if it occurred. Needless to say that there is an inerrancy divide here. Apart from implications on how archaeology impinges on the Old Testament, there are very different understandings on how science relates to early Genesis and thus I consider a selection of writers on this.

I have put these writers into three cohorts based entirely on their acceptance or not of geological time. Because of the evangelical understanding of scripture, evangelicals do not take the position of many liberal scholars, for whom Genesis is not historical. Barr, for example, argues that though the original authors of Genesis thought that the days of Genesis One were solar days, the Bible is clearly wrong on this point, but it still has theological value. This is anathema to the conservative evangelical. This is John Whitcomb's argument in *The Genesis Flood* (Morris and Whitcomb, 1961, chap. 6) where he posits "a scriptural framework for historical geology."

At the popular level many expositions of Genesis argue for six solar days as the "true" interpretation. More serious studies are rare. One of the most influential is Douglas Kelly's *Creation and Change* (Kelly, 1997). In 2003 John Currid, Carl McMurray Professor of Old Testament at the Jackson campus of the Reformed Theological Seminary, published a two volume commentary on Genesis for the Evangelical Press Study Commentary Series. This is an academic commentary making much use of the Hebrew text. Currid argues for six solar days and a global Flood as the best interpretation, but unusually for a conservative maintains that the firmament of Genesis 1 vs 6–8 was a solid dome, and that is what the author of Genesis (Moses) thought along with a belief in a flat earth, which was typical of ancient Egyptian cosmology. In this he followed the work of Seely discussed below. No Old Testament theologian has done more to encourage evangelicals to accept a literal Genesis than the coauthor of *The Genesis Flood*, John Whitcomb.

At the other end of the evangelical spectrum, some reject both literalism and concordist interpretations. Instead they adopt a "framework" interpretation, which understands the six days as thematic rather than chronological. Arie Noordzij of the University of Utrecht first used it as an interpretive tool for Genesis 1 in 1924, and Meredith Kline of Westminster Theological Seminary developed it in "Because it had not rained"(Kline, 1958). Kline wrote as an exegete rather than an apologist, that a chronological six-day creation does not fit with Genesis 2 vs 5 (because it had not rained). As he was loath to admit to contradiction between "two creation accounts" or that early Genesis was legendary or mythical, he recognized "the figurative NATURE of the several chronological terms of Genesis 1" and argued that the author "used the imagery of a chronological week to provide a figurative framework" for the creation acts. Kline later developed this in *Space and Time in the Genesis* Cosmogony (Kline, 1996). Kline's thesis has been widely accepted by many evangelicals, especially those convinced of geological time, but has been criticized by more conservative theologians like Wayne Grudem (Grudem, 1994, pp. 302–305), where he summarizes the framework hypothesis and its alleged problems. Grudem

is also critical of evolutionary theory and inclines to YEC. Ken Ham is also critical in his AIG booklet *Six Days or Millions of Years?* However Kline did not intend to open the floodgates for evolution and many orthodox Presbyterians (especially members of the Orthodox Presbyterian Church and the Presbyterian Church of America) hold to the framework hypothesis but deny evolution.

Despite many criticisms, a form of framework hypothesis is followed by several leading evangelical scholars in their commentaries on Genesis; Gordon Wenham (Word Commentary), Bruce Waltke (Genesis: A Commentary, Zondervan), John Walton (NIV Application Commentary, Zondervan), and Conrad Hyers in various writings. One of the most accessible expositions is by Henri Blocher in his work *In the Beginning* (Blocher, 1984, chap. 2). For an evangelical who is inclined to accept evolution, the Framework theory is attractive as there is no need to devise any chronological concordance with six days.

Declining numbers still hold to either the "Gap Theory" or a "Day Age Theory," but they are between a rock and a hard place as they claim to be literalist. Both appear to have been largely eclipsed after the rise of YEC. The main scholar who holds to the Day age is Gleason Archer. Two nontheologians who argue for this are Glenn Morton, whose apostasy from YEC is discussed in Chapter 7, and Hugh Ross of *Reasons to Believe*, who has expounded the day-age theory at length in his recent book *A Matter of Days: Resolving a Creation Controversy* (Ross, 2004) and has received virulent criticism from *Answers in Genesis.* Davis Young held to a Concordist Day Age view in the 1970s (*Creation and the Flood* (Young, 1977, pp. 81–134), but now has adopted the framework theory. The physicist turned theologian Robert Newman and Herman Eckelmann Jr. also argue for this (Newman and Eckelmann, 1977) in as does John Wiester (Wiester, 1983). Older writers include Peter Stoner and Edwin Gedney in Chapters 2 and 3 of *Modern Science and Christian Faith* by members of the American Scientific Affiliation (Everest, 1950, pp. 9–57). Few today argue for the Gap Theory and the last significant evangelical to do so was Arthur Cunstance. The Gap Theory is strongly criticized by YEs, most notably by Weston Fields. It is significant that the Day Age theory today is held by evangelicals, who are OEC rather than YEC or TE.

These three views still cause considerable debate among American evangelicals and a useful discussion is to be found in the book *The Genesis Debate: Three Views on the Days of Creation* (Duncan et al., 2000). Three pairs of authors put forward their case and respond to the others. J. Ligon Duncan III and David Hall for solar days, Gleason Archer and Hugh Ross for the Day Age, and Lee Irons and Meredith Kline for the Framework Theory. In the blurb, Geisler stated "The Genesis Debate is a worthwhile volume that will help you better understand the biblical doctrine of creation."

Even so, it is wrong to assume that adherence to a literal Genesis blinds the scholar to critical study of the Bible. David Fouts of the YEC Bryan College argues that the large numbers in the Old Testament are polemical hyperbole and thus are not to be taken literally (Fouts, 1997). However he still maintains that Creation occurred in 144 hours.

As a rider these three views they also tend to reflect "three views" on science. Those who accept evolution tend to accept the Framework Hypothesis as do many in the ASA or Christians in Science, Day Age appeals to Old Earth creationists who reject evolution, and the Solar Day, not surprisingly, appeals to YECs. The Gap Theory is in eclipse.

THREE REPRESENTATIVE EVANGELICAL THEOLOGIANS; KELLY, BLOCHER, AND LUCAS

I have chosen these three as their work is at a serious lay level. The three are well-regarded theologians in America, France, and Britain. They also indicate the range of scientific understanding by evangelicals; Kelly is a convinced YEC and also argues that YEC is correct and reflects a changing paradigm of science. Lucas, a scientist-theologian, accepts evolution, though he flirted with YEC over thirty years ago. Blocher firmly rejects YEC but is hesitant about evolution.

Ernest Lucas graduated in chemistry from Oxford and obtained first a Ph.D. in chemistry from the University of North Carolina and then a Ph.D. in biblical studies. Henri Blocher, a French protestant, was appointed to the Gunther H. Knoedler Chair of Theology at Wheaton College in 2003. Since 1965 he had been Professor of Systematic Theology at the Faculté Libre de Théologie Evangélique in Vaux-sur-Seine. He was educated at the Sorbonne, London Bible College, Gordon Divinity School, and Faculté Libre de Théologie Protestante of Paris and has written many theological books, including *In the Beginning*, *Evil and the Cross* and *Original Sin*. Douglas Kelly originally studied in the States and earned a Ph.D. in systematic theology in Edinburgh under T. F. Torrance.

The subtitle of Kelly's book *Genesis 1.1–2.4 in the light of changing scientific paradigms* (Kelly, 1997) makes his thesis clear. Kelly adopts Kuhn's paradigm shifts in his *The Structure of Scientific Revolutions* and argues that as a paradigm shift, that is the success of YEC, has occurred in science, there needs to be a related paradigm shift in theology away from previously-held old earth interpretations of scripture. After putting forward his arguments for accepting YEC and a literal hermeneutic of Genesis, he concluded, "There is only one way for massive intellectual, moral and cultural healing to occur, and it entails a revolutionary 'paradigm shift' from mythological evolution to a Scripturally revealed and scientifically realistic paradigm of special, divine creation" (Kelly, 1997, p. 245). His

arguments on science reflect conventional YEC understandings of science, but his theological arguments need considering.

Douglas Kelly

Kelly begins with a chapter entitled *Creation: Why it Matters*, which is strongly based on the Scottish theologian Tom Torrance and standard writers on the history of science and Christianity—Hooykaas, Jaki, etc. though none doubts the "evolutionary paradigm." However he does move on to the challenge to evolution posed by Johnson and Behe and concludes the chapter by saying "God provides us with such information in the first three chapters of Genesis . . . from the One was the eye-witness . . . " (Kelly, 1997, p. 30). It is difficult not to conclude that Kelly, like many YECs, draws his science from the Bible.

The center part of the book are discussions of the various days of creation. Kelly argues against those who reject a 24-hour day for *yom* (Heb day), and questions all alternative interpretative schemes whether "Gap Theory," Day-age or Framework. His weakest argument is to claim that there are fifty-seven references to Genesis 1–11 in the New Testament and that "[I]n none of these references . . . is there the slightest indication of anything other than the literal, chronological understanding of the six days of creation . . . " (Kelly, 1997, p. 134).However, most of these references have no bearing on a literal Genesis. At the end of the book Kelly argues for no death before the fall (Kelly, 1997, p. 228f) from Genesis 1 vs 31, "And God saw that it was very good," stating that "very good" means no suffering or death and that this is in accord with Genesis 3, Romans 5 vs 12, Romans 6, and I Corinthians 15 vs 21.

On scientific questions Kelly accepts the consensus of YEC arguments. These include the moon dust argument, the circular reasoning of the Geological Column, catastrophic deposition at Mt. St. Helens and others. All have been shown to be fundamentally wrong. Whether or not one finds Kelly's arguments convincing, it is probably the best theological argument for a YEC "paradigm."

Ernest Lucas

Lucas argues that standard science, whether cosmology, geology, or evolutionary biology, are conformable to evangelical belief. He writes for the well-informed layman and presents his case eirenically. The title *Can We Believe Genesis Today?* (Lucas, 2001) is rhetorical. The first third of the book deals with Biblical interpretation and stresses the variety of literary forms before moving onto Genesis itself, as well as considering scientific matters. Various young earth arguments like the decay of the magnetic field are found wanting. Despite Lucas' scientific credentials, he deals far

more with theological questions, and moves easily between science and theology. Unlike Kelly, Lucas uses science to inform his interpretation of scripture, and draws a parallel with the use of archaeology. He also stresses how archaeological evidence has assisted in the understanding of the Greek of the New Testament.[4] In the New Testament there are several Greek words, which were not found in classical texts and thus their meaning was obscure, until some Greek documents were found in the nineteenth century in Egypt, using these words, revealing the meaning. Lucas (2001, pp. 61–62) argued that the principle behind this is the same as using science to illuminate the meaning of scripture as it is using the best available knowledge. His next two chapters apply this approach to Genesis.

Lucas is the antithesis of Kelly and comes to a diametrically opposed conclusion. These two books are highlight the theological division within Evangelicalism and are instructive as both are accessible to both the nonscientist and nontheologian.

Henri Blocher

Blocher's books represent evangelical theology at its best. *In the Beginning* is an extended study on the first three chapters of Genesis. His aim is theological but makes reference to science and refers to scholars from both sides of the Atlantic, Protestant and Roman Catholic. His approach is thematic and provides a useful appendix on *Scientific hypotheses and the beginning of Genesis*. On the creation week he outlines the various interpretations and favors the Framework hypothesis. In his discussion of evil in Genesis 3 he is reluctant to posit that the Fall had any physical effects. Blocher was familiar with YEC, but rejects it (Blocher, 1984, p. 214), preferring to accept standard science with reservations about evolution. Philosophical extensions of science have no appeal for him. Blocher's book has been widely used by evangelicals but has come in for much criticism by YECs, like Douglas Kelly (Kelly, 1997, pp. 115–120), who likens Blocher to a Mediaeval Nominalist. The fact that Blocher was appointed to a chair at Wheaton College in 2003 demonstrates his acceptability to American Evangelicalism.

INERRANCY

Most evangelicals today hold that the Bible is *Inerrant*. This means that the Bible is absolute truth and does not err in its statements. It is easy to conclude that evangelicals, who believe in biblical inerrancy, equate it with literalism and thus YEC. Though this is often the case, there are many exceptions. Evangelicals who espouse YEC adopt both literalism and inerrancy and this is often written into credal statements of evangelical

churches and colleges, as well as YEC groups like AIG and ICR. However to leave it at that would be misleading.

It is a matter of debate whether inerrancy has been the main protestant doctrine of the Bible since the Reformation or not. In 1979, at the height of the inerrancy debate centered on the writings of Harold Lindsell, Rogers and McKim (Rogers and McKim, 1979) argued that inerrancy was introduced by the Haldane brothers in 1828 and developed by the Princeton theologians Hodge and Warfield after 1860. Calvin along with most Reformers and Doddridge, Thomas Scott and others in the eighteenth century allowed some error in the Bible, without questioning its absolute authority.

The classic nineteenth-century expression of inerrancy is in Hodge's *Systematic Theology* of 1870 (Hodge, 1870) and Warfield's (1851–1921) many writings (Warfield, 1951) on the authority of scripture. Hodge likens the errors in the Bible to tiny specks of sandstone in the marble of the Parthenon (Hodge, 1870, vol. 1, p. 170). Both theologians accepted geological ages and Warfield reckoned himself a Darwinian. Thus in its classic formulation, Inerrancy embraced a nonliteral interpretation of Genesis. Biblical inerrancy became a central belief among the early twentieth-century American fundamentalists, often with an acceptance of geological time. With the growth of the "New Evangelicals" after 1950, some, like E. J. Carnell and others from Fuller seminary, began to question inerrancy. D. P. Fuller put forward the case for a *limited inerrancy*, in which the Bible is not inerrant on matters of history and science (Marsden, 1987). This came to a head in the 1970s with Lindsell's books, notably *The Battle for the Bible* (Lindsell, 1976), followed in 1978 by the *International Council on Biblical Inerrancy* which met in Chicago in October 1978.

The International Council on Biblical Inerrancy

The *Chicago Statement on Biblical Inerrancy* was signed by nearly 300 noted evangelical scholars, including James Boice, Norman L. Geisler, Carl F. H. Henry, Harold Lindsell, John W Montgomery, J. I. Packer, and Francis Schaeffer. Most of these accepted geological ages and Packer accepted evolution.

Article 12 of the Chicago Statement refers to earth history:

> We affirm that Scripture in its entirety is inerrant, being free from all falsehood, fraud, or deceit.
>
> We deny that Biblical infallibility and inerrancy is limited to spiritual, religious, or redemptive themes, exclusive of assertions in the fields of history and science. We further deny that scientific hypotheses about earth history may be properly used to overturn the teaching of Scripture on creation and flood.

In 1982 the council met again to discuss the hermeneutics of the Bible and produce a second report—the *Chicago Statement on Biblical Hermeneutics.* This contained twenty-five articles and the twenty-second dealt with the early chapters of Genesis.

WE AFFIRM that Genesis 1–11 is factual, as is the rest of the book.

WE DENY that the teachings of Genesis 1–11 are mythical and that scientific hypotheses about earth history or the origin of humanity may be invoked to overthrow what Scripture teaches about creation.

Since the historicity and the scientific accuracy of the early chapters of the Bible have come under severe attack it is important to apply the "literal" hermeneutic espoused (Article XV) to this question. The result was a recognition of the factual nature of the account of the creation of the universe, all living things, the special creation of man, the Fall, and the Flood. These accounts are all factual, that is, they are about space-time events which actually happened as reported in the book of Genesis (see Article XIV).

The article left open the question of the age of the earth on which there is no unanimity among evangelicals and which was beyond the purview of this conference. There was, however, complete agreement on denying that Genesis is mythological or unhistorical. Likewise, the use of the term "creation" was meant to exclude the belief in macro-evolution, whether of the atheistic or theistic varieties.

This affirmed the factuality of Genesis and denied that it could be either mythical or that "scientific hypotheses" could "overthrow what Scripture teaches about creation." The article seems to point to a literal Genesis, but Norman Geisler made it clear in his commentary that "The article left open the question of the age of the earth on which there is no unanimity among evangelicals" but "the use of the term 'creation' was to exclude macro-evolution." In the volume *Hermeneutics, Inerrancy and the Bible* produced for the Council, Walter Bradley and Roger Olsen claimed that Progressive Creation was the best combination of "the biblical and scientific particulars," thus giving semiofficial support to the refusal to espouse YEC.[5] However responding to Bradley and Olsen, Henry Morris called progressive creation an "old time-worn, compromising hermeneutical system" and refused to sign the declaration.

Thus on early Genesis the 1982 Council failed to resolve anything, as evolution was stated to be contrary to inerrancy but old-earth ideas were not excluded. This, in itself, marked a considerable hardening of the definition of inerrancy from that of Warfield a century earlier and also James Packer, who wrote a classic defense of inerrancy in the 1950s. Though the statement was equivocal, it undermined those who accepted evolution

and gave YECs confidence. Since then, if not before, YECs have insisted that the only right view of the Bible is inerrancy and inerrancy implies YEC. This is a powerful debating tactic and gives immediate advantage to the YEC, who can then charge any "Old Earther" as "Liberal"

Inerrancy Today

In the United States, the majority of evangelicals hold to inerrancy today, which makes the total acceptance of geology and evolution extremely difficult.[6] Where the Chicago Statements are regarded as authoritative, evolution is out. There are some evangelicals who hold to both evolution and inerrancy but that goes against the general opinion. For many evangelicals, to accept evolution is to reject inerrancy and thus to have a weakened belief in the Bible. This outlook is increasingly being accepted throughout the world, including Britain.

Definitions of inerrancy vary considerably. At the popular level inerrancy is assumed to imply literalism and a young earth. Thus scientific evangelicals may reject inerrancy for scientific reasons, being oblivious of more nuanced treatments. Among those who have gone through Evangelical seminaries, there is a considerable range of opinion but most will recognize the literary nature of the Bible. Even so, seminary professors may disturb students' notions of inerrancy by pointing out that there are many grammatical errors in the Greek of Paul's letters. After all, if the Bible is inerrant, the grammar must be also![7]

Today Inerrancy is held in a variety of forms. Some evangelicals continue in the tradition of Hodge and Warfield, which recognizes the variety of literary forms in the Bible and accept evolution. These include both theologians like Jim Packer and John Stott and scientists like Oliver Barclay and Denis Alexander. This is not by shared by many YECs who argue that acceptance of an old earth is "theological compromise" as it destroys inerrancy. As the *correct* hermeneutic of the Bible is to read in it a literal way this means that Flood must be universal and that Creation took place in six 24-hour days. However as no one can deny that the earth is spherical, then all references in the Bible to the shape of the earth must be inerrant. Thus every biblical passage in the Old Testament, which can possibly be taken to imply a flat earth, *must* be taken to support the earth's sphericity, or else inerrancy would be denied. Thus the natural meaning of passages like Genesis 1 vs 6–8, Exodus 20 vs 4, and Isaiah 40 vs 22 is ignored (see below) and taken to support sphericity contrary to the usage of Hebrew words. This is the logical conclusion of attempting to extend inerrancy to "scientific" matters and not recognizing that the Biblical writers were limited to the "scientific" understanding of their day and in the words of Calvin "Moses wrote in a popular style" for "the unlearned and rude as of the learned."

Because of these types of questions, some evangelicals avoid the use of inerrancy and prefer to speak of the supreme authority of Scripture. Others simply reject inerrancy altogether and happily affirm that the Bible though authoritative contains minor errors. That in turn elicits opposition from those who adopt the extremer forms of inerrancy and so the internecine conflict between evangelicals continues. Because of the voices for inerrancy, especially in America, the large number of evangelicals who either reject it are often not heard. Howard Marshall, professor emeritus of theology at the University of Aberdeen, discussed inerrancy at length and rejected it as unhelpful as it tends to make people expect the Bible to be "literally" true. (Marshall 1982, p. 49ff) Gerald Bray, a British scholar at Beeson divinity school in Birmingham, Alabama, has similar reservations (Bray, 1996, pp. 539–563). It is also true to say that most evangelicals in Britain reject or avoid inerrancy. Risking oversimplification evangelicals can be divided into three groups:

1. Those who do not accept inerrancy and prefer to speak of the trustworthiness of scripture. This includes a large minority of evangelical scholars, who would not be found in the most conservative schools.
2. Those who accept a nuanced form of inerrancy and allow for *accommodation.* This would include most evangelical scholars in more conservative schools.
3. Those whose inerrancy is decidedly not nuanced and dependent on the scientific accuracy of the Bible. This is the stance supported by colleges affiliated to TRACS and includes many "popular" evangelicals.

The most strident defenders of Inerrancy come from the third group, who as Noll says often have "lush but eccentric interpretations" (Noll, 1994). Some will be discussed in the chapter on Young Earth Creationism. They are probably the largest group in the United States. It is important to realize the differences among evangelicals to understand the "biblical" reasons evangelicals have for adopting particular attitudes to science.

The whole subject of inerrancy may seem to a side-show on evangelicals and science, but it is crucial in the understanding of controversies over evolution, issues of medical ethics (like stem cell research) and the nature of what it is to be human and whether a body–soul dichotomy is tenable. It is surely no accident that the earliest attempts at ID from Olsen and Bradley came shortly after their attempts to harmonize the Chicago Statement, which tentatively allowed an old earth but not evolution.

THE BIBLE AND A FLAT EARTH; A CASE STUDY IN EXEGESIS ON DOES THE BIBLE TEACH SCIENCE?

I have never met a flat-earther but some Afrikaner farmers in the remoter parts of South Africa were in the 1970s. My source was a fellow geologist,

Dr. Piet Joubert, also an Afrikaner, who regaled friends about it. When local farmers asked about his work, Piet happened to mention that the earth was spherical, to which they retorted, "Ek is plat!" About the same time other geologists working in Zimbabwe told their African laborers that men had walked on the moon and were told, "Yes, baas, Neil Armstrong and Edwin Aldrin." With these exceptions there can be few who accept that the world is flat and hence it is a good example to discuss the Bible in relation to science.

Before doing so, the myth of a flat earth must be dispelled. Most people in the West believe that until the time of Columbus most Europeans believed in a flat earth and it was the voyages of Columbus and Magellan, which disproved a flat earth around about 1,500 and is still repeated by some (Moore, 2002, p. 148). It is one of the instances where the Church opposed science and Andrew White waxes eloquent on the subject. The myth of the flat earth was wonderfully exploded by J. B. Russell (Russell, 1991), who demonstrated that few theologians believed in a flat earth in contrast to the majority like Augustine and Aquinas who took the earth's sphericity for granted.

However the cosmogony of the Bible tells a very different story. The New Testament makes no clear reference to cosmogony but Rudolf Bultmann claimed that it teaches a three-decker universe, but this cannot be substantiated. In his classic argument presented in 1941 Bultmann in *New Testament and Mythology* (Bultmann, 1984, pp. 1–2), the world-picture of the New Testament as something highly mythological:

> The world is like a three-storied building. In the middle is the earth; above it is heaven, below it is the subterranean world. Heaven is the dwelling-place of God . . . the lower world is hell, the place of torment.

He argued that "modern man" cannot accept Christianity without "demythologizing" the biblical world view. Though few still adhere to Bultmann's "demythologizsation," many still believe that the New Testament writers held to a flat earth. That would be highly unlikely, especially for the Greek-educated Luke and Paul, as the Greeks had demonstrated the earth's sphericity in 500 BC. It is entirely reasonable to regard the apparently mythological descriptions of "the heavens" in the Lukan and Pauline writings as metaphorical. However, it is possible that Gallilean fishermen and carpenters could have adhered to a three-decker universe. In the centuries before Christ, astronomers considered the earth to be spherical but the stars were tiny and fixed on the celestial dome. The small size of the stars is probably reflected in Matthew 24 vs 29, "and the stars will fall from heaven."

However, the Old Testament was a very different world, going back to 2000 BC.[8] The dates of the actual composition of Old Testament books are in

dispute. Many liberal scholars hold that all were written after the Exile and thus are post 500 BC, with Genesis being of a Babylonian origin. The most Conservative Evangelicals reckon that Job was written before 1500 BC, and that Moses wrote the Pentateuch in about 1450 BC. Moderate evangelicals argue that little of the Old Testament was committed to writing before 1000 BC.

The differences are more than those of theology as if the biblical books were written before 500 BC. then the authors could not have known that Greek astronomers had demonstrated the earth's sphericity, and thus would have held to the conventional beliefs of their societies, viz., that the earth was a flat disc, with the hemispherical firmament above, and the underworld below. To those who consider that the Bible will reflect the world view of the writers' day that presents no problem. But to those who hold fast to a strong form of Inerrancy, then the "science" in the Bible *must* be accurate. Thus some evangelicals argue that biblical writers believed that the earth was spherical. As Moses and Isaiah lived in the fourteenth and eighth century BC this was before the time of Plato (427–348/7 BC) when most educated Greeks began to accept that the earth was spherical.

To maintain that the Israelites believed that the earth was spherical (often with the implication that this had been revealed to them by God) it is necessary to interpret several Biblical passages contrary to their "plain and literal" meaning. Take Isaiah chapter 40 vs 22, "It is he [God] who sits above the circle of the earth, and its inhabitants are like grasshoppers." Most commentators take the word for circle *khug* to mean a flat disc or the dome of the firmament. However Mark Eastman in his article, "Science and the Bible," states:

> Despite contrary assertions, the fact of a spherical earth was clearly proclaimed in the Bible by the prophet Isaiah nearly twenty-eight centuries ago . . . "It is He who sits above the circle of the earth, and its inhabitants are like grasshoppers [etc.]" Isaiah 40:22 (NKJ). When Isaiah wrote this verse he used the Hebrew word "khug" to describe the shape of the earth. Although this word is commonly translated into the English word "circle," the literal meaning of this word is "a sphere."[9]

Jonathan Sarfati in *Refuting Evolution*, argues in a similar way, as does Henry M. Morris, who in *The Biblical Basis of Modern Science* asserts that *khug* in Isa. 40:22 often translated "circle" means a "sphere" (Morris, 1984a, pp. 245–246). All of these writers claim that the Hebrew *khug*—or *hûg* of Isaiah 40:22a means "sphericity." No biblical scholars support this; in the nineteenth century Delitzsch translated it as the "vault of heaven" which is supported by Allen in DOTTE. Arguments that the Bible teaches the earth's sphericity are to be found in many YEC writings and Web sites.[10] Sarfati also argues that Luke 17:34–36 implies that Jesus believed the earth

to be spherical, because Jesus "stated that different people on earth would experience night, morning and midday at the same time!"

This raises a fundamental question: Just how should one interpret the Bible in light of modern scientific knowledge? The YECs Nelson and Reynolds state that one should not read meanings into biblical texts that are not there in order to make them conform to modern scientific knowledge (Moreland and Reynolds, 1999). Some YECs do not follow their advice. Besides the earth's sphericity, Eastman finds references to such modern scientific knowledge as ocean currents (Isaiah 43:16; Psalm 8:8), elementary particles (Hebrew 11:3), and nuclear explosions (2 Peter 3:10). Such fanciful eisegesis as this is matched by Morris' readings into the text of Job, whom he credits with knowledge of the hydrological cycle (28:24–27), and the rotation of the earth (38:12–14). He also claimed that Job describes dinosaurs in Job 40 vs 15ff and, according to Henry Morris (Morris, 1984, pp. 356–359) from Job chap. 41 vs 20–21 some dinosaurs were like dragons and breathed fire. No one can fault their devotion to the Bible, but by reading modern science *into* the Bible, they make mockery of it by ignoring the historical context of the Bible.

Ernest Lucas emphasizes that the thought world of the Ancient Near East of Babylon and Egypt demonstrates that the Cosmology of the Hebrews was similar to that of its neighbors, with some kind of flat earth and heavens above and the underworld beneath (Alexander and Baker, 2003, p. 137). This is manifest in Exodus 20 vs 4, which of the "heaven above, or that is in the earth beneath or that is in the water under the earth." This is similar to Egyptian cosmology (Alexander and Baker, 2003, p. 134). In parts of the Old Testament there are still references to Babylonian and Egyptian mythology associated with their cosmology.

There have been many interpretations of the *firmament* of Genesis chap. I vs 8. Calvin writing in his commentary on Genesis in 1553 claimed that this was a description of clouds carrying rain, no doubt because although no Copernican he was a well-informed Renaissance man and knew that the heavens or the *firmament* was not a solid dome. During the next three centuries most commentators evaded the question of what the firmament was, partly because Copernicanism was unquestioned. With the rise of more detailed biblical studies in the nineteenth century and research into other ANE cultures, scholars began to see that this fitted into typical Egyptian cosmogony. Conservative exegetes objected, as did Delitzsch in his commentary of 1852 (Keil and Delitzsch E. T., nd, p. 53) presumably to allow Genesis not to contradict modern astronomy. He also argued for six Solar Days and a global flood and questioned the reliability of geology. Several decades later he took a far more open line in a later commentary on Genesis.

Many recent commentators ignore the question, but Paul Seely, a graduate of Westminster Theological Seminary, has demonstrated conclusively that the firmament was a solid dome (Seely, 1991) and this has been incorporated into the commentaries by Walton and Currid.

To conclude then, the writers of the Old Testament clearly accepted a flat earth as part of the common ANE cosmogony. This is of no concern to many Christians, who accept that the writers were children of their time. However if Inerrancy extends to history and science, then it is inevitable that some Inerrantists would feel obliged to demonstrate that the Bible taught a spherical earth. The question of a flat earth in the Old Testament highlights the problems some evangelicals face in relation to science and the Bible.

CONCLUSION

This chapter has looked briefly at how evangelicals have related science and scripture in the last three centuries and the main issues today, which are centered on the interpretation of Genesis. The "scientific reliability" of the Bible is of much greater concern to those who hold to Inerrancy, and it is difficult not to conclude that the emphasis on a strict inerrancy during the last thirty years has encouraged a more literal hermeneutic and an inclination to YEC. As we now consider the relationship of evangelicals and science since 1730, it is important to keep the various evangelical understandings of scripture in mind.

NOTES

1. *Génie du Christianisme*, a Catholic literary tour-de-force re-acting against the French Revolution. He rejected Buffon's long timescale commenting, "Dieu a dû creér, et sans doute créér le monde avec toutes les marques de vétusté." This can be translated "created the world with all the marks of antiquity and decay;" thus the world may *appear* ancient but *is* actually a recent creation. Gosse took this up in 1857.

2. There is no detailed study of either Chalmers' Gap Theory or subsequent developments. My suspicion is that others anticipated Chalmers and the documentary evidence is somewhere in Scotland.

3. Samuel Wilberforce owned a copy which is now privately owned in Australia.

4. The Greek of the New Testament is not classical Greek but a popular or *koine* Greek.

5. We shall come across Bradley and Olsen again in Chapter 7 as pioneers of Intelligent Design.

6. This is because YECs describe conventional geology as evolutionary uniformitarianism. A knowledge of the history of geology will show how that is wrong.

7. I do not joke, as this has happened recently in a theological seminary in Britain.

8. The more liberal like van Seters and Thompson doubt whether the Old Testament is historical in any sense. There is variation among Evangelicals as the more conservative insist on a historicity which demands the reliability of the vast ages of the Patriarchs of Genesis 4–11. The less conservative like Wenham and Lucas still insist on the basic historicity of the stories of Abraham, Isaac, Jacob, and Joseph in Genesis.

9. www.marshill.org/Apologetics%20Pages/science_and_the_Bible.htm

10. "The Bible and the Earth's Sphericity" posted on the Creation Research Society web site: www.creationresearch. org/creation_matters/ *Astronomy and the Bible*, www.answersingenesis.org/docs/400.asp.