

# Evangelicals and Science



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# Introduction

“Evangelicals and Science!” The very thought will make many today smile at the sheer incongruity of it. After all evangelicals were the cause of the Scopes trial and the whole round of “monkey” legislation in almost every state in the United States. Many readers, like me, will remember that scene in *Inherit the Wind* where the local Tennessee fundamentalists were singing “The Old Time Religion.” This has etched the perception that evangelicals are inherently hostile to science in the minds of many for the last half-century. Now there is some truth in this portrayal and I have been on the receiving end from latter day exemplars, who regard me as a heretic and compromiser, but the evangelicals have had a long and rich interaction with science, sometimes glorious and sometimes ignominious, and have produced some fine scientists. I prefer the tradition of Adam Sedgwick, in whose footsteps I have walked both literally and metaphorically (see Chapter 4).

The purpose of this volume is first, to give an overview of the way evangelicals have interacted with science since the start of the Evangelical Revival in the 1730s and this accounts for Chapters 3 through to 6. Second, it aims to analyze how the evangelicals of today interact with science and to put the controversy of creationism into its proper context and to avoid simplistic dismissals. Third, it aims to understand how and why evangelicals interact with science because of their various theologies. Fourth, it takes the two ethical issues of the environment and bioethics to see how evangelicals interact with aspects of science in the political arena.

The whole aspect of evangelicals and science is frequently misunderstood as it is assumed that evangelicals are entirely literalist and thus this

book gives a wider perspective on that from both a historical and contemporary perspective. Of particular importance is that I demonstrate that with minor exceptions, and I mean minor, most evangelicals did not oppose science until the early twentieth century. It does, of course, explode the myth that there was virtual warfare between geology and Genesis in the early nineteenth century as I do over Sedgwick and others in Chapter 4. This continues my contribution to the *Geological Society of London Special Publication "Myth and Geology"* (Roberts, 2007), where I challenge the received account that the church was literalist over Genesis until 1800 and thus had serious problems over geological time. This myth renders many historical understandings of both evangelicals and science (and also Christianity in general and science) to be basically wrong, whether by evangelical creationists or secularists.

I also emphasize that the rise of creationism in the twentieth century is not a throwback to the seventeenth or eighteenth centuries, but rather an innovation caused by the synergism between the early twentieth-century fundamentalism, which had a strong anti-intellectual component, and new ideas of "Flood Geology" coming from McCready Price and the Seventh Day Adventists. Despite Numbers' excellent work *The Creationists*, many still hold to this.

Consequently the historical section is almost teleological in that it does not discuss every aspect of evangelicals and science from 1730 until now, but rather focuses on that which is important today, that is creationism. I can hear criticisms that I have left out this or that and that I should have given more space to miracles and evangelical scientists working in physics, chemistry, or astronomy. Of course, they are important, but when faced with a limitation on space, an author has either to deal with everything in extreme brevity or some things in depth. I have chosen the latter course, and have sought to select those, which seem to be more relevant today than those which may be of interest historically. I have not attempted to give a catalogue and chronology of scientific evangelicals in the last quarter of a millennium.

My overriding purpose is to put evangelicals and science *today* into historical and contemporary context and it is written both for the student, who may be studying the history of science or contemporary science studies, for clergy of all stripes, for educationalists, for the scientific community at large as well as the general reader.

I thus start with the earliest evangelicals in the 1730s and gradually move forward to the present day and focus mostly on British and American evangelicals. The book reflects my life-long interest in both the history of science in relation to evangelicalism and creationism, which began when I visited the evangelical study center at L'Abri in Switzerland in 1971. This, along with a historical study on Darwin's geology, has been my main

academic interest during my ministry in Anglican parishes. I have also been to many creationist meetings and had the good fortune to attend the conference *Intelligent Design and its Critics* in Wisconsin in June 2000, when I met many leading Intelligent Designers and some of their critics.

Much of the book is not particularly original and has been said elsewhere, but my section in Chapter 4 on evangelicals and geology and “anti-geology” has come from my research into that period and presents evangelicals in a new light. An integral part of my research was deciphering the Welsh geological notebooks of Sedgwick, Buckland, and Sedgwick’s pupil Darwin and spending many days walking the Welsh hills in all weathers retracing their steps. On one particular day in 1999, it took me over ten hours to retrace Sedgwick’s route in the Carneddau, covering twenty miles of mountainous terrain. Above all, this book reflects nearly four decades of being personally involved in these issues and brings together my theological and scientific interests.

As this book deals with evangelicals both in history and today, the structure reflects this.

- Chapter 1 gives both a historical overview from the 1730s and contemporary snapshot of evangelicals in their sheer diversity from the most separatist fundamentalist to those who are nearly as liberal as Liberal Protestants.
- Chapter 2 considers the theological concerns of evangelicals and especially the nature and interpretation of the Bible and the iconic status of Inerrancy, along with the issue of the “Curse.”
- Chapters 3 through 6 trace out evangelical attitudes to science from the beginning of the Evangelical Revival in the 1730s, to the publication of *The Genesis Flood* in 1961.
- Chapter 3 begins with a study of the conflict thesis of science and religion and how this distorts our understanding of evangelicals and science. I then deal briefly with the early years from 1730 to 1790, when evangelicals were a small group, who simply reflected the science of their day.
- Chapter 4 takes one from 1790 to 1850, which is when the evangelicals blossomed in numbers and when geology became the most popular science. Evangelicals were both in the forefront of geological research, and in the opposition to geology because of its implications on Genesis.
- Chapter 5 takes us though the heyday of evangelicalism in the late nineteenth century and the time of Darwinian controversies. It shows how evangelicals first “made peace” with Darwin and then with the rise of Fundamentalism broke the truce and listened to voices coming from the Seventh Day Adventists.
- Chapter 6 records the decline of evangelicalism and the rise of fundamentalism with its break from intellectual Christianity and the adoption of anti-evolution culminating in the Scopes trial of 1925, putting evangelicals and science in the doldrums. Then after the war, scientific concerns of evangelicals revived with the

American Scientific Association in the United States and the Research Scientists Christian Fellowship in Britain, but “creationism” was also quietly growing.

- The next three chapters bring us to today, with its unique mix of “Creationism” in all its forms and also evangelicals in the mainstream of science.
- Chapter 7 discusses the origin and influence of “creationism” both Young Earth Creationism (YEC) and Intelligent Design (ID) and their critics.
- Chapter 8 brings out the sheer diversity of today’s evangelicals and science, and considers both evangelical scientists of all shades and how evangelicals at large, whether laity, clergy, or theologians understand science.
- Chapter 9 considers some of the ethical issues of science and how evangelicals deal with them. These are the environment (and global warming) and bioethics with attitudes to GM crops and stem cell research, over which evangelicals are sharply divided.
- Chapter 10 briefly sums up the book and attempts to crystal-gaze into the future, when evangelicals will be more prevalent in the Third World than they are today.

Evangelicals are split into three overlapping camps concerning science as described in Chapter 8. These are Young Earth Creationism, Intelligent Design and what is often called Theistic Evolution. Sometimes these co-exist, whether through desire or necessity, but at times this can lead to internecine warfare. The perception an individual will have of evangelicals and science will often depend on what type of attitude to science they have met among evangelicals, which varies from country to country, place to place and church to church.

I am very aware that my selectivity will not appeal to all informed readers, but I ask them to bear with me, particularly over my many omissions. I hope that through my recommended sources readers can read up for themselves what I have omitted. As McGrath wrote of himself in his writing of his massive three-volume work that he played to his strengths—biochemistry and historical theology—I have also done so and mine are geology and the history of science, and the former is often neglected. Geology and its history in relation to the Christian faith are essential to get a right perspective as so often it is glibly believed that in the early nineteenth century only liberal Christians accepted geology and when Darwin published *The Origin of Species* most Christians, whether educated or not, still accepted a six-day creation, whereas most educated Christians did not. To get this wrong, is to completely misunderstand the relationship of evangelicals and science and perpetuate the myth that good Bible-believers must accept Genesis literally.

I cannot claim to be a detached and disinterested outside observer on evangelicals, but then that creature does not exist. In one sense, the genesis of this book goes back thirty-six years when I first came across YEC at

Francis Schaeffer's centre L'Abri in Switzerland, where I first had to consider the relationship of evangelicals with science. I was originally helped by the Rev. Bob Ferris, now a minister of the Southern Baptist Church, and his wife Sue, who had studied under Russell Mixer. I was later given a second impetus when Canon Eric Jenkins invited me to his Science and Religion group in Liverpool Diocese in the early 1980s, which in turn led me to involvement with groups like the *Science and Religion Forum*, *Society of Ordained Scientists* and *Christians in Science*. Were it not for Eric's encouragement and friendship, this book would never have been written, but as he died in November 2006 he will not see it.

It is difficult to give all acknowledgments but I would single out the historians of science Jim Moore, Jim Secord, and John Brooke. Among clerical scientists I have already mentioned Eric Jenkins and now mention Arthur Peacocke, who passed away the same month as Eric. For many years I have benefited from membership of *Christians in Science* and have had particular help from Oliver Barclay, Sam (R.J.) Berry, Paul Marston and Bennet McInnes. In 2000 Angus Menuge made me very welcome at Wisconsin. I have benefited from the help of members of the *American Scientific Association*, especially Ted Davies, and Jack Haas, who made me so welcome at the ASA conference at Boston in 2001. My membership of HOGG (the History Of Geology Group of the Geological Society of London) has helped to literally ground my historical study, especially the one who welcomed me as a "bloody clergyman." John McKeown of the John Ray Initiative gave me a copy of a paper he gave on the environment, which has been invaluable. Most of my research has been done on a shoestring but over the years I have received small grants from the dioceses of Liverpool, St Asaph and Blackburn. I also express my appreciation to Kevin Downing, who has tried to keep me to deadlines and Richard Olson, the editor of this series.

And, finally, I give thanks to my wife, Andrea, who delights to refer to all I do as my "creationist rubbish" and now hopes that the study will regain some order and tidiness.

November 2007

Michael Roberts

## Chapter 8



# Evangelicals and Science Today

Because of the high visibility of Creationism, many, whether liberal Christians, atheists, or many scientists, often consider that all evangelicals are creationist. The media, left or right, often report such issues in a simplistic way. In the United States and the third world, many would assume that to be a real evangelical one must be YEC, as that is as the perceived logic of biblical inerrancy. Since the rise of YEC after 1961 there is some truth in this, but it does not do justice to the variety of Evangelicalism and science. From my historical survey, in previous centuries most evangelicals accepted mainstream science, whether the scientifically competent like Dana and Sedgwick or preachers like Cumming and Close. The anti-geologists, Seventh Day Adventists, and mid-Western Germanic Lutherans made little impact before 1900. In the first half of the twentieth century Price's Flood Geology began to make inroads into American Evangelicalism but only became a powerful force after the publication of *The Genesis Flood* in 1961. Since then there has been conflict between evangelicals who accept mainstream science and those who favor YEC or, more recently, Intelligent Design (ID).

As the center of the evangelical world is America, their situation tends to influence all world Evangelicalism, both in reality and perception. Many, especially evangelicals, would prefer to consider Evangelicalism and science in its purely religious aspects, but in America both Evangelicalism and science are highly politicized. Thus one cannot ignore the Religious Right and its understanding of science, especially evolution, the environment, and medical research. Closely related, overlapping, are right-wing Republican attitudes to science well chronicled in Chris Mooney's *The*



*Republican War on Science* (Mooney, 2005). Whereas many American evangelicals do not belong to the Religious Right, many do, like Pat Robertson and Jerry Falwell, and these have the most bucks. Robertson called down God's judgment on Dover, Pennsylvania, after the ruling against ID in December 2005. In the United States it is not possible to separate Republican hostility to science as in global warming, the WHO report on obesity, and stem cell research from YEC or ID. The Discovery Institute's and Bush's statements on evolution are good examples. Outside America this political aspect scarcely exists and so evangelical attitudes on science do not (yet) have political clout. Much of this is because there are relatively few as, for example, in Britain about 5 percent of the population are evangelical compared to 30 percent in the United States. However some groups, like *The Christian Institute* and *truthinscience*, are seeking to develop political clout.

Over the last forty years the evangelicals have come to prominence in many parts of the world, and, with Pentecostals, are the fastest growing constituency of Christianity. There have been two evangelical presidents, Jimmy Carter and George Bush, who take diametrically opposed views on evolution. Their prominence and politicization in the United States is well known, as is the result of conflict. Much of this conflict is over science. Some evangelicals see this as part of the culture wars and an inevitable result of a biblical world view clashing with the secular.

However there is no one understanding of science among evangelicals, but rather a kaleidoscopic variety of opinions ranging from extreme YEC to being almost a theological liberal. The diverse opinions grade into each other. To illustrate the gradation of opinion, Eugenie Scott and Alan Gishlick (Scott, 2004, p. 57) attempted to categorize reactions to evolution and religion as a *continuum* (with ID running through three to eight):

- Flat Earthers
- Geocentrism
- Young Earth Creationists
- Gap Creationism
- Day-Age Creationism
- Progressive Creationism
- Evolutionary Creationism
- Theistic evolutionism (spectrum from evangelical to liberal or catholic in theology)
- Agnostic Evolutionism
- Materialist Evolutionism

Scott stressed a gradation of views rather than distinct categories. If anything, it is a classification of a "splitter" rather than a "lumper" as it

brings out the variety of evangelical views. Evangelicals are to be found in the first eight categories. Mainstream “liberal” Protestants and Anglicans are almost entirely theistic evolutionists, as are most Roman Catholics. However the few evangelical flat-earthers can be ignored. I would prefer to divide evangelical attitudes into three groups, which merge into each other. (I omit ID, because this forms a subset, which straddles the three, though ID tends to appeal more to Old Earth Creationists. Some TEs do support ID, as does the Roman Catholic, Michael Behe, and some YECs support ID, as do Paul Nelson and Nancy Pearcey. Some YECs, for example those from AIG, have scant respect for ID.) These three categories are:

1. Young Earth Creationism
2. Old Earth Creationism (accept geology and cosmology)
3. Theistic Evolutionism (accept evolution as well)

It is not possible to be precise on what proportion hold each of the three, as there have been no rigorous surveys. Surveys of the American population indicate that about half the nation rejects evolution and favors a young earth. From my knowledge of American evangelicals I suspect this reflects confusion in the face of a questionnaire rather than conviction. In the absence of a thorough survey I can give only my impression. About 40 percent of Americans are loosely evangelical and I would suggest that over half of those would respond by favoring a YEC position, with varying dogmatism. In Britain evangelicals number a few percent in a nation where less than 10 percent are churchgoers. My impression is that a minority of British evangelicals are YEC but this proportion is growing rapidly, including in the Church of England. In many ways these are irrelevant figures as most evangelicals are simply not interested in scientific matters. Many will reflect back what they had heard in the pulpit. Among evangelicals non-YECs are very much the silent majority in the UK and may be a large minority in the United States.

The attitude of evangelicals to science also varies according to geographical location and denominational history. In Chapter 5 I expounded how David Livingstone discussed the importance of place over the reception of Darwinism and how that can affect the response of those with almost identical theology. To my knowledge there has been no comparable study on more recent attitudes of evangelicals to science and particularly on evolution. The importance of geography may be illustrated by an evangelical shibboleth—drink. Among American evangelicals, especially those of a Holiness or Fundamentalist tradition, alcohol is taboo. That is less so for evangelicals of Lutheran or Dutch Calvinist roots or Anglicans. Among

the British, Anglicans are least liable to be against drink, but those from independent churches more so. French evangelicals are typically French and happily drink wine and water it down for children. It does not take a genius to work out why America had prohibition in the 30s, the Temperance movement was strong in Britain in the Victorian era, and France is a major wine-growing country.

There have been no systematic studies of how evangelicals have responded to science either in particular traditions or denominations or places. A few general observations are in order. American evangelicals are far more likely to accept either YEC or OEC/ID than their coreligionists in Britain, Canada, Australia, or New Zealand. Thus Archbishop Jensen of Sydney, who is regarded as the most Fundamentalist of Anglicans, explicitly holds to an OEC, if not a TE, position, which is marked contrast to many church leaders in the United States. The reason for this can be summed up in the one word "Scopes" as this epitomizes the fundamentalist and antievolutionary course American evangelicals took in the 1920s. Britain and the Empire did not follow suit, but things are a-changing.

The majority of evangelicals throughout the world are hostile to evolution, coupled with a naïve appeal to Baconian empirical thought. Often this is not explicit, but even among evangelicals who would consider themselves more "liberal" there is often a suspicion that evolution has atheistic overtones and an unexpressed feeling that "We're no kin of the monkey." Among scientists who profess Evangelicalism there is a disproportionate number of engineers, physical, and computer scientists rather than biologists and geologists. Those who are bioscientists tend to be biochemists or biophysicists rather than evolutionary biologists. The ordered world of a biophysics or biochemistry laboratory tends not to deal with the messiness of biological forms in the field. One reason for opposition to evolution is the reductionism of some neo-Darwinists, especially Dawkins.

As well as considering how evangelicals respond to science one also needs to consider the number and variety of scientists, who are openly evangelical. There is no survey or register of them, but numbers are members of such groups as the American Scientific Association (ASA), Christians in Science (CIS), or equivalent groups in Australia and Canada, as well as those in YEC groups. Membership lists give some indication of the number and variety. Evangelical scientists are numerous with some outstanding scientists.

In Britain many evangelical scientists are members of *Christians in Science* (<http://www.cis.org.uk/>), which has some 400 members. Most have professional appointments, with a number of university professors (note, in Britain most university teachers are not professors but lecturers), as well as lecturers and scientists working for industry or research establishments. At least six are Fellows of the Royal Society (out of 1,300 fellows this is a

low proportion), one Fellow of the British Academy, and at least three have been knighted for their services to science. A snapshot of some of the leading evangelical scientists of the early 90s may be found in *Real Science, Real Faith* (Berry, 1991). This showed how seventeen evangelical scientists considered their faith and their science. Almost all were TE, which is the dominant outlook of *Christians in Science* (and the RSCF before it). Most have made major contributions to their fields. Denominationally they included Anglicans, mainstream nonconformist and independent evangelicals.

Among the “leading lights” of *Christians in Science* are several significant environmentalists, who will be discussed in the next chapter, Sir John Houghton, R. J. Berry, and Sir Ghillean Prance. Other notables are Martin Bott and Bob White, both geophysicists, Malcolm Jeeves, a psychologist, David Livingstone, a historian of science, Derek Burke, geneticist, and Sir Brian Heap a biochemist and former Vice President of the Royal Society. To these may be added many more, who are almost as distinguished. From a previous generation could be added Donald MacKay and Sir Robert Boyd. All of these, and the many I failed to mention, have made good contributions to scientific research in their own fields and some have published on the relationship of science and religion.

So far I have described some who have achieved distinction and thus will be over fifty. Today, if anything there are more evangelical scientists of a younger generation, who are at present developing their careers. What has changed is the increase of YECs who hold university positions in science or engineering and who tend to be in the *Biblical Creation Society* rather than *Christians in Science*. Examples include Andy McIntosh, Phillip Burgess, and David Tyler, each of who have published YEC books, which sell well among evangelicals.

The situation in the United States tends to be similar. The American Scientific Association ([www.asa3.org](http://www.asa3.org)) has long attempted to be an umbrella group for evangelical scientists, and deliberately avoid making any policy statement on any aspect of science. We have already seen that over the shibboleth of evolution, as controversy has always been near, especially in the sixties when some left the ASA to form the Creation Research Society. However some YECs stayed, but the ASA has a more conservative complexion than the CIS, and their journal has some YEC articles. One competent observer, Ted Davies, reckons that 35–50 percent of ASA members are sympathetic to ID, which is a far higher proportion than their British counterparts. However, my observation is that ID is gaining ground among evangelicals in Britain.

Despite the far larger numbers in the ASA, there seems to be a lower proportion of top-ranking evangelical scientists than in Britain. These include Henry Schaefer, the Graham Perdue Professor of Chemistry at the University of Georgia, who was nominated for the Nobel Prize in 1994, and

was cited for the period 1981–1997 as the sixth most-quoted chemist in the world. He is closely associated with ID and the Discovery Institute. Very different is Dr Francis Collins, the present Director of the Genome Project, a thoroughgoing evolutionist. Another is Owen Gingerich of the Harvard-Smithsonian Center for Astrophysics, a historian of science, whose life's work on Copernicus resulted in the popular science book *The Book Nobody Read* (Gingerich, 2006)

Charles Townes (b. 1915), who was awarded the Nobel Prize in physics in 1964 for his work on the maser and laser, is very sympathetic to evangelicals and on the advisory council of the ASA. In 1953, due partly to what Townes called a "revelation" experienced on a park bench, he invented the maser (Microwave Amplification by Stimulated Emission). By building on this work, he achieved similar amplification using visible light, resulting in the laser. He had chairs at Columbia, MIT, and Berkeley and was awarded the Templeton prize in religion in March 2005. After that he described himself, 'I'm a Protestant Christian, I would say a very progressive one. This has different meanings for different people. But I'm quite open minded and willing to consider all kinds of new ideas and to look at new things. At the same time it has a very deep meaning for me: I feel the presence of God. I feel it in my own life as a spirit that is somehow with me all the time.'

Several other ASA members have achieved distinction in science, for example, Richard Bube in materials science, especially photovoltaics, Ian Hutchinson in plasma physics, Ted Davis in the history of science, who is an authority on Robert Boyle, Fred Brooks in computer science, David Myers in psychology, and Cal de Wit and Richard Wright on the environment. Undoubtedly this list is incomplete, and some readers will be aware of some serious omissions on my part. It would be tedious to itemize every competent evangelical scientist working in a laboratory or college or university.

Since 1990 ID has made a considerable impact in America and most recent attempts to alter the teaching of evolution in schools have had considerable input from ID. Most of the leading lights are evangelical. A vast amount of ID literature has been published, but this is largely in the religious sphere or in philosophy. So far nothing to my knowledge has been published in peer-reviewed journals except for Meyer's notorious paper on the so-called Cambrian explosion in the *Proceedings of the Biological Society of Washington*, edited by the baraminologist Sternberg. There are questions whether the paper was properly peer-reviewed. (Numbers, 2006, p. 390 for references).

YEC has a tremendous following in America and though it is largely a grassroots movement has attracted a small but influential number of scientists. They tend to be engineers or teachers in Fundamentalist colleges, but

count Raymond Damadian, one of the founders of MRI, among their number. YEC has received almost total rejection from the scientific community, but some support from Republican administrations and presidents.

However there are a large number of evangelical scientists in all echelons of scientific endeavor, whether in education from high school to university, or in industry. Many have Ph.D.s and are competent in their fields. Numbers teach science in evangelical liberal arts colleges in North America, where it is necessary to be both evangelical and scientifically qualified. At some, as at Liberty University, Cedarville, Bryan College, Bob Jones University, and others, it is mandatory to believe in a six-day creation, but others, such as Wheaton College, Illinois, Calvin College, Messiah College, are not so strict. What is taught in evangelical colleges varies tremendously. This will not be apparent in physics, chemistry, and computer science, but some colleges teach Biological and earth sciences from a young earth perspective. A recent survey of *Answers in Genesis* has shown that many colleges simply teach mainstream science accommodating those “billions of years.”

If we look beyond Britain and the United States, we will find similar, but smaller, organizations in Canada (Canadian Scientific and Christian Affiliation [CSCA]) and Australia (Institute for the Study of Christianity in an Age of Science and Technology [ISCAST]), whose members exhibit a similar range of scientific expertise. These four associations (ASA, CIS, CSCA, and ISCAST) for evangelical scientists have a common purpose, operate in similar ways and work together. A prospective member has to sign a basic “Statement of Faith” acknowledging the authority of the Bible, the Trinity, and the person of Christ. Unlike YEC organizations little is done to enforce this, so that in the ASA a few “unbelievers” are members. Further there is a wide range of membership from YEC to moderately liberal theological views. However two groups of Christians tend not to be members. The first are liberal Christians, who in the United States would gravitate to the *Institute on Religion in an Age of Science* and in Britain would opt for the *Science and Religion Forum* or the *Society of Ordained Scientists*, though these include evangelicals. The second are YECs, who object the indifference or hostility to YEC from these organizations. Each of these does have YEC members, but many choose to belong to their own organizations. Several YEC members of the ASA, including Henry Morris, left to found the *Creation Research Society* in 1963. YEC members of *Christians in Science* have long been unhappy with the committee for failing to support them and some left after the annual CIS conference in 1992, because the tenor of the papers was anti-YEC.

Each organization produces a journal. The CIS, in conjunction with the Victoria Institute (see Chapter 5), have jointly published *Science and Christian Belief* (<http://www.scienceandchristianbelief.org>) since 1989. This

journal has a rigorous peer-reviewing system. It is not sectarianly evangelical, as it has published articles by Arthur Peacocke, John Haught, Simon Conway Morris, and responses by Richard Dawkins. Its ethos is of open Evangelicalism and though the consensus of articles probably represents the sponsoring bodies, individual articles may not. The ASA journal, *Perspectives on Science and Faith* (formerly *Journal of the American Scientific Affiliation*) has been published since the 1940s and also has peer-reviewing.

The two North Atlantic journals publish articles, short contributions and book reviews on the whole range of science and faith issues. Some volumes focus on particular topics and over the years deal with the whole range of science and faith issues such as the environment, cosmology, genetic engineering, ID and of course, the ever present YEC. The last topic frequently gets short shrift. The ASA and CIS also hold annual national conferences along with more local regional ones. Every decade a joint ASA/CIS conference is held in Britain. Along with all the formal activities these organizations act as a support group, especially for younger scientists.

In 2005 two members of CIS (Denys Alexander and Bob White), who are science fellows at St. Edmunds College, Cambridge, founded the Faraday Institute with funding from the John Templeton Foundation to explore science and religion at depth. Since 2006 they put on many courses drawing on competent scientists throughout the world and attracting students from Muslim countries as well. The basis is a rigorous academic approach within a broad evangelical framework. Some evangelicals would say too broad.

This brief discussion should demonstrate that one cannot argue that cannot be an evangelical and a leading scientist.

## THE DIVERSITY OF EVANGELICALS ON SCIENCE

By now, it should be clear that evangelicals take a wide variety of outlooks on science, which defies clear description and classification. We are liable to get different answers from evangelical scientists, clergy, and laity. Part of the problem is that it is rare for someone to be well versed in both science and theology. Many evangelical scientists are very competent in their field, but are only vaguely aware of other sciences and their theological understanding may not have progressed beyond teenage Sunday school.<sup>1</sup> Many clergy have no science beyond high school. Science scarcely figures in seminary courses, beyond a bit of apologetics and references to Darwin (frequently inaccurate!) in church history. It is dangerous to generalize for the average evangelical layperson, but it is tempting to say that many combine the weaknesses of the evangelical scientist and the evangelical clergy! They often reflect what they are taught from the pulpit and in bible class, with little reflection. As a result understandings of the relation

of Christianity and science range across the spectrum from Young Earth Creationism to neo-orthodoxy, with a mythical Genesis and in theological thinking from the simplicities of saying “The Bible says” to highly sophisticated grappling with all issues with rigorous Biblical hermeneutics and a questioning, yet evangelical, approach to theology.

This is seen most clearly on interpretations of Genesis. There are many who interpret Genesis literally, however, I must re-iterate that, many who do so are not dogmatically committed to a Young Earth position, but uncritically reflect what they are taught. Then there are those who accept the vast time scale put forward by cosmologists and geologists and argue that Genesis does not preclude such a time scale or allow science to influence their interpretation. On this point there is often controversy as several YEC leaders, for example Ken Ham, Morris, and Jonathan Sarfati, accuse other evangelicals scientists of “compromise” and allowing science to dictate their biblical interpretation. Apart from the strict literalism of YECs, evangelicals hold a variety of interpretations summed up in decreasing conservatism as the Gap Theory, Day Age, the Framework hypothesis and the totally symbolic. Though the Gap Theory and the Day age interpretations have an illustrious heritage and were widely held before Darwin, today they are only held by the most conservative evangelicals who do not accept YEC. As a result there are often held by those who have recently “escaped” from YEC like Richard Fischer and Glenn Morton, who wish to see Genesis as historical in the strong sense, and strive to shoe-horn archaeological and paleoanthropological data into what they consider a literalist interpretation of Genesis. The absurdity is apparent when Morton attempts to prove that Noah’s Flood occurred 5.5 million years ago.

A similar divide or rather gradation is to be seen over ethical issues whether the environment or medical and genetic issues.

## TWO BOOKS

An old and time-honored way of considering science and Christianity is the doctrine of Two Books. This goes back to Francis Bacon in the early seventeenth century and up to the mid-nineteenth century provided the main method of reconciling the two. It is argued that God revealed himself in two books. The first Book is the Bible and the second is the Book of Nature. This had the great advantage of recognizing both spheres and allowing scientists a certain autonomy in their science, but it originated in a desire to keep science in its place, though clearly more than a handmaid of theology.

By the nineteenth century the doctrine of Two Books was only retained by Christian apologists for science and rejected by most scientists. The



following century only some evangelicals, who wished to steer a middle course between “creationism” and theistic evolution, used it. Today it is rarely adopted as most theistic evolutionists have “moved on” and adopted some kind of *complementarity*, and YECs wish to have science under the dominion of biblical teaching. The clearest recent exposition of the Two Books is by Hugh Ross (Ross, 1994, pp. 56–57), where he prefers to call nature the sixty-seventh book after the sixty-six books of the Bible. To a YEC this denigrates the Bible and Sarfati argues that Ross’s approach is to *compromise* (Sarfati, 2004, p. 41ff). Further strictures are given by the AIG historian Mortenson, who argued that the separation of the study of nature and of scripture by Galileo and Bacon has had dire results as it has resulted in the subordination of scripture to science (Mortenson, 2004, pp. 19–25, 228–230).

### COMPLEMENTARITY

In the 1960s Donald MacKay developed his concept of *complementarity* to explain the difference between science and faith. He expounded this in several papers, which are found in his collected essays *The Open Mind* (MacKay, 1988, *passim*). This has been widely followed by evangelicals of the ASA or CIS mould, but is often criticized for totally separating science from theology, a charge MacKay thought unjust. In his Gifford Lectures of 1997–1998, R. J. Berry develops this theme, which was published as *God’s Book of Works: The Nature and Theology of Nature* (Berry, 2003), which at first sight may seem to be in the Two Books tradition. He emphasized that *complementarity* does not lead to two independent models as both science and theology seek to understand the same reality, and provides the best way of relating science and theology.

### OLD EARTH CREATIONISTS

This cumbersome term comprises those who accept Deep Time but reject evolution. Historically we saw these in the majority of immediate pre-Darwinian Christians like Sedgwick, and those after 1859 who were not able to accept evolution like Dawson and Duns. A goodly proportion of interwar Americans held it, as did the founding fathers of the ASA. Essentially the Progressive Creationism of Bernard Ramm is OEC. In Britain, OEC tended to be held by nonconformist evangelicals before 1970 as Anglicans tended to be TE.

After the rise of YEC, OEC was caught in the crossfire, and thus many of the rising generation became YEC, rather than move to the left. Thus Billy Graham was OEC with a nod to evolution but his son Franklin is YEC. Contemporary evangelical theologians in the United States are split

between YEC and OEC, with a greater proportion of YEC than fifty years ago. Wayne Grudem, a leading systematic theologian is YEC, grudgingly tolerates OEC but has no truck with evolution (Grudem, 1994, pp. 273–309). Millard Erickson is OEC but of the more “liberal” evangelicals more and more tend to ID in preference to classic OEC, as does Bishop Fitzsimons Allison. The British scene is different as more accept evolution but even so, ID is becoming more popular and two leading evangelical bishops Tom Wright and Michael Nazir-Ali lean towards ID.

We have already considered the case of Daniel Wonderly, but probably the most high-profile OEC today is Hugh Ross (1945–), who is vilified by AIG but seen as creationist by many. (On *Panda’s Thumb*, his site is listed as Creationist.)

### HUGH ROSS, REASONS TO BELIEVE

Hugh Ross, a Canadian, gained a Ph.D. in astronomy from Toronto in 1973 and was a research Fellow in Radio Astronomy, California Institute of Technology, from 1973 to 1978. Since 1976 he has been a pastor at Sierra Madre Congregational Church in California and founded *Reasons to Believe* in 1986. The *Reasons to Believe* Web site modestly describes itself as “The premiere science-faith think tank.”

With his background in astronomy, Ross accepts conventional astronomy and geology with its vast ages, but does not accept evolution and inclines to ID. He also accepts the vast patriarchal longevity. To the strident atheist, Ross is no better than a YEC from AIG or ICR, but many YECs consider him as a total compromiser who has sold out to Godless evolution. Jonathan Sarfati, formerly of AIG and now of CMI, devoted the whole of *Refuting Compromise* (Sarfati, 2004) to refuting the “Progressive Creationism (Billions of Years) as popularised by Astronomer Hugh Ross” to refute the errors of Ross with considerable vitriol referring to “his ostensibly Christian apologetics ministry” (p. 13) This book is worth reading if only to see how YECs are as bitterly opposed to Progressive Creationists, who accept Inerrancy and all other *conservative* evangelical beliefs as they are to TEs or even atheists like Dawkins.

*Reasons to Believe* is probably the largest *progressive* creationist outfit and employs a large staff, is assisted by numbers of competent scientists and theologians, including Norman Geisler, Walter Kaiser, J. P. Moreland, and Allan Sandage. Its staff and supporters have extensive speaking engagements and encourage local chapters. Ross and others have published many books and articles and their Web site is very comprehensive and extensive, though its claim to be “The premiere science-faith think tank” may not convince all. However it does have a fulsome range of articles and audio clips. Mainstream scientists, whether Christian or not, would

find little to object to on the scientific content except where it impinges on evolution and paleoanthropology.

### THEISTIC EVOLUTION (TE)

A significant minority of evangelical scientists and theologians accept a more or less unqualified evolution, though this may be the majority among “whites” living outside the United States. The broadening effect of the ASA and the writings of Ramm, Kulp, and Mixter encouraged more of the rising generation of American evangelicals to accept evolution at the time when Henry Morris was reviving YEC. This meant that those who were OEC were caught between a rock and a hard place, and so OEC was squeezed by the pressure to be either YEC or TE. The term Theistic Evolution is unsatisfactory, but it is widely held and some try to change it by calling themselves Evolutionary Creationists, which has not caught on.

In Britain there had long been a tacit acceptance of evolution both by theologians and scientists, and thus many scientists and clergy, who were trained before the mid-1970s, simply accepted TE by default. There were a few exceptions, notably Dr. Martin Lloyd-Jones, a doctor turned pastor, but in the early postwar decades theologians like J. I. Packer, or John Stott, almost took evolution for granted.

Likewise the RSCF under the guidance of Oliver Barclay, who eirencially supported evolution when it was no cause for controversy. In the 60s evangelical scientists like Donald MacKay, Malcolm Jeeves, Frank Rhodes, a geologist who ended up as President of Cornell and Robert Boyd, took this up. This was expressed in their writings, which had much in common with the mainstream Christian writers on science like E. L. Mascall, A. Smethurst, G. D. Yarnold,<sup>2</sup> and C. A. Coulson. Apart from Coulson, a Methodist lay preacher who had chairs in mathematics, physics, and chemistry at Oxford, these were Anglican clergy. The consensus of the evangelicals in the RSCF took Genesis nonliterally but tended to insist on the first pair Adam and Eve and the historicity of Noah’s Flood, even if it was a local inundation.

By the end of the twentieth century Theistic Evolution in one guise or another was put forward by numbers of evangelicals as by Berry, White, Alexander, and Wilkerson in Britain and Collins, Keith Miller, and others in the United States (Miller, 2003). Relatively few evangelical theologians explicitly support theistic evolution as opposed to more “creationist” positions, with the main ones being McGrath and Torrance in Britain and Murphy in America (Murphy and McGrath both have Ph.D.s in science). It is difficult not to conclude that the “Evolution Wars” have made evangelical theologians wary of supporting a position at loggerheads with many evangelicals.

Even such a scholar as the historian, Mark Noll seems to hover between ID and TE despite his book *The Scandal of the Evangelical Mind* (Noll, 1994), which is a critique of the intellectual flaws of evangelicals. He highlighted and expounded the major ones in politics, science and the preoccupation with “end-times.” These are not separate issues but are inter-related. Noll brings together Evangelicalism’s intellectual failings over the last 150 years, particularly the retreat into fundamentalism. His chapter *Thinking about Science* focuses on the change of evangelicals on science from Asa Gray and his contemporaries through the antievolutionists of the 1920s to modern Creation Scientists, which he sees as a disastrous decline. As Noll wrote in the early nineties, he does not deal with ID, which he now has some sympathy for.

However many evangelicals throughout the world are increasingly accepting of YEC almost by default. This needs to be clearly understood as often there is no dogmatic or doctrinal insistence on YEC, but now it is perceived as the most reasonable evangelical belief. In Britain this was not the case before about 1980. A study of statements of doctrinal beliefs, like that of the University and Colleges Christian Fellowship, the International Federation of Evangelical Students, the various Evangelical Alliances throughout the world, will show that most refer simply to God as Creator and make no mention of time. Many more recent (post-1980) statements of faith for churches or evangelical groups in all countries increasingly insist on a six-day creation, which is due to growth and influence of YEC.

So why do so many evangelicals seemingly accept YEC by default, without rigorous thought? It is more than a widespread naïve literalism, and a brief discussion is liable to oversimplify. Ultimately it is a result of the almost iconic status of the Bible among evangelicals. However much evangelicals insist that they follow sound interpretative principles and use a careful hermeneutic, what is most often heard is that, “The Bible says.” That is the catch phrase of Billy Graham and many evangelical preachers and thus it is perceived that not only does the Bible have absolute authority in matters of faith, but also it becomes iconic. As the Bible is expounded to the “plain” man and woman, and, especially, child, the plain person will look for the plain meaning of scripture, and thus the Bible will be read as the account of football match, without any consideration of poetry or figurative speech. Simply accepting the plain meaning of scripture, instead of resulting in asking what kind of writing a part of the Bible is, results in a naïve literalist interpretation, especially on Genesis and prophetic parts of the Bible, which are most clearly poetic (try a Web search; *Bible, plain, meaning*). With a limited knowledge of geological and biological science and of their history in relation to Christianity, the simplest solution is accepted. This provides a ready and receptive audience for the YEC

speaker who knows which buttons to press to capitalize on what “The Bible says.”

The question behind all this is a hermeneutical one on what exactly the Bible *does* say.

## EVANGELICAL COLLEGES AND SEMINARIES AND SCIENCE

### North America

In the United States, and to a lesser extent in Canada, there are a great variety of evangelical colleges. These include Liberal Arts Colleges, Bible Colleges (often renamed as universities) and seminaries. These vary widely in both academic standards and faith perspective, but draw their students from teenagers from evangelical homes and churches. Most colleges teach science, often as a preparation for a career in nursing or similar medical profession, but relatively few teach the whole range of science. The perspective on science teaching depends on the faith stance of the college. Thus colleges which adhere to YEC in their basis of faith may teach most sciences but do so from a YEC perspective as do Bob Jones University, Cedarville College, Liberty University, Bryan College, and the various Concordia Colleges which are part of the Lutheran Church Missouri Synod.

Very different are the colleges like Wheaton, Calvin, Gordon, and Messiah Colleges, which teach the whole range of science. Their teaching reflects mainstream science, especially over geology and biology, even though many students come from a “creationist” background. The staff needs to be diplomatic as some parents are very concerned that their offspring are only taught “creation.” Needless to say that this can cause crises of faith for students, with some opposing the staff and others rejecting their heritage. Some professors have published textbooks, but, because of the nature of Liberal Arts Colleges, relatively little research. A good number of students go on to do doctorates in mainstream universities, as the students receive a science education as least as good as most secular colleges.<sup>3</sup> Even so, some professors have a good publications record as do Davis Young on the history of geology, Richard Wright on ecology, and Edward Davies on the history of science.

The divisions and conflicts are reflected in some colleges like Taylor University and Dordt Colleges, which are betwixt and between the “liberal” colleges discussed above and overtly YEC colleges, not to mention universities, which favor ID like Biola, where the philosopher J. P. Moreland teaches. There college staff across the faculties vary in attitude to science at times causing tension. The YEC colleges like Liberty teach Creation Science and some object to any support of global warming as this is “junk science” peddled by evolutionists.

There is also a wide variation in evangelical seminaries. Fuller is probably the most “liberal” and has long been criticized by the more conservative (see Marsden, 1987). At the risk of overgeneralization most evangelical seminaries reject some aspect or another of mainstream science and incline to either ID or YEC and, at times, adopt antienvironmentalism. However, it would be wrong to be dismissive from a scientific angle, as, for example, some good hermeneutical work is being done at Westminster Theological Seminary, especially by Peter Enns, and Nigel Cameron, President of Trinity, Deerfield, has done valuable work on medical ethics. It is inevitable that seminaries will reflect the present ethos of American Evangelicalism.

### Britain and Elsewhere

In Britain, Australia, and New Zealand there are no colleges to compare with American Liberal Arts colleges and all places of higher education are basically secular, though there are few church-based colleges and universities like Gloucester, Chester, and the University of Cumbria, where science is taught in a totally secular way. There is a wide range of seminaries (or theological colleges as the British call them). Half of the Anglican theological colleges are evangelical, but science does not figure much in their courses, except in apologetics. The present principal of St. John’s College, Durham, David Wilkerson, has a Ph.D. in astrophysics and, unusually for an Anglican college, is a Methodist minister. The general ethos reflects mainstream science except for Oak Hill. Similar are the two Baptist colleges—Bristol and Spurgeons and the London School of Theology. Ernest Lucas, vice-principal of Bristol Baptist College and McGrath, former principal of Wycliffe, Oxford, both have science Ph.D.s, and have written widely on science and religion. There are a plethora of small independent colleges for evangelical denominations, which are frequently YEC, which may be affiliated to local universities so that they can give accredited degrees. The situation in Australia and New Zealand is similar.

### KEY EVANGELICAL WRITERS ON SCIENCE

With the plethora of YEC and ID writings, which have the seal of approval of many evangelical theologians, like Wayne Grudem, the multitude of writings by scientific evangelicals who are neither YEC nor ID but follow, or rather agree with, mainstream science are often not heard in the noise of controversy.

The number of publications has been increasing exponentially over the last half century and are to be found in journals like *Perspectives in Science and Christian Faith* and *Science and Christian Belief* and the ever increasing number of books and Web articles by evangelical scientists or theologians.

Many are apologetic and may just be a scientist attempting to explain why a scientist can be a Christian. The quality varies immensely. Due to the controversial effect of YEC and ID, writings tend to fall into one of three camps YEC, ID, or TE and intermediate forms are rare.

As discussed previously the first and most significant evangelical book on science and religion was Bernard Ramm's *The Christian View of Science and Scripture* (Ramm, 1954), which laid the foundation how most evangelicals, apart from creationists, grappled with science and religion for several decades. Most of the writers up to about 1980 were following in his path whether from the ASA or the RSCF, and is thus THE seminal book for the immediate postwar era. Ramm has received heavy criticism for being semi-fundamentalist and James Barr in *The Fundamentals* (1977), criticized Ramm for dealing with such topics as Jonah, forgetting the fundamentalism Ramm was addressing.

As we saw in Chapter 6, immediate postwar evangelicals moved from fundamentalism to a more accepting view of science. In Britain the RSCF attracted scientists like Robert Boyd, Donald MacKay, and Malcolm Jeeves who produced a steady stream of publications from 1960. The next generation was more numerous and now most are in an active retirement. These include R. J. (Sam) Berry, Derek Burke, Sir Brian Heap, Sir John Houghton, Sir Ghilean Prance, and Colin Russell. However their writings have tended to be on Christian aspects of their own fields (ecology, global warming, genetic engineering, or history of science) rather than a theological overview integrating their theology and science as have Polkinghorne and Peacocke. In private, Peacocke has criticized CIS for tending to be too biblicist, but that reflects his own liberal theology.<sup>4</sup> However they probably had more in common with Peacocke than fellow evangelicals of a YEC persuasion. The next generation includes Ernest Lucas, Colin Humphreys, David Livingstone, Bob White and Denis Alexander.

The situation is similar in the United States, and over the last forty years there has been a tremendous interchange between the ASA and the RSCF/CiS, with a joint conference every ten years in Britain. Again we see a succession of contributors. As America was more anti-evolutionary than Britain this included more old earth creationists like Peter Stoner (1888-1980) whose OEC books were widely read and other founders of the ASA. In many ways, Hugh Ross is a successor to them as he takes a similar stance on both science and theology and it is easy to see why they and Ross are considered to be creationist and close to YEC by secular evolutionists.

However many members of the ASA moved on from the "gappist" OEC of their founders, who, as I argued earlier, were progressive in their own way. Hence by the 1960s there was an immense variety among members of the ASA and this was reflected in their publications and the

articles in their journal. Most were scientific apologetics or short studies on particular themes. Initially they were mostly of the type “Can an evangelical be a Christian?” and dealt with the immediate theological questions, similar to Ramm in his earlier book. As in Britain after the 60s more writers considered ethical issues like the environment, genetics, and reproduction. Richard Bube, possibly the leading evangelical scientist of the 70s, wrote *The Human Quest* (1971) and *Putting It All Together: Seven Patterns Relating Science and Christian Faith* (1995) and edited *The Encounter between Christianity and Science* (1968) as well as writing many papers and articles often in the JASA/PSCF.

In recent years evangelical scientists have published widely with the PCSF as the main journal. Relatively few evangelical theologians have written on science, probably because few have the double training needed. One who does is George Murphy, a Lutheran pastor (ECLA) who has written several works on science, which start from the person of Christ rather than creation. Thus suffering is seen from the perspective of the cross rather than a possible event in Eden. The more conservative evangelicals regard Murphy as too liberal and his theology does resonate with that of Barth and Moltmann, on their nonliteral view of Genesis and the Crucified God respectively. Some start from creation and thus cannot make the linkage with Christ and redemption. This can be seen in the writings of the former evangelical Howard Van Til, whose theology emphasized a front-loaded creation, but said little about the cross. His volumes *The Fourth Day* and *Portraits of creation* are two of the most important evangelical works on science of the 80s and 90s, but are criticized by Murphy for being weak on soteriology. Toward the end of the 90s van Til moved from an evangelical faith to a progressive Unitarianism.

Most of the evangelical writing on science is by scientists rather than theologians. Many of these are either apologetic works of varying quality on the theme “Why I am a Christian and a scientist” or detailed Christian commentaries on their particular field. A fine example of the former is Francis Collins’ *The Language of God*, which almost forms a riposte to Dawkins’ *The God Delusion*. Collins is, of course, director of the Genome Project and converted from atheism to Evangelicalism when in his late twenties. He did not claim that his book was deep theology but rather an explanation why he, as a leading scientist, could be a person of orthodox faith. Reviews varied and the most critical were by either “creationists” or atheists. In 2006 *Time magazine* published a debate between Collins and Dawkins. Owen Gingerich emeritus professor of astronomy and of the history of science at Harvard, delivered the 2005 William Belden Noble Lectures, which have been published as *God’s Universe* (Gingerich, 2006) almost covering the same issues from another scientific perspective. In this work Gingerich writes of God’s purpose in the universe, which some



regard as verging toward ID, but Gingerich rejects this preferring some kind of lower case *intelligent design* as he terms it.

Far more theological are the collection of essays *Perspectives on an evolving Creation* edited by Keith Miller (Miller, 2003), a geologist from Kansas, which from a broad evangelical perspective give theological reasons for evolution and approach the subject from a variety of disciplines theological, historical, and scientific. It does not give definitive conclusions, but shows how evangelicals are grappling with questions normally side-stepped.

Few writers have attempted a broad theological overview as did Peacocke from his liberal perspective in his many book from *Science and the Christian Experiment* in 1971 until his last, *Paths from Science Towards God: The End of All Our Exploring* in 2001. There are probably several reasons for this. Evangelicalism has never produced a probing wrestling theology, unlike the liberal variants typified by Peacocke and those attracted by the ethos of *Zygon*. However in recent years one writer has begun to do so, having spent two decades in preparation and that is Oxford professor, Alister McGrath.

### ALISTER MCGRATH

Alister McGrath (1953–) is a relative newcomer to science and religion as despite having impeccable qualifications on science and theology from Oxford University and being a prodigious theological author since the early 80s, his first book on science and religion *The Foundations of Dialogue in Science and Religion* (McGrath, 1998) was only published in 1998. After schooling in Northern Ireland, McGrath graduated in chemistry at Oxford in 1975, and then obtained a D.Phil. in molecular biophysics under Professor Sir George K. Radda, FRS, in 1977 and a first in theology in 1978. He was ordained in 1980 and was appointed lecturer in Christian doctrine and ethics at Wycliffe Hall, Oxford in 1983 and has remained there ever since, relinquishing his position as Principal in 2006. He was made full professor in 1999 and awarded a D.D. in 2001. He is most definitely an evangelical in the tradition of Packer and Stott. To many Americans he might fall short on inerrancy, but his work is as widely read in America as in Britain and has recently joined forces with Ravi Zacharias to develop apologetics in Oxford.

Most of his writing has been on systematic and historical theology. His *Christian Theology, An Introduction* (McGrath, 2001) is rightly a standard work. His works on historical theology span the time scale from the Reformation to the present day. Unusually for one trained as a scientist his *Christian Theology* makes scant reference to science, which struck me as a major omission. That deficiency was soon to be remedied with a vengeance

and it is best to let McGrath speak for himself. McGrath began to think of the relationship of science and religion in 1976, but allowed these thoughts to slowly mature for over two decades. As he says, he looked to the Scottish theologian Thomas Torrance for inspiration, who over several decades had related his orthodox, almost evangelical, faith to science. The first fruits of McGrath's quest were in 1998 followed in the next few years with his massive three volume study *A Scientific Theology* (McGrath, 2002–2003). The three volumes are entitled respectively, *Nature, Reality* and *Theory*. This trilogy is probably the most massive treatment of science and theology in the Anglo-Saxon world, and in perspective is conservative and orthodox and further removed from YEC approaches than it is from liberal theologies like that of Arthur Peacocke. Over the last half century many have tried to devise a "scientific theology," beginning with Coulson, Mascall, Yarnold, and Pollard in the 1950s. The three most significant writers in recent years have been the liberal protestant Ian Barbour, the liberal Anglican and process theologian Arthur Peacocke, and a more conservative Anglican, John Polkinghorne. All have been awarded the Templeton Prize for progress in religion. Of these Polkinghorne is closest to Evangelicalism, as evangelicals would consider both Barbour and Peacocke as being weak on atonement and salvation. To actually reflect theologically on science is a far harder task than to either carry out research science or to be a historian of science and religion.

In his Web article, McGrath perceptively and self-critically writes, "My weaknesses, however, must also be acknowledged. While I am completely at home in the worlds of mathematics, chemistry, physics and biology, I do not feel totally at ease in other natural sciences, and thus have not attempted to make correlations beyond my field of competence."

As well as his massive treatment McGrath has attempted to engage fellow Oxford professor Richard Dawkins in his small book *Dawkin's God* and *The God Delusion*. He has engaged him both in print and debates. He has also written a series of shorter books: *Science and Religion, An Introduction* (McGrath, 1998b), which is still a substantial volume, and two smaller volumes *The Twilight of Atheism* and *The Re-Enchantment of Nature*. It would not be unreasonable to expect McGrath to publish further significant works in the coming years, which may also act as a bridge between secular and liberal theological approaches to science and religion and the more conservative, which tend to dominate at present.

## EVANGELICAL THEOLOGIANS AND SCIENCE

Over the last few decades evangelicals have published an immense amount of theological work, ranging from popular to technical articles, and all aspects of theology from biblical study, doctrine to apologetics.

There is an immense variety of perspectives from the most conservative, dare I say Fundamentalist, to the almost liberal. Even though the quality varies, many have excellent theological training and expertise, whether in Greek or Hebrew, history, philosophy or hermeneutics. Relatively few have scientific qualifications and thus McGrath is the exception. However this also applies to non-evangelical theologians.

### SCIENTIFIC WARFARE BETWEEN EVANGELICALS

In the previous two chapters the “warfare” between some evangelicals and science was briefly documented, where battle lines were drawn between “creationists” and mainstream science. Since 1961 the conflict with mainstream science and first YEC and then ID has grown and is now a major feature of the relationship of Evangelicalism and the rest of society. It has attracted a vast amount of media attention, though often the reporting is of dubious accuracy. What is often unknown or ignored is the friction, which at times degenerates to warfare, between different groups of evangelicals over science.

Before 1961 this was fairly muted and as discussed previously began to appear following the ASA’s rejection of YEC in the 50s. This was a non-issue in Britain and remained so until about 1970. As YEC gained ground in the 70s, more and more conflict occurred between the Young Earthers and Old Earthers, who were either OEC or TE. Soon the gradual spectrum from YEC to TE was replaced by hardened positions with YECs headed by Henry Morris, claiming orthodoxy and reviling others for succumbing to liberalism and by 1964 the split was irrevocable. Both the ASA in the USA and the RSCF/CIS in Britain attempted to be reconciliatory, but few YECs would countenance an old earth as an evangelical option. The placatory approach of most in the ASA and CIS had no effect and as ID and AIG got off the ground in the early 90s, the situation became more polarized. This resulted in a breakdown in discussions so that most TEs simply avoided the subject to prevent conflict. Relatively few evangelicals were as belligerent to YEC or ID, as the other way round. Consequently evangelical criticism of YEC and ID has been muted, and hard-hitting criticisms came from outside the evangelical fold, some of which was hostile to all things evangelical and often to all things Christians.

Even though proponents of ID or YEC are very strident in their criticism of “Evangelical Darwinists” both the ASA and the CIS are very muted in response, though the content of most of their publications whether in journals or that of individual members was strongly TE or OE. It seems that no one wished to offend their Christian brethren. If anything the criticisms from ID and YEC have become more strident since the beginning of this century, as exemplified by Ken Ham and Jonathan Safarti (AIG and

CMI) on one hand and Bill Dembski and colleagues on the other. As I write a recent charge by Dembski in his blog *Uncommondescent* is that the ASA has both attacked fellow believers of YEC conviction for their stance on the age of the earth<sup>5</sup> and has failed to take on the atheism of some forms of Darwinism, especially that of Dennett and Dawkins. This resulted in heated comments both on *Uncommondescent*<sup>6</sup> and the ASA listserve in April 2007. It makes sorry and inaccurate reading and it may seem remarkable that evangelicals can pour out so much vitriol on their brothers and sisters in Christ.

To the outsider, it must seem both odd and unseemly that evangelicals who are so close theologically should be at such loggerheads over certain issues. The friction is two-fold. The first is over the age of the earth—the essence of YEC and the second over the refusal of many evangelical scientists to condemn all forms of “naturalism”<sup>7</sup> combined with allegation that they are unwilling to engage with and seek to counter atheistic scientists like Dawkins.

Since the 1940s many evangelical scientists have sought to counter young earth arguments, but have often been rather muted. By and large conflict has been avoided and strident voices against YEC are rare, in marked contrast to the stridency YECs often adopt in tackling other evangelicals for “compromising” the authority of the bible. Even the most cursory survey of YEC Web sites or publications will produce many examples of how fellow evangelicals are accused of some kind of heresy. However in the Web sites of the ASA and CIS, belligerence against either YEC or ID is rare, and although most Web articles reflect one or both of an Old Earth and evolution, some are either YEC or ID. This reflects the purpose of both organizations to include all evangelical scientists, whatever stance they take on any issue.

A major plank of the ID project is to overthrow “naturalism” in all its forms. Clearly, naturalism as philosophical or materialistic naturalism precludes any belief in the supernatural, but most of science operates with a *methodological* naturalism. Philip Johnson (Johnson, *passim*) bases his critique of evolution by conflating methodological naturalism with metaphysical naturalism and maintaining that evolution is metaphysical rather than scientific. In *The Tower of Babel*, Robert Pennock discusses this and emphasizes the difference between metaphysical and methodological naturalism (Pennock, 1999, chap. 4). Since Pennock wrote this in 1999, this is still a major argument used against evangelicals who are in the scientific mainstream. A recent example is the book by Michael Rea *World without Design: The Ontological Consequences of Naturalism* (Rea, 2007), which argues that Naturalism leads to non-realism. He considers the alternative research programs to be intuitionism and supernaturalism, and that, often, intuitionism is self-defeating. That leaves only supernaturalism (or *theistic*

science), which is rejected by many evangelicals in favor of methodological naturalism.

If one visits Web sites like AIG, CMI, ICR or less well-known Creationist groups one will find a series of articles criticizing fellow evangelicals with as much hostility as atheists. The content of these articles is often repeated in books like Sarfati's *Refuting Compromise*. The success of this kind of attack by both YEC and ID becomes apparent as frequently evangelicals conclude that it is "evolutionary" evangelicals who are at fault and that if they respond, either gently or in kind (which is very tempting), it is they who are at fault for either "rejecting the Bible" or fanning the flames of controversy.

### FROM SCIENTIFIC DIVERSITY TO ETHICAL DIVERSITY

The incessant controversy between evolution and creationism among evangelicals must seem wearing and pointless to many. Whether we like it or not it has been the dominant theme among evangelicals concerning science and often prevents adequate discussion of other issues.

The many issues raised by science impinge on a vast range of theological understandings and doctrines. These range across the nature and interpretation of the Bible, questions of theodicy, sin, atonement and redemption, miracles, and ultimately the nature of God. Few can be, or have been, studied at any depth in a brief introduction. Almost without exception evangelicals take their beliefs very seriously and objections to any branch of science are not from contrariness but from a heartfelt concern that their whole belief system is under threat. Conversely the acceptance of any science rarely derives from a "liberal" tendency, but from a theological perspective, which is only subtly different from those who come to different conclusions. The difference in theology between a Wayne Grudem and an Alister McGrath may not be very different and to a liberal theologian or an atheist or agnostic may be perceived to be almost identical, but the two come to radically different conclusions.

So far only passing mention has been made of ethical issues raised by modern science. These include the environment, bioethics, and various aspects of technology. Each of these merits a book length treatment and to them we now turn in the next chapter.

### NOTES

1. This also applies to many scientists and other "educated" people, and contributes to the acceptance of the conflict thesis.
2. I have in my possession a letter from Coulson to Yarnold criticizing Yarnold's mistakes in chemistry in a book written for older high school students in 1951.

3. This is my personal observation having taught a course for Wheaton College in 2001, when I could compare what Wheaton taught with British universities.

4. Arthur died in November 2006, and this comment is based on interacting with Arthur for twenty-five years, rather than any public writing of his. He avoided any public criticism of evangelical scientists and there was mutual trust and respect. On a personal note in the 1950s Peacocke visited my uncle G. D. Yarnold, a priest physicist, as he began his work on science and religion.

5. This issue concerned was the project initiated by the ASA in 2002 to provide educational material setting forth the arguments for the vast age of the earth, both theological and scientific. For various reasons this never saw the light of day.

6. <http://www.uncommondescent.com/philosophy/american-scientific-affiliation-whatever-happened-to-its-mission/>

7. Most followers of ID regard any naturalism as wrong and do not agree with those who draw a distinction between *metaphysical* naturalism, which denies the possibility of God, and *methodological* naturalism, which is seen as a method, which leaves God to one side during scientific research rather than denying him.