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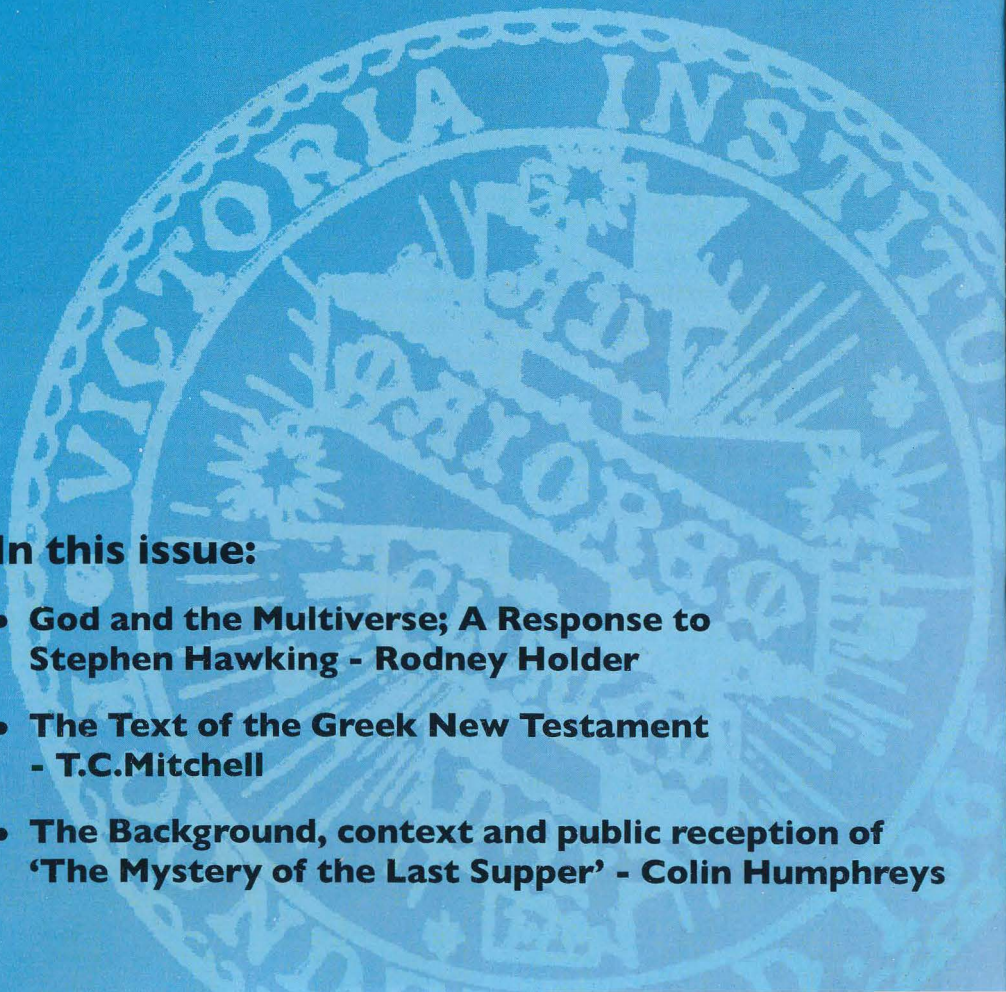

In this issue:

- **God and the Multiverse; A Response to Stephen Hawking - Rodney Holder**
- **The Text of the Greek New Testament - T.C.Mitchell**
- **The Background, context and public reception of 'The Mystery of the Last Supper' - Colin Humphreys**

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Contents

Editorial

Each of our contributors this month is a member of the Council of the Victoria Institute and each writes on a contemporary issue. Dr.Rodney Holder responds to the much publicised recent book by Stephen Hawking. Terence Mitchell has written about the Greek text behind the Authorised version of the Bible, which was published four hundred years ago. Finally Professor Sir Colin Humphreys has given us a background to his book about the mystery of the Last Supper, published this year and reviewed later in this journal.

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God and the Multiverse: A Response to Stephen Hawking

Rodney Holder

Introduction

On September 2nd 2011 the front page of *The Times* presented us with this startling headline: 'Hawking: God did not create Universe'. The claim is based on what Hawking says in his book, co-authored with Leonard Mlodinow, published the week after the article, and entitled *The Grand Design*.[1] Among the claims Hawking and Mlodinow make are the following:

1. There is no need for God to light the blue touch paper and set the universe going, which for Hawking was his only possible rôle anyway.
2. Philosophy is dead and has been superseded by science.
3. M-theory is the ultimate 'Theory of Everything'.
4. Because there is gravity or the laws of nature, the universe creates itself out of nothing.
5. A multiverse explains the 'fine-tuning' of our universe.

The statement that philosophy is dead is on the first page. Yet only a couple of pages later Hawking and Mlodinow say they adopt 'model-dependent realism', a philosophical position if ever there was one, and a distinctly odd one at that. One might well ask how the reality of the external world can depend upon the mathematical models we construct of that world. Hawking and Mlodinow define their concept by saying 'it is pointless to ask whether a model is real, only whether it agrees with observations. If there are two models that both agree with observation ... then one cannot say that one is more real than another.' (46). In contrast 'critical realism' would say that there is indeed a real world and scientific theories are gaining an ever tighter grasp on that reality.

Despite what Hawking and Mlodinow say about philosophy their book is permeated by philosophy and this is only one of their philosophical statements.

Space, Time and the Theology of Creation

The framework for all discussion in modern cosmology is the big bang theory, according to which space and time came into existence together some 13.7 billion years ago, and from its original hot and highly compact state the universe has expanded into the vast cosmos we see today. The expansion was observed in 1929, but the clinching evidence came in 1965 with the observation of the cosmic background radiation, the

remnant radiation field left over from the big bang and bathing the universe today.

It is interesting to consider this theory in the light of what Christian theology has said about creation. Indeed Hawking and Mlodinow themselves have something to say about this. They rightly state that St Augustine believed that time is 'a property of the world that God created and that time did not exist before the creation' (50). But then they say, in line with model-dependent realism: 'That is a possible model, which is favoured by those who maintain that the account given in Genesis is literally true', but the big bang theory is more useful, even though neither model is more real than the other (50-51).

This is all deeply confused, not least because (a) Augustine himself did not take Genesis literally and (b) Augustine's view is entirely compatible with the big bang theory! Interestingly, Hawking and Mlodinow admit that it is not clear that we can take time back beyond the big bang, because the present laws of physics may break down there (51).

St Augustine did indeed believe that time did not exist before the creation. Round about 400 AD he wrote: 'And if the sacred and infallible Scriptures say that in the beginning God created the heavens and the earth ... then assuredly the world was made, not in time, but simultaneously with time'.[2] Augustine saw God as outside or transcending the space-time realm of the universe he created. In another place Augustine says this: 'With the motion of creatures, time began to run its course. It is idle to look for time before creation, as if time can be found before time. ... We should, therefore, say that time began with creation rather than that creation began with time. But both are from God. For from Him and through Him and in Him are all things.'[3]

All this is of course entirely compatible with the big bang! However, one thing to emphasise is that the main point of the Christian doctrine of creation is not to pinpoint a moment when the universe began, but to say that the universe is totally dependent on God every moment, and that would be true even if the universe had an infinite past. Thus, unlike ancient pagan cosmologies, whether Babylonian or Platonic, the Christian faith does not believe in a god who moulds pre-existent and recalcitrant matter to make the universe, but in a transcendent God apart from whose will matter would simply not exist. Thus it makes no difference whatsoever to the Christian doctrine whether the universe had or had not a temporal beginning, and the point of the Augustine quotation is how space and time are bound up together as both created by God and dependent for their existence on his will. This was made particularly clear by St Thomas Aquinas in the thirteenth century but is a matter about which Hawking and Mlodinow, like many atheists, are deeply confused.

Specialness of the Big Bang: Cosmic Fine-tuning

The big bang is well-established, yet it presents us with some puzzles. It seems to be set up in a very special way indeed, seemingly in order for us to be here to observe it. This specialness relates to two areas:

(1) First, the conditions right back at the beginning, at the earliest time we can speak of with any confidence at all, have to be just right for the universe to give rise to life. This is some 10^{-43} seconds after the beginning when an as yet unknown theory of physics applies, which combines Einstein's theory of gravity with quantum mechanics, the theory of the very small.

(2) Secondly, the constants which go into the laws of physics have to be what they are, in order for the universe to give rise to life. These constants determine the relative strengths of the fundamental forces of nature, like gravity, and the force which holds atoms together. They determine how key physical processes go at different stages of the universe's evolution.

The cosmologist Paul Davies puts it like this: 'Like the porridge in the tale of Goldilocks and the three bears, the universe seems to be "just right" for life, in so many intriguing ways.'[4]

There are many, many examples of this so-called fine-tuning, and I will just give one of each kind now, though some more will crop up later:

(1) First, the mean density of the universe has to be just right at the very beginning to 1 part in 10^{60}. If it is smaller than it is by this amount then the universe will expand far too quickly for galaxies and stars to be able to form. If it is greater then the whole universe will recollapse under gravity long before there has been time for stars to evolve. Either way one has a boring universe with no possibility of life. An accuracy of 1 in 10^{60} is that required to aim a gun at a coin 13 billion light years away at the opposite end of the universe and hit it.

(2) Secondly, the basic building block bequeathed by the big bang is hydrogen, with some helium formed in the first few minutes from the origin, and the other chemical elements are made from these through nuclear fusion in stars. It turns out that the force which binds atomic nuclei together has to be just right to high precision for carbon and oxygen, essential elements for life, to be made this way. Sir Fred Hoyle, the famous atheist Cambridge astrophysicist, was foremost in this discovery, and he it was who discovered the particular 'coincidences' required for carbon to be made in the first place, and then for the carbon not to

be destroyed in making oxygen. When he made this discovery he was moved to remark: 'A commonsense interpretation of the facts suggests that a superintellect has monkeyed with physics, as well as with chemistry and biology, and that there are no blind forces worth speaking about in nature.'

Explanations

This specialness of the universe, which is essential if there is to be life, just cries out for explanation. The most obvious explanation is that it was made that way; it was designed so that life would appear. Christians would say that God intended there to be living creatures with the capacity for reason and with free will, who would be able to have a relationship with him. Many scientists, however, regard any kind of design hypothesis with loathing. They want to restrict their explanations, even for why the laws of physics are as they are, which is the question being asked here, to within science itself.

So what alternatives have scientists come up with? I shall contrast two strategies which scientists have pursued in order to avoid the implication of design by God.

(1) The first is to seek an explanation from within science for the values taken by the various constants of physics—to derive them from some more fundamental theory, a so-called 'theory of everything' (TOE). Interestingly Einstein spent his later years in a fruitless search for such a theory: 'What I am really interested in is whether God could have made the world in a different way', he said—although this quote obviously indicates that he still saw no contradiction with God being behind it all. Connected with this search for a TOE, though different from it, is the aim to show that the initial conditions are not special: to argue that whatever they were, the universe would turn out much the same.

(2) The second strategy is diametrically opposed to this. It is to postulate a multiverse, i.e. a vast or infinite ensemble of existent universes, embracing the whole range of values of the constants and initial conditions. The idea is that if a multiverse exists you can then say: Hey presto! Given the vast ensemble, our universe with its suite of parameters is bound to exist, and we should not be surprised to find ourselves in it, because we simply could not exist in the overwhelming majority of universes which differ from ours in their parameter values to the slightest degree.

Interestingly, Stephen Hawking seems now to believe in a combination of these. M-theory is the TOE but it gives rise to a multiverse. However, he recognizes that M-theory is a patchwork of theories rather than a unique theory.

Ultimate Explanations

By an ultimate explanation I mean an answer to the question, not 'Why is the universe so special?' but 'Why is there any universe at all?' Or, as Leibniz put it, 'Why is there something rather than nothing?' In their book Hawking and Mlodinow claim that science can answer that question too. How do they do this? Well, Hawking and Mlodinow make a number of moves which I now list. As will be apparent, these are mainly philosophical assumptions, so once again it can hardly be said that philosophy is dead:

1. Hawking (with his co-author) adopts Wheeler's 'it-from-bit' interpretation of quantum theory, namely that we create the history of the universe by observing it (82, 140).
2. He also interprets the Feynman sum-over-histories approach to quantum theory in a realist way, so that all possible histories of the universe—ways of getting from state A to state B—are real, and we 'select' a set of histories, no matter how improbable, which are compatible with our own existence.
3. Negative gravitational energy cancels out positive matter energy which means the universe can create itself out of nothing.
4. M-theory predicts that a great many universes were created out of nothing.
5. Add into the mix the no-boundary proposal whereby time becomes imaginary (space-like) in the earliest epoch, which Hawking developed with Jim Hartle, and which appeared in popular form first in *A Brief History of Time*, and you end up, he says, with a universe that has no beginning in time. Hence you avoid the need to invoke God to light the blue touch paper to set it going (134, 180)—again, repeating what he said in the earlier book.

In *A Brief History of Time* Hawking discussed philosophical options for the meaning of imaginary time and the Euclidean 4 dimensional space, which embraced it 'prior', in some doubtful sense, to the emergence of real time. Either these were convenient mathematical devices, or perhaps imaginary time was real and real time our own invention, or (what seems to be his considered position and what he now calls 'model-dependent realism') it is meaningless to ask which is real since they both exist only in our minds and it only a matter of which is the more useful description. But if time has become space-like it is very difficult to see how time can 'flow' and the universe evolve from the 4-space at all.

Of course, even if we accept Hawking's mathematics, we do not have to accept his philosophy: we can perfectly well accept only real time in the mathematical sense as ontologically real. The universe would then begin, though not from a singularity, at the point where (real) 3-space and real time intersect the Euclidean 4-space where time

has become imaginary. Moreover, neither do we have to ontologize all the histories in the Feynman sum, only regard them as a useful calculating device.

What of the other claims in the above list? Hawking and Mlodinow write: 'M-theory predicts that a great many universes were created out of nothing. Their creation does not require the intervention of a supernatural being or god. Rather, these multiple universes arise naturally from physical law.' (8-9). Again, this raises more questions than answers. First, there is no mention of the speculative nature of M-theory, the overarching generalization of string theory (which Hawking refers to as a network of different theories which apply to different situations, acceptable in model-dependent realism), and that serious questions have been raised over its lack of predictions and observational or experimental support. That goes particularly for the claim about many universes, which I shall come to in a moment.

Of course the idea that the universe can create itself out of nothing is inherently self-contradictory.[5] Apparently gravity can do the trick because its negative energy balances the positive energy needed to create matter. Contra Hawking, this sleight of hand does not mean that the universe creates itself out of nothing, and if gravity and the laws of nature were responsible, one really would still be entitled to ask where these come from in the first place and the quantum vacuum on which they act. Hawking states that invoking God here is to do no more than provide 'a definition of God as the embodiment of the laws of nature' (29). But there is a world of difference between God as the supreme agent of creation, behind the laws, and the laws themselves, as I shall explain.

The fact is that only God can provide the ultimate explanation. No scientific theory can do that. And neither atheistic strategy on offer in the context of the fine-tuning of the universe can do it.

The basic question is, as Hawking rightly says, 'Why is there something rather than nothing?' 'Why is there any universe at all?' God explains that. There is a universe because he freely created it. He wanted to bring about an environment in which free, rational creatures could flourish and have a relationship with him.

I shall now introduce two important terms from philosophy, the terms 'necessary' and 'contingent'. Something is said to be necessary if it cannot be other than it is; something is contingent if it can be otherwise or if it need not exist at all.

At least since the time of St Thomas Aquinas in the thirteenth century theologians have argued that the idea of God as 'necessary being' provides a stopping point for explanation. To say that God is necessary means that he cannot but exist. He must exist.

He cannot not exist. This is what the concept 'God' means. Another way of saying it is that there is no possible universe in which God does not exist. It follows from this that God was not himself created. He could not have been or else there would have been a time when God did not exist but something else did, namely whatever or whoever created God. Anything created is not God. Now someone could doubt that such a being exists—we know that many do doubt it—but it follows that if he does exist then he has always existed and will always exist and everything else that exists depends on him.

That is because everything else is 'contingent'. The word contingent means the opposite of necessary. Something which may or may not exist is contingent. It did not have to exist. It might not have existed.

Now the universe would certainly appear to be contingent in that the universe might or might not have existed. Hawking put this very eloquently himself back in *A Brief History of Time*, when he wrote: 'What is it that breathes fire into the equations, and makes a universe for them to describe?'[6] That is the fundamental question. Cosmologist Martin Rees recognises that it cannot be answered by physics. 'Such questions lie beyond science', he writes: 'they are the province of philosophers and theologians'.[7] Interestingly the same point was made in 1978 by Dennis Sciama, who supervised the PhDs of both Hawking and Rees, and incidentally of Rodney Holder. Speaking as a scientist Sciama said this: 'None of us can understand why there is a Universe at all, why anything should exist; that's the ultimate question.'[8]

That is right. Science is powerless to explain why the universe exists. The universe cannot explain its own existence. It cannot create itself, by lifting itself up by its own bootstraps, as it were, into existence.

The upshot of this is that the question 'Why is there something rather than nothing?' has no answer on the basis of either strategy 1 or strategy 2.

Now strategy 1 does not explain why anything exists, why there is a universe, but it does explain why the universe is like it is, given that it exists. It could not have been different, so, with the big proviso that it exists, then it is necessarily the way it is.

If that is so, then there is still a massive puzzle because we can now ask, 'Why does the only self-consistent set of physical laws give rise to life?' It could have given rise to an isolated amorphous lump of rock and nothing else. Why on earth did it give rise to a universe with all the rich complexity including living creatures that we see? Given the infinite variety of outcomes we can imagine it is desperately puzzling why the only possible set of laws gives a universe with human beings in it.

Coming to strategy 2, the multiverse hypothesis says that the universe certainly can be different and indeed different universes actually exist. And it could be the case that the more universes you have the more chance there is of getting one with life. But there is a pretty big puzzle here too, namely, 'Why does this particular multiverse exist as opposed to another?' We now have a choice of equations into which fire somehow gets breathed, and we have a choice about how many sets of equations give rise to universes and how many universes they give rise to. What determines these choices? The theist is perfectly at liberty to say 'God determines the choice'. Indeed it is quite clear that multiverses are compatible with theism anyway, since God is able to make as many universes as he pleases and what matters is that a subset, however small, of universes within the ensemble are conducive to life.

One cosmologist, Max Tegmark, has proposed in answer to this that all possible mathematical structures have physical existence. That would certainly guarantee our universe's existence. But it takes us way beyond what physics can tell us and most mathematicians and physicists think the idea makes no sense. One soon runs into problems and paradoxes when one actually starts to try and write down 'all possible mathematical structures'. Certainly there seem to be conflicts in what actually exists as opposed to what can possibly exist. For example *I* cannot simultaneously go to the theatre tonight *and* sit at home watching TV. Some copy of me in another universe could conceivably have taken a different course, but *I* couldn't simultaneously do both.

Some Recent Developments in Cosmology

An attempt to solve some of the problems with the seemingly special way the big bang is set up is the theory of inflation. This postulates that the universe underwent an incredibly rapid period of accelerating expansion–called inflation–from 10^{-35} to 10^{-32} seconds after the origin. In that time the universe expanded from being 10^{-25} cm to 10 metres across. At that point the much slower deceleration of the classical big bang took over. It is indeed the case that such a rapid period of accelerating expansion, even if that short, drives the density of the universe to the critical value and smooths out the differences between different parts of the universe, explaining why the universe looks much the same in all directions.

That sounds impressive, but there were some serious problems with inflation as originally conceived. One serious problem in respect of solving the fine-tuning is that inflation itself needed fine-tuning, i.e. parameters to be chosen specially! As Hawking and Mlodinow say in *The Grand Design*, the universe still needs to be set up in a special state. That is not very satisfactory for a theory which was meant to solve the problem of the need for fine-tuning. The upshot is that there has been an enormous inflation in the number of inflation theories—well over a hundred at the last count.

The inflation era is also the era when three of the forces of nature are supposedly united, and at the end of the inflationary period the forces split into two. They split again at about 10^{-10} seconds after the origin. That is about the time when we actually start to be confident about the physics. We can do experiments in the laboratory, and the standard model of particle physics applies.

But back to inflation. The next step was to propose that this force splitting occurs at different rates in different parts of the universe. This is a turn from strategy 1 to strategy 2, namely a multiverse with different regions having different parameters. This picture was proposed by a Russian cosmologist now working at the University of Stanford, California, Andrei Linde. His idea is known as 'chaotic inflation', and in a further development called 'eternal inflation' he imagines infinitely many different bubble universes forming by inflation, with bubbles forming within bubbles ad infinitum.

We are still not quite at the Theory of Everything (TOE). That is the theory which is said to apply to the very first 10^{-43} seconds from the origin. During that time one needs a theory which combines all the fundamental forces of nature. That is to say, it combines Einstein's general theory of relativity, which is the theory of gravity, with quantum mechanics, which applies to the other forces and describes the very small.

We do not know what that theory is but the leading contender is string theory, or more generally M-theory, which embraces 5 different types of string theory. String theory postulates that the ultimate building blocks of matter are not point-like particles but tiny, one-dimensional objects called strings. By tiny I mean really tiny, some 10^{-33} cm across. According to string theory the elementary particles we observe are actually different modes of vibration of the strings. An important complication is that these vibrations occur in more than the three dimensions of space that we are used to. The reason we only see three extended dimensions is that these other dimensions get curled up very small. Quite why this is so remains something of a mystery.

The original aim of string theory was to calculate particle masses, i.e. strategy 1 was pursued. The theory has always been dogged by its lack of connection with observation and experiment, so the main motivation has been that it is mathematically elegant and it solves some theoretical problems. But since nothing has been calculated in practice some string theorists, notably Leonard Susskind, have taken the turn to strategy 2. And as noted above, Hawking has followed suit.

Susskind and his colleagues talk about the 'landscape of string theory'.[9] They find that there is not just one but many solutions of the theory, anything from 10^{500} to 10^{1000} solutions. This feeds neatly into the eternal inflation idea since eternal inflation would be the means whereby the string theory landscape is populated. It is also true that if

there is a theory which in some sense naturally gives rise to many universes, then that gives plausibility to the idea of a multiverse. However, there are many problems, as I shall now explain.

Problems for multiverses

The whole idea of multiverses, including the stringy landscape idea is fraught with problems and I shall just list a few of them.

1. It is important to recognise that the physics is speculative, to say the least. The trouble with many universes is that they cannot even in principle be observed. They cause no effect whatever in our own universe because no signal from them can ever reach us.

   Martin Rees is one of Britain's most distinguished cosmologists. In one of his books he describes himself as a 'cautious empiricist' who starts to feel at home when familiar physics can be applied to the universe, which he says is the first thousandth of a second from the origin and later.[10] However, in another book he expresses his preference for a multiverse over design, even though he describes the multiverse idea as 'highly speculative' and his preference 'no more than a hunch'.[11] The physics which would yield multiverses applies not to one thousandth of a second after the origin, but the first 10^{-32} seconds or even the first 10^{-43} seconds. It is a quite interesting example of an ideologically driven rather than evidence based preference. Even though Rees recognises that science cannot answer the question why there is anything at all, he still opts for a multiverse as apparently removing the need for God. Both Leonard Susskind and now Hawking likewise see no need for God if his stringy landscape version of the multiverse is correct.

2. There is a problem about the existence of actual infinities in nature. Mathematicians happily talk about and manipulate different degrees of infinity but paradoxes arise when we think about infinite numbers of things existing in the real world. Hilbert's Hotel has infinitely many rooms all of which are full. Even so, room can very easily be made for infinitely many more guests! All one has to do is tell the person in Room 1 to move to Room 2, the one in Room 2 to go to Room 4, the one in Room 3 to go to Room 6, and so on. Then all the even numbered rooms are full but the odd numbered ones are all free! This paradox illustrates that no infinity is ever 'complete'; it can always be added to.

   Then there is the problem, noted above, that, if there are infinitely many regions with varying parameters, there will be infinitely many identical (and near

identical) copies of me, and this leads to very strange consequences. Some philosophers and mathematicians think infinitely many universes are ruled out because of the paradoxes. I don't quite see the paradoxes as logically precluding them, but a theory without paradoxes is surely to be preferred.

3. The multiverse hypothesis is not a simple hypothesis. Scientists normally opt for the simplest of competing hypotheses which are consistent with the data, and this does not seem to be that. The principle of Ockham's razor tells us that we should not multiply entities needlessly. As noted earlier, another question one needs to ask is, 'Why this multiverse?' That applies to the stringy landscape idea as much as any of the others, and already to produce the landscape some choices within string theory have been made.

4. In any case the turn from strategy 1 to strategy 2 implies a move away from predictability, which had been a cornerstone of the scientific method. This is not just predictability of physical parameters, but predictability in general based on the existence of order in the universe. Suppose some unexplained feature arises in the universe. Instead of trying to explain it rationally using science, the temptation is now to say, 'We just happen to be in a universe which exhibits that feature'. Such theories are not falsifiable (though see point 6 below).

5. Possibly the most outstanding problem in cosmology is the fine-tuning of the cosmological constant, Λ. This is the term originally introduced into his equations by Einstein, and assigned a particular value, to make the universe static. If he had put it to zero, or another value, he would have predicted the expansion and arrived at the big bang theory.

   Until recently it had been thought that Λ was zero, but observations have now indicated that Λ might take a very small, but positive value.

   Now physicists think they know where Λ comes from. In quantum theory the vacuum is not empty but a hive of constantly fluctuating activity, and possesses energy. Λ is believed to be the energy of the vacuum. The unfortunate thing is that when Λ is calculated it gives a value 10^{120} times that which is compatible with observations. If Λ really took the calculated value our bodies would be pulled apart in an instant with body parts flying away to the ends of the universe.

   The answer cosmologists have come up with to this? The reader by now will have guessed: a multiverse. And in the string theory landscape the different universes represent different values of Λ. If a universe starts with a very high value of Λ it will spawn billions upon billions of universes until a universe

eventually arises with the small value of Λ that our universe has.

This looks like a great success. But now there is another question we need to ask. According to the multiverse theory, the universe is now to be regarded as typical of those with Λ values which permit life. The question then is, 'Does it look like that or is it more special than that?'

Calculations show that the average value of Λ which would be compatible with life is quite a bit more than the value we observe. The first calculations showed that it could be a hundred times more; that figure came down with more recent calculations but it still looks a bit too high. Thus we seem to be observing a value of Λ that is a bit too special, though not enormously so by astronomical standards.

Of course there could be many other parameters of our universe besides Λ which are more highly tuned than is strictly required for our own existence. It looks as though there are and I shall return to this issue in a moment.

6. Some multiverse models require an element of fine-tuning for there to be a multiverse in the first place. An example is that the overall mean density must be less than or equal to the critical value so that the universe as a whole is infinite and expands forever. And that may not be likely given that in principle the density can take any value from an enormously large range. It might well be greater than the critical value, in which case the universe is not infinite, but finite.

It may be that the landscape and other multiverse theories are already faced with the possibility of observational falsification for this reason. The latest satellite data on the cosmic background radiation, which I mentioned near the beginning as confirming the big bang, show very tiny fluctuations in its temperature, which have been taken to confirm the predictions of inflation. But there is a discrepancy, namely that the fluctuations disappear at certain points. That could mean that we are living in a finite universe which is closing back in on itself. What this would be saying is that we could almost be seeing right round the universe and there simply would not exist other regions 'outside' ours.[12] This is very tentative and controversial, but the model which is proposed here at least has the merit of contact with observation and openness to empirical enquiry—and would avoid all the paradoxes of infinity.

Suppose this particular finite model were eliminated by observation. It would still be the case that we could never be sure that we really inhabited an infinite

universe. John Barrow makes just this point, noting that either of two options is possible.[13] We may think we are in an infinite universe when we just inhabit an underdense part of a finite universe *or* we think we are in a finite universe when we inhabit an overdense part of an infinite universe.

7. Roger Penrose poses a massive problem to inflation and indeed all attempts to explain the specialness of the big bang on the basis of a multiverse.

Penrose is concerned with the amount of order there was at the beginning. Order can be measured (by a quantity called entropy) and it decreases over time. Penrose puts it like this concerning the entropy of the universe. He says that the Creator had something like $10^{10^{123}}$ possible universe configurations to choose from, only one of which would have the order which ours does.[14] That is the order necessary to produce a cosmos with all the galaxies, stars and planets that our universe possesses.

Now Penrose points to the fact that, for a universe to have life, a great deal of order is needed but much less than this vast amount. One could create the entire solar system with all its planets and all its inhabitants by the random collisions of particles and radiation with a probability of 1 in $10^{10^{60}}$.[15] This is a tiny probability but much greater than 1 in $10^{10^{123}}$. The implication is that our universe is vastly more special than required merely in order for us to be here. It is much, much more special than a universe randomly selected from the subset of universes which are conducive to life. This is a very serious challenge for the multiverse idea but totally consistent with design.

To summarize this point, if the multiverse explanation is correct then we ought to be in a universe with parameters just right for us but not vastly too special. The cosmological constant looks close to meeting this criterion but the initial entropy of the universe fails catastrophically. There are other parameters such as the constancy of the charge on the electron and the lifetime of the proton which also look much too fine-tuned, again posing a problem for the multiverse hypothesis.

Comparing the explanations

So how do we choose between the multiverse explanation and design? Let me just summarize a few of the problems with the multiverse from the above discussion:

1. It does not provide an ultimate explanation. One can always ask, 'Why is there something rather than nothing?'

2. It is also a complex explanation. Simpler explanations involving the least number
of entities and kinds of entities are preferred in general in science, so scientists ought to be sceptical about the gigantic multiplication of entities involved in multiverse theories. There is also the question for any particular multiverse, 'Why does this particular multiverse exist and not another?'
3. A multiverse does not explain why there should be life. There is no reason in principle why a multiverse should do so. The question is always, 'Why does this particular set of laws, which gives rise to the multiverse in question, give rise to life?'
4. This universe looks too special. It is more special than is required for life to develop and that speaks of design more than of any kind of random selection.

In contrast creation and design by God does provide an ultimate explanation because God, if he exists, exists necessarily—that is at least part of what we mean by 'God'. In addition design by God is a simple explanation, and much more economical than the multiverse. One is not invoking a whole multitude of complex entities with which one can have no possible interaction, but one intelligent being, like ourselves in some ways but so much greater, who designed the universe with the deliberate intention of its bringing forth creatures for a relationship with himself.

Notes

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4. Paul Davies (2006), *The Goldilocks Enigma: Why is the Universe Just Right for Life?*, London: Allen Lane, 3.
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12. As suggested in Luminet, J.-P. (2005), 'A Cosmic Hall of Mirrors', *Physics World* 18 (9), pp. 23-28.
13. John Barrow (2005), *The Infinite Book: A Short Guide to the Boundless, Timeless and Endless*, London: Jonathan Cape, 144.
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The Text of The Greek New Testament

T.C. Mitchell

The year 2011 marks the 400th anniversary of the publication in 1611 of the so-called Authorized or King James Version of the Bible, so it may be appropriate to look at the current state of study of the Greek text of the New Testament, which formed an important element in it. The original title page runs *The Holy Bible Conteyning the Old Testament and the New. Newly Translated out of the Originall tongues: & with the former Translations diligently compared and reuised by his Maiesties special Commandment. Appointed to be read in Churches. Imprinted at London by Robert Barker, Printer to the Kings most Excellent Maiestie. Anno Dom 1611.* This illustrates two points: first, that neither of the commonly used designations is found there, though each can be derived from it (and the Preface is addressed to "The Most High and Mighty Prince James"); and, second, that spelling revision has taken place over the centuries, something typical of transmitted texts.

In this version, the translators of the New Testament made use of a printed Greek text issued in 1550 by the Paris publisher Robert Estienne (Stephanus), which was a lightly revised form of the first edition published in 1516 by Desiderius Erasmus at Basel in Switzerland.[1] This he had prepared on the basis of a limited number of New Testament Greek manuscripts available to him there. These manuscripts were mainly medieval minuscules (in lower case rather than capital letters), the principal ones being those designated today as ms. 2^{e} for the Gospels, ms. 2^{ap} for Acts and the Epistles and ms. 1^{r} for Revelation, all of the 12th century A.D., together with a few other manuscripts of the 11th, 12th and 15th centuries, which gave slightly different readings. This text has been reprinted with slight revision over the centuries, and has since 1633 been designated the "Textus Receptus (Received Text)" on the basis of an otherwise unsubstantiated claim made by the publisher Elzevir for an edition printed at Leiden, a designation that has retained an authority not justified by what was no more than a publisher's boast.

Before the invention of printing in the fifteenth century, every Bible had to be copied by hand, and examination of the surviving manuscripts shows that the scribes introduced, often unintentionally, alterations in the texts they were copying.

An important point to note concerning alterations in the manuscript evidence is that, while it is reasonable to believe that the original text of the Bible was received by special revelation, the same cannot be said of manuscript copies of it. It is clear from the manuscript evidence, which exhibits numerous variant readings, that the Holy Spirit did not control the individual work of scribes copying the text. This point is set out in a theological context by W. Gruden in his *Systematic Theology* " . . . it is extremely important to affirm the inerrancy of the original documents, for the subsequent copies were made by men with no claim or guarantee by God that these copies would be perfect. But the original manuscripts are those to which the claims to be God's very words apply. Thus, if we have mistakes in the copies (as we do), then these are only the *mistakes of men.*" [2]

After the time of Erasmus, further manuscripts became available, particularly from monastic, ecclesiastical and wealthy collector's libraries, and students of the text observed that these sometimes showed variant readings. An early example was the fine manuscript the Codex Alexandrinus (designated A), which was presented in 1627 to King Charles I by Cyril Lucar, Patriarch of Constantinople (and presented to the British Museum by King George II in 1757),[3] and variant readings were cited from it, and thirteen other manuscripts, in the New Testament volume of the great London Polyglot Bible published in 1657 by Brian Walton.[4]

This was an early example of a continuing trend, and by the eighteenth century some scholars were concluding that it was desirable to make a study of the different manuscripts which were coming to light in order to decide whether an improved Greek text was possible.[5] A notable event in the latter part of the nineteenth century was the publication in 1881 by B.F. Westcott and F.J.A. Hort of a new edition of the Greek New Testament, with a separate volume by Hort discussing the manuscript evidence and its classification.[6] Their text was based to a considerable extent on the great 4th century Codex Vaticanus (B),[7] an imperfect though usable edition of which had been published in 1867 by the German scholar Constantine Tischendorf.

A new element came into consideration not long after the publication of Westcott and Hort's edition when in 1897 two young English scholars, B.P. Grenfell and A.S. Hunt, who had been excavating for papyri at Egyptian sites, transferred operations to Behnesa (al-Bahnasa), ancient Oxyrhynchos, and began finding papyrus copies of parts of the Greek New Testament. Since then large numbers of papyri have come to light both by excavation and from illicit digging and purchase from dealers, [8] and, though many

were simply documents of everyday life, they included other Christian documents as well as further manuscripts of the Greek New Testament.[9] Particularly important collections of such material were purchased in 1930-31 by A. Chester Beatty (P^{45}, P^{46}, P^{47}), now at Dublin,[10] and in 1955-56 by M. Martin Bodmer (P^{66}, P^{72}, P^{74}, P^{75}), now at Cologny near Geneva.[11] Some of the papyri date from as early as the second and third centuries A.D.,[12] predating previously known manuscripts, and therefore requiring the reconsideration of earlier conclusions. Papyrus was no doubt used throughout the ancient Near East, as demonstrated for instance by a papyrus fragment of the 8th century B.C. from Murabba'at in Palestine inscribed in archaic Hebrew with a letter over-written by a list of names (palimpsest),[13] but so far all known Greek papyri have been found in Egypt.[14]

A very significant papyrus (P^{52}), a fragment of chapter 18 of the Gospel of John, which had been acquired by B.P. Grenfell in 1920, and now held at the John Rylands Library, Manchester (Gr.P. 457), was recognised in 1935 by C.H. Roberts as datable on palaeographic grounds (comparison of the script with other dated documents) to the first half of the second century A.D. This remains the earliest known New Testament manuscript.[15]

The Greek New Testament is now known from over 5000 manuscripts (some fragmentary), passages quoted in lectionaries (Biblical passages arranged for liturgical use) and citations by early Christian writers.[16] A recent count gives the numbers as 115 papyri, 307 uncials (majuscules), 2862 minuscules, and 2412 lectionaries,[17] with dates in the ranges: papyri, 2nd-8th centuries A.D., uncials, 4th-9th centuries, minuscules, 9th-15th centuries, and lectionaries, various dates,[18] that is to say none earlier than 100 A.D., and therefore none an original manuscript. The fact that these manuscripts, most dating some centuries later than the originals, and all having been through the hands of secondary copyists, contain variant readings, shows that it is sensible to study and analyze them in order to get as near as possible to the original text.

The existence of so many manuscripts means that the determination of the Greek text nearest to that originally written presents a considerable challenge. Concerning the kind of ancient context in which the early New Testament manuscripts are likely to have been recorded, Sir Frederic Kenyon wrote

> We now have texts, substantial in the case of the Gospels, Acts and Apocalypse and almost complete in the case of the Pauline Epistles, which go back to the early part of the third century. The interval between the composition of the New Testament and the earliest extant manuscripts of them has been reduced by a hundred years, and we actually have evidence (small but decisive) of the circulation of the Fourth Gospel in the first half of the second century—that is, within about a generation of the earliest date usually assigned to its composition. The general effect of this new evidence is to confirm the

> substantial integrity of our texts of the New Testament Scriptures, but also to show that in the third century, and therefore presumably for some time back into the second, the text was in detail very far from settled. Instead of a state of orderly descent . . . from the original autographs to the extant copies of the fourth century, we seem to see a period of increasing disorder, from which a state of comparative order was ultimately produced when the Church reached more settled conditions[19]

After referring to the fact that in this period the works of classical literature were copied by professional scribes who were respected and protected, he pointed out that

> the fortunes of the Christian Scriptures were different. In the earliest days the Christians were a poor community, who would seldom have been able to command the services of professional scribes. There were no recognized centres for the promulgation of authorized copies of the Scriptures. . . . Many copies were made by untrained provincial copyists, . . . So long as Christianity was at best tolerated and at worst persecuted, the transcription and circulation of the Scriptures were exposed to difficulties from which the pagan literature was free. In circumstances such as these it was natural that varieties of readings should multiply. . . Such revision as there was would be local and casual, due to the initiative of individual bishops or scholars, and its influence would be confined to the immediate neighbourhood. This would tend to the creation of local types of text, extending at most to a province or to part of a province. . . . Only when times were peaceful, and only decisively after the recognition of Christianity by Constantine, could revision be seriously taken in hand, and by that time the confusion had been created, the original autographs had long ago disappeared, and absolute verbal accuracy was no longer obtainable[20]

Study of the manuscripts resulting from factors such as these has led to a generally agreed conclusion that much of the New Testament text found in them can be grouped in main text-types. These are classified in this way because in each type the details of the text can be explained reasonably as representing a common text tradition going back to earlier manuscripts.

The main text-types distinguished in this way are usually designated Byzantine, Alexandrian, and Western with a less clear possible Ceasarian.[21] Of these the most clearly attested are the Byzantine, Alexandrian and Western.

The **Byzantine** text-type (earlier known as Syrian (Hort), sometimes as Koine, and recently as Majority), is represented by over 80% of all manuscripts. Many of these are mediaeval in date, so the large number is not necessarily a significant factor. This text-type is not attested before the fourth century A.D., when readings characteristic of it appear in the writings of Chrysostom (c.347-407) and Theodoret (c.393-c.460), both associated with Antioch in Syria. The earliest known manuscript belonging mainly to this group is the Gospel section in the Codex Alexandrinus (A), dated to about 475. This

document is known as "Alexandrinus" because it is assumed that Cyril Lucar the Orthodox Patriarch of Constantinople, who presented it to Charles I, had brought it from his former See in Alexandria, but there is some question as to whether this was really its place of origin, so it cannot be assumed to have originated in Egypt.[22] There is a lack of clear evidence bearing on the early stages of this text-type, but it is possible that it was put in its basic form in Antioch by the great scholar Lucian (c.240-312), best known for his work on the Septuagint, the Greek version of the Old Testament,[23] and that Chrysostom brought it from Antioch to Constantinople, the capitol of the East Roman Empire, when he became Patriarch in 398. It was a text-type much quoted by the early Fathers and became the main Biblical text of Constantinople, Asia Minor and Syria.[24]

Concerning this text type (which had been designated "Syrian" by Westcott and Hort), Kenyon wrote:

> This is the text found in the great majority of manuscripts, entrenched in print by Erasmus and Stephanus, and known as the Textus Receptus or Received Text, as opposed to the critical editions of modern times. . . . this is a text which has suffered progressive revision, not (or only to a very slight extent) on doctrinal grounds, but mainly in the interests of intelligibility and by means of verbal and stylistic alterations and by the assimilation (deliberate or unintentional) of parallel narratives. . . . It may now be taken as an ascertained fact that there is a type of text which begins to make its appearance about the end of the fourth century, and that this type acquired prominence in the Church of Constantinople, and that it continued to be the text in general use throughout the Middle Ages, and finally was stereotyped in print.[25]
>
> It is not to be understood that this revision was made as a deliberate act at a single time, or that it assumed its final form at once. It was rather the result of forces and tendencies which continued to operate over a long period. In part it was due to unconscious tendencies which lead a scribe to substitute familiar phrases for those less familiar; in part to more deliberate but wholly innocent action in the supposed interests of the reader, taking the form of insertion of names or pronouns to make a passage more clear, of modifying a passage which appeared open to misunderstanding, of removing apparent contradictions between two evangelists, of assimilating the narrative of one Synoptist to that of another, of the substitution of one word for another, or an alteration in the order of words. All of these are changes which might easily be made at a time when authoritative texts were not to be had, when accurate reproduction of writer's words were of little account, and when what mattered was that the sacred Scriptures should be readily intelligible. [26]
>
> The relatively late date and on the whole secondary character of the α text[27]is generally assumed. [28]

More recently, Metzger has said of this text-type

> scholars today generally agree that one of the chief contributions made by Westcott and

> Hort was their clear demonstration that the Syrian (or Byzantine) text is later than the other types of text. Three main types of evidence support this judgement: (1) the Syrian text contains combined or conflate readings which are clearly composed of elements current in earlier forms of text; (2) no ante-Nicene Father quotes a distinctively Syrian reading; and (3) when the Syrian readings are compared with the rival readings their claim to be regarded as original is found gradually to diminish, and at last to disappear."[29]

In this quotation, the "Syrian (or Byzantine) text" is that generally known as the "Received Text"; "combined or conflate readings" are passages in which readings occurring in separate texts are found combined in the text in question, for example at Luke 24:53 one text-type (known today as the Alexandrian) has "blessing God", a second (the Western) has "praising God", but a third (the Byzantine or "Received Text") has "praising and blessing God", showing that it depended on, and was therefore later than, the other two;[30] and an "ante-Nicene Father", was a Christian writer earlier in date than the Council of Nicea, 325 A.D.

It is presumed that the **Alexandrian** text-type (earlier known as Neutral (Hort), now also sometimes as Egyptian) was the work of scholars working in Alexandria in Egypt, probably as early as the second century A.D., in the accomplished scribal tradition of that city. They are likely to have had access to manuscripts not far removed from the originals. This text-type is represented today by papyri dating from the end of the second century A.D. (P^{66}, P^{75}), from the third century (P^{46}, P^{72}), and by the great fourth century uncial Codices Vaticanus (B), and Sinaiticus (S or ℵ; some readings). It is agreed that the text in P^{75} is almost identical with that in the Codex Vaticanus.[31] This was also the type of text quoted by the third century scholar Origen of Ceasarea (c.185-c.254). It continued to be represented in manuscripts copied in later centuries.[32]

Of this text-type, which was considered by Westcott and Hort to be that nearest the original, a view he could not fully accept, Kenyon wrote that it

> . . . is now generally regarded as a text produced—or perhaps it would be better to say transmitted—in Egypt and probably at Alexandria under editorial care, which was so far accepted in the country that it is found in the Coptic versions and in many manuscripts of Egyptian origin.[33]

and

> If . . . the extreme claims by Westcott and Hort . . . need to be qualified, it does not follow that the text itself ceases to demand the highest respect. Even though it is an edited text, it may be a well-edited text; and in the case of all ancient literature a well-edited text is the best that we can hope for.[34]

One possible objection that might be raised against the Codex Vaticanus and the Alexandrian text-type which it represents could be that because it is held in the Vatican Library, it might represent a biased Roman Catholic version of the text. That this would

be inherently improbable is shown by the fact that the Vatican authorities for long made access to it extremely difficult.[35] If it had held a text particularly favorable to their position, they would surely have made it known as soon as possible. Though it's early history is unknown, it was evidently already in the Vatican by 1481, but it was not until 1857 and 1859 that two inaccurate versions of it were published by the Vatican authorities, and the German scholar Tischendorf was only allowed the limited period of fourteen days to study it. On the basis of this short examination he published the best version of it that he could in the circumstances in 1867, and it was only in 1889-90 that the Vatican published a photographic facsimile.

The **Western** text-type is so called because it is found particularly in citations in the writings of scholars in North Africa such as Tertullian (c.160-c.225), and in Gaul (France) such as Irenaeus (c.130-c.200). It is also reflected in some readings in local Old Latin (that is pre-Vulgate) versions of the Bible which were in use in the same areas.[36] The Old Latin manuscripts show many variant readings, probably because of a situation reflected in a comment of Augustine (354-430) that "In the earliest days of the faith, when a Greek manuscript came into anyone's hands and he thought he possessed a little facility in both languages, he ventured to make a translation".[37] The church in Rome itself would not have needed a Latin translation, since educated Romans knew Greek.[38] There is evidence of this text-type also, however, in the Middle East in the *Diatessaron* (life of Christ based on the four Gospels, circulated mainly in Syriac) of Tatian (c.160 A.D.),[39] and in the Old Syriac version, as well as in some papyri of the third (P^{29}, P^{48}) and fourth (P^{38}) centuries. It is known also from the uncial Codex Bezae (D) of the 4th or 5th century, well known as a manuscript because it was acquired in 1562 by Calvin's friend Théodore Beza (and presented by him to the University of Cambridge in 1581).[40]

A graph showing the frequency by century of these three main early text-types has been given by D.B. Wallace.[41] The following table shows his details, the figures representing, not the numbers of manuscripts, but the varying widths in millimeters of entries in his graph, giving the relative extent of the evidence.

Century	Byzantine	Alexandrian	Western
I	-	-	-
II	-	11	-
III	-	36	5
IV	-	20	3
V	4	15	3
VI	16	25	-
VII	5	15	-
VIII	5	11	-
IX	31	7	-

This chart ends with the ninth century A.D., but large numbers of manuscripts following the Byzantine text-type are attested from the subsequent centuries, until the invention of printing in the fifteenth century, when such publications as Gutenberg's edition of the Latin Vulgate in 1456 and its successors began to make hand-copying unnecessary. Wycliffe (c.1330-84) had to use manuscript versions of the Vulgate for his English translation (1380-82), but printed versions of the Vulgate would have been available when Miles Coverdale made his translation, published in 1535.

A possible further text-type referred to as "Caesarian" has been suggested, though it is not so distinctive as the previous three.[42]

One characteristic of the Textus Receptus (Byzantine or "Majority Text"), which adds to the unwillingness of it's adherents to give it up, is that it includes passages not found in the earlier manuscripts. Two notable instances are at Acts 8:37 and 1 John 5:7-8.

In Acts 8, in the passage concerning Philip and the Ethiopian Eunuch, where the Ethiopian asks for baptism, the AV has at verse 37, "*And Philip said, If thou believest with all thine heart, thou mayest. And he answered and said, I believe that Jesus Christ is the Son of God*", a passage which does not appear in recent versions. Concerning it, B.M. Metzger writes that this verse is not found in the principal early manuscripts, and continues "There is no reason why scribes should have omitted the material, if it had originally stood in the text. . . . Though the passage does not appear in the late medieval manuscript on which Erasmus chiefly depended for his edition (ms. 2), it stands in the margin of another (ms. 4), from which he inserted it into his text because he 'judged that it had been omitted by the carelessness of scribes'"[43] In the episode described in this passage, Philip may well have said something of the kind reported, but it is not necessary to the understanding of the event, and is the sort of thing that might have been written in the margin of a Biblical manuscript, perhaps being used in baptism ceremonies, and copied inadvertently into the main text by a later scribe.

In 1 John 5:7-8, the AV has "(7) For there are three that bear record *in heaven, the Father, the Word, and the Holy Ghost; and these three are one. (8) And there are three that bear witness in earth*, the spirit, and the water, and the blood; and these three agree in one." In this passage the words set in Italics do not appear in early manuscripts, and Metzger writes concerning them that "The passage is absent from every known Greek manuscript except four, and these contain the passage in what appears to be a translation from a late recension of the Latin Vulgate. These four manuscripts are ms. 61, a sixteenth century manuscript formerly at Oxford, now at Dublin; ms. 88, a twelfth century manuscript at Naples, which has the passage written in the margin by a modern hand; ms. 629, a fourteenth or fifteenth century manuscript in the Vatican; and ms. 635, an eleventh century manuscript which has the passage written in the margin by a

seventeenth century hand."[44] In other words, it has no reliable manuscript attestation. Metzger comments further that " . . . if the passage were original, no good reason can be found to account for its omission, either accidentally or intentionally, by copyists of hundreds of Greek manuscripts, and by translators of ancient versions." These verses were present in the Greek text of Erasmus, because, though he did not find them in his main manuscripts, and had at first omitted them, he included them because he was shown ms. 61. It is highly likely that this manuscript, a complete New Testament, which dates from the late fifteenth or early sixteenth century, was written expressly in order to persuade Erasmus to include this passage.[45] This passage has appeared to provide convenient support for the doctrine of the Trinity, but it is not needed because that doctrine is quite clear from other passages in the Bible (Matt 28:19; 2 Cor 13:14).

These are just two examples of the kind of passage which formed part of Erasmus's Greek Text, and are therefore found in the Authorized Version, but, in the light of earlier textual evidence, are omitted from more recent versions.

The Authorized Version has served many generations very well. It was the Bible of Bunyan, the Wesleys, Whitfield, and more recently of such men as Martyn Lloyd Jones. It is still worth reading, and should certainly not be discarded, but it should be recognised that in the New Testament it was based on the Byzantine Text, as represented by Erasmus's text, the so-called "Received Text". On the basis of modern evidence, this can only be regarded as an inferior text, which has been abandoned by most modern translations. It has been retained however in the New King James Version, in which the Preface makes clear that, while it makes use of an up-to-date Hebrew text for the Old Testament, it is still adhering to the "Received Text" for the New Testament.

While it is thus reasonable to recognize that the Byzantine or Received Text, in spite of the numerous manuscripts representing it, belongs to a tradition furthest from the original, this is not the end of the story. The large number of manuscripts and the very large number of variant readings found in them means that careful consideration and judgement are needed in deciding the most likely original readings, and there is not entire agreement on the best procedures.

There are major Greek New Testament text projects in hand dealing with individual biblical books,[46] and there have been several concise editions of the Greek New Testament,[47] of which two in particular have been in common use in recent years. These are: (a) the 25th edition (1963, edited by his son Erwin Nestle and Kurt Aland) of a text prepared by the German scholar Eberhard Nestle, who had published his first edition (*Novum Testamentum Graece*, Stuttgart), in 1898; and (b) the 2nd edition (1968) of a Greek New Testament intended mainly for translators in the mission field, prepared for the United Bible Societies by K. Aland, M. Black, C.M. Martini, B.M. Metzger, and

A. Wikren; both editions with variant readings in an apparatus at the foot of each page.

Eberhard Nestle based his text on three previous editions, Tischendorf (1869-72), Westcott & Hort (1881), and first R.F. Weymouth (1886), then from 1901 B. Weiss (1894-1900), following the textual variant readings supported by the majority of the three, the rejected readings being given in the apparatus. Subsequently this edition under Aland added readings from the papyri. The United Bible Societies editors formed their text on the basis of choices between variants decided by majority agreement of the editors.

With the 26th edition (1979) of Nestle and the 3rd edition (1975) of the United Bible Societies version, an identical Greek text was adopted by both, though the format and details of the apparatus remained different, suitable respectively (a) for general academic study, and (b) for concentration on particular passages. It cannot be said, however, that this Greek text represents a finally recovered original,[48] and there is still much work to be done on the sources.

In the early period of the preparation of editions of the Greek New Testament, the method of choosing between alternative readings was what has been called eclectic, that is to say, each passage was treated independently, without regard to any relation the manuscript in question might have with any other,[49] but a new approach was brought in with the grouping manuscripts in related types, and a further new element came in with the discovery of the papyri. There is today some debate about the best method of dealing with the wealth of evidence available. E.J. Epp has classified the different approaches which have been in use over the period of textual study into three methods: 1. Historical-documentary; 2. Rigorous eclectic; and 3. Reasoned eclectic.[50] He defines no.1 as attempting "to reconstruct the history of the NT text by tracing the lines of transmission back through our extant MSS to the very earliest stages and then choosing the reading that represents the earliest attainable level of the textual tradition"; no.2 as examining "all the variants available to us" and selecting "the reading that makes the best sense in terms of the internal criteria. That is, we select the variant reading that best suits the context of the passage, the author's style and vocabulary, or the author's theology, while taking into account such factors as scribal habits . . ."; and no.3 as combining "these two procedures". Of these, no.1 is largely the method which has resulted in the identification of text-types, and no.2 as choosing readings without regard to the age or context of any manuscript. Concerning no.3, Epp comments "It is essential to have this third method if —- as is realistically the case —- the criteria for making decisions on the basis of the first method (the historical-documentary) are not obvious or clear, and if —- as many textual critics think —- the second method (rigorous eclecticism), though valuable for its numerous insights, is —- in isolation — a one sided and less than adequate method. On this third procedure, when faced with any

variation-unit, we would choose the variant reading that appears to be in the earliest chronological group *and* that also makes the best sense when the internal criteria are applied."

This third approach, the Reasoned eclectic, is reasonable, but it is clear that to carry it out it is essential that the scholars engaged in this work will be fully academically equipped, and that they have dedicated and sound judgment.

It might appear, from repeated references to variant readings in the text found in New Testament manuscripts, that there is uncertainty about the reliability of the Bible as we have it today. This would be a false impression, and it is relevant here to conclude by quoting some remarks of Sir Frederic Kenyon:

> No fundamental doctrine of the Christian faith rests on a disputed reading. Constant references to divergences of reading . . . might give rise to the doubt whether the substance, as well as the language, of the Bible is not open to question. It cannot be too strongly asserted that in substance the text of the Bible is certain. Especially is this the case with the New Testament. The number of manuscripts of the New Testament, of early translations from it, and of quotations from it in the oldest writers of the church, is so large that it is practically certain that the true reading of every doubtful passage is preserved in one or other of these ancient authorities.[51]

In a similar sense, following discussion of such matters, F.F. Bruce wrote, half a century ago:

> Something more ought to be said, and said with emphasis. We have been discussing various textual families, and reviewing their comparative claims to be regarded as best representatives of the original New Testament text. But there are not wide divergences between the families, of a kind that could make any difference to the Church as a witness and guardian of Holy Writ. The Authorized Version of 1611 represents, by and large, the Byzantine text. The Revised Version of 1881 and the American Standard Version of 1901, which were produced under the influence of Westcott and Hort's textual theory and work, represent in the main the Alexandrian text.[52]

After referring to the Revised Standard Version of 1946, he continued:

> If the variant readings are so numerous, it is because the witnesses are so numerous. But all the witnesses, and all the families into which they may be divided, agree on every article of Christian belief and practice.[53]

[1] On Erasmus as a scholar and his attitude to Biblical study see R. Pfeiffer, *History of Classical Scholarship 1300-1850* (Oxford, 1976), pp.71-81.

[2] *Systematic Theology. An Introduction to Biblical Doctrine* (Leicester and Grand Rapids, 1994),

pp.96-97.

[3] On this manuscript see Frederic Kenyon, *Our Bible and the Ancient Manuscripts* (4th ed.; London, 1939), pp.135-138, (5th ed.; 1958), pp.198-202.

[4] B. Walton, *Biblia Sacra Polyglotta*, 5 (London, 1657). For an enthusiastic description of this Polyglot (of which he owned a copy), see R.H. Pfeiffer, *Introduction to the Old Testament* (New York and London, 1941), pp.99-100; see also on the New Testament section, Kenyon, *Our Bible*, pp.179, 309.

[5] Notable scholars who pursued this work were (with the dates of their principal publications): J. Mill (1707), R. Bentley (1720), J.J. Wetstein (1730 and1751-52), J.A. Bengel (1734), J.S. Semler (1767), J.J. Griesbach (1775-77), C. Lachmann (1831), C. Tischendorf (1869-72) and S.P. Tregelles (1857-72). For a summary of the work of these scholars see Kenyon, *The Text of the Greek Bible* (new ed.; London, 1949), pp.158-165; (3rd ed., revised and augmented by A.W. Adams; London, 1975), pp.175-180; and E.J. Epp in E.J. Epp and G.D. Fee, *Studies in the Theory and Method of New Testament Textual Criticism* [Studies and Documents 45] (Grand Rapids, 1993), [revised reprints of articles previously published elsewhere by Epp and Fee, hereafter *Studies*], pp.145-157.

[6] Summary of his analysis in B.M. Metzger, *The Text of the New Testament. Its Transmission, Corruption and Restoration* (Oxford, 1964), pp.131-134; and earlier in Kenyon, *Our Bible* (4th ed.; 1939), pp.110-11, (5th ed.; 1958), pp.168-172; and for interesting accounts of Westcott and Hort themselves, see W.F. Howard, *The Romance of New Testament Scholarship* (London, 1949), pp.69-83, as part of a chapter on "The Cambridge Triumvirate", the third member being J.B. Lightfoot.

[7] On which see Kenyon, *Our Bible* (4th ed.; 1939), pp.138-142, (5th ed.; 1958), pp.202-206; Metzger, *Text of the New Testament*, pp.47-48; K. and B. Aland, *The Text of the New Testament* (Grand Rapids and Leiden, 1987), p.107.

[8] A brief account of the beginning of these discoveries is given in Howard, *Romance of New Testament Scholarship*, pp.111-114; and for further details see H.I. Bell, *Egypt from Alexander the Great to the Arab Conquest* (Oxford, 1948), pp.14-18; E.G. Turner, *Greek Papyri. An Introduction* (Oxford, 1968), pp.21-37..

[9] Metzger gives a list of 76 New Testament papyri (*Text of the New Testament* (1964), pp.247-255); and Aland and Aland, list 88 (*Text of the New Testament*, pp.96-101). Most of these are now in European and American collections, with a small number in the Near East, notable locations being (with their classification numbers, P^{15} etc.): **Near East**: Cairo, 15, 16; Sinai, St Catharine's Monastery, 14; **Europe**: Berlin, Staatliche Mus., 8, 25, 63, 79; Cambridge, Univ. Lib., 17, 27; Dublin: Chester Beatty, 45, 46, 47; Florence: Archaeological Museum, 2; Bib. Laurenziana, 35, 36, 48, 65; Geneva (Cologny): Bodmer, 66, 72, 73,74, 75; London, British Lib., 5, 13, 18, 43, 51; Manchester, Rylands Lib., 31, 32, 52; Oxford: Ashmolean, 77, 78, Bodleian, 19, 29; Magdalen Coll. 64; Paris, Bib. Nat., 4; St Petersburg, 11, 68; Vienna, Nat. Lib., 3, 33, 34, 41, 42, 55, 56, 57, 58, 76; **U.S.A.**: Ann Arbor, 37, 38, 53; Berkeley, Cal., 28; Cambridge, Mass., 9, 10; New York: Met. Mus. 44; Morgan Lib., 12; New York Univ., 59, 60, 61; Yale, 49, 50.

[10] Kenyon, *Text of the Greek Bible* (new ed., 1949), pp.72-74, and 188-189; (3rd ed., 1975), pp.69-72 and 197; Metzger, *Text of the New Testament*, pp.37-38.

[11] Metzger, *Text of the New Testament*, pp.39-42.

[12] E.J. Epp lists these by date in B.D. Ehrman and M.W. Holmes (eds), *The Text of the New Testament in Contemporary Research* [Studies and Documents 46] (Grand Rapids, 1995), p.6.

[13] J.T. Milik in P. Benoit, J.T. Milik and R. de Vaux, *Les Grottes de Murabba'at* [Discoveries in the Judaean Desert, II] (Oxford, 1961), pp.93-100, pl. XXVIII.

[14] On this limited provenance see S.E. Porter in S. McKendrick and O.A. O'Sullivan (eds), *The Bible as Book. The Transmission of the Greek Text* (British Library; London, 2003), pp.177-178.

[15] On this text see Kenyon, *Our Bible* (4th ed.; 1939), pp.128, pl.XIV, (5th ed.; 1958), pp.189-90, pl.XXII; Bruce, *Books and Parchments*, p.172 with facing plate; Metzger, *Text of the New Testament*, pp. pp.38-39, 253; J. Finegan, *Light from the Ancient Past* (2nd ed.; Princeton and London, 1959), fig.142 with p.417; Aland and Aland, *Text of the New Testament*, p.99 and pl.19 (p.84). For a suggested date perhaps early in the years 100-125 A.D. see Epp in Epp and Fee, *Studies*, p.279 n.10.

[16] As well as recognisable in versions in other languages, notably Coptic in Egypt, Syriac in Syria and northern Mesopotamia, and Latin in the west.

[17] B.M. Metzger in McKendrick and O'Sullivan (eds), *The Bible as Book* (British Library), p.203.

[18] A. Piñero and J. Peláez, *The Study of the New Testament. A Comprehensive Introduction* (Leiden, 2003), p.86.

[19] F.G. Kenyon, *Text of the Greek Bible*, (new ed., 1949), p.244; (3rd ed., 1975), p.248.

[20] *Text of the Greek Bible*, (new ed., 1949), pp.245-47; (3rd ed., 1975), pp.249-250. Epp (in Epp and Fee, *Studies* and Documents 45, pp.277-283) argues for "extensive and lively interactions" over long distances at this time, but largely on the basis of secular papyri, so Kenyon's analysis need not be discounted.

[21] Metzger classifies these in two main groups: **Koine** or Byzantine; and **Pre-Koine** consisting of Western, Caesarian (with both Western readings and Alexandrian readings) and Alexandrian, (*Text of the New Testament*, pp.213-216).

[22] On this point see S. McKendrick, "The Codex Alexandrinus or the Dangers of being a Named Manuscript" in McKendrick and O'Sullivan (eds), *The Bible as Book.* (British Library), pp.1-16.

[23]On Lucian see e.g. S. Jellicoe, *The Septuagint and Modern Study* (Oxford, 1968), pp.157-160; and H.B. Swete, *An Introduction to the Old Testament in Greek* (Cambridge, 1914; repr. Peabody, Mass., 1989), pp.80-82 (old but still worth consulting); also briefly Kenyon, *Our Bible* (4th ed.; 1939), pp.60, 76-77, (5th ed.; 1958), pp. 109, 131.

[24] A convenient brief summary of this and the other main text-types is given by G.D. Fee, "Textual Criticism of the New Testament" in Epp and Fee, *Studies*, pp.3-16, this text-type specifically p.8; also Epp (treating it as his "Text Group A") in idem., 285, 289, and 294 (late papyri belonging to this group); and L. Vaganay and C.-B. Amphoux, *An Introduction to New Testament Textual Criticism* (Cambridge, 1991), pp.107-110.

[25] From Kenyon's characterization of this text-type, which he designates the "α text" (*Text of the Greek Bible*, (2nd ed., 1949), pp. 197-203, specifically 197-199; (3rd ed., 1975), pp.208-213, specifically 208-209). On the designation "α text" see n.27 below.

[26]*Text of the Greek Bible*, (2nd ed., 1949), p.199; (3rd ed., 1975), pp.209-210.

[27] Kenyon, like Epp with his text groups "A" etc. (n.24 above), uses the following non-committal Greek designations in his discussion of text-types in *Text of the Greek Bible*, Chapter VII: α (alpha) = Byzantine; β (beta) = Alexandrian; γ (gamma) = Caesarian; δ (delta) = Western.

[28] *Text of the Greek Bible*, (2nd ed., 1949), p.202; (3rd ed., 1975), pp.212, with some revision between editions.

[29] Metzger, *Text of the New Testament*, p.135.

[30] On combined readings, and quoting this example see Kenyon, *Our Bible* (4th ed.; 1939), pp.111, (5th ed.; 1958), p.109.

[31] G.D. Fee, in Epp and Fee, *Studies*, pp.251-273; and Epp in ibid., pp.289-290.

[32] See Fee in Epp and Fee, *Studies*, p.7; and Epp (treating it as his "Text Group B") in idem., 285, 289-292, and 294 (papyri belonging to this group).

[33] *Text of the Greek Bible*, (2nd ed., 1949), pp.208-9; (3rd ed., 1975), pp.219, his text. The insertion "—or perhaps . ." is by Adams in the 3rd edition.

[34] *Text of the Greek Bible*, (2nd ed., 1949), p.210; (3rd ed., 1975), pp.219-220.

[35] See e.g. Kenyon, *Our Bible* (4th ed.; 1939), pp.138-139, (5th ed.; 1958), pp.202-203; also Howard, *Romance of New Testament Scholarship*, pp.91-92.
[36] See Fee in Epp and Fee, *Studies*, pp.7-8; and Epp (treating it as his "Text Group D") in idem., 285, 293-294, and 294 (papyri belonging to this group).
[37] Quoted by Bruce, *Books and Parchments*, p.191; on the Old Latin and the Vulgate, see conveniently Kenyon, *Our Bible*, (4th ed.; 1939), pp.170-177; (5th ed., 1958), pp.238-246.
[38] See e.g. A. Souter, *The Text and Canon of the New Testament* (London, 1912), pp.33-35.
[39]On which see F.L. Cross, *The Early Christian Fathers* (London, 1960), pp.66-68.
[40] On which see Metzger, *Text of the New Testament*, pp. 48-51.
[41] D.B. Wallace, "The Majority Text Theory: History, Methods, and Critique" in Ehrman and Holmes (eds), *Text of the New Testament*, pp. 297-320, specifically 311.
[42] See briefly Fee in Epp and Fee, *Studies*, p.8; and Epp (treating it as his "Text Group C") in idem., 285, 292-293, and 294 (papyri belonging to this group).
[43] B.M. Metzger, *A Textual Commentary on the Greek New Testament* (London, New York, 1971), pp.359-360.
[44] *Textual Commentary*, pp.716-718.
[45] Metzger, *Text of the New Testament*, pp.62, 101-102; see also comparable remarks by Bruce, *Books and Parchments* (rev. ed. London, 1953), pp.199-200.
[46] Outlined by Epp in Epp and Fee, *Studies*, pp.26-29.
[47] Listed and analysed by Epp in Epp and Fee, *Studies*, pp.84-86, and more briefly p.26.
[48] It has been strongly criticized, for instance, by R. Borger (a distinguished Assyriologist, but well versed in Biblical studies), in B.A. Taylor et al. (eds), *Biblical Greek Language and Lexicography. Essays in Honor of F.W. Danker* (Grand Rapids and Cambridge, 2004), pp.34-41.
[49] This was in effect the method applied by the men named in n.5 above.
[50] In Epp and Fee, *Studies*, pp.31-36 with discussion of the difficulties in each, pp.36-44.
[51] Kenyon, *Our Bible* (4th ed.; 1939), p.23, (5th ed.; 1958), p.55.
[52] Bruce, *Books and Parchments*, p.179.
[53] Bruce, *Books and Parchments*, p.180. It has been a great pleasure in this paper to cite the authority of two former Presidents of the Victoria Institute, Sir Frederic Kenyon and Professor F.F. Bruce, both of whom contributed in the past to the Institute journal, mainly the JTVI.

The background, context and public reception of "The Mystery of the Last Supper"

Colin Humphreys

Cambridge University Press released my book "The Mystery of the Last Supper: Reconstructing the Final Days of Jesus" on Palm Sunday (17 April 2011). It created what can only be described as a media storm. In this article I would like to describe what happened, which may be useful to others, and explain why I wrote the book.

For a number of years I had been puzzled about various apparent discrepancies in the Gospel accounts of the Last Supper and other events in the final days of Jesus (more of this later). I gradually worked through these problems and decided to write a book

about their solution. I wrote three draft chapters and sent these, plus a book proposal, to many publishers. They all rejected the book (I believe this is a common experience). I finally sent my proposal to Cambridge University Press (CUP). They sent my proposal to three reviewers: I did not see the reviews but I was told they were favourable. CUP then decided to publish the book, subject to one rather strict condition. This was that they would send my complete book to a biblical scholar of their choice, whose name I would not be told, and if he or she said it should not be published, then they would reject the book and I would have no right of appeal. I was happy to accept this condition. CUP was understandably nervous that a scientist like myself was stepping outside of my area of expertise and I was therefore likely to make elementary mistakes in biblical interpretation. I was happy to have my book thoroughly read by a biblical scholar because I wanted my book to be taken seriously by such scholars. So I received my contract from CUP, but with this strict condition.

I had to decide who I was writing my book for. The last week of Jesus is such a wonderful story that I decided to write the book for the general public and it assumes no specialist biblical knowledge. On the other hand, I wanted biblical scholars to engage with the new information I presented in the book, and so I have an extensive Notes section at the back of the book where I dig more deeply into difficult or contentious issues and where I give full references.

I wanted to make sure that the biblical interpretations in my book were sound, so I sent different chapters of my book to different biblical scholars, including Howard Marshall, Alan Millard, Robert Gordon, Ernest Lucas, Markus Bockmuehl, Peter Williams, David Instone-Brewer and John Sweet. All most generously gave of their time and advice. I learnt a huge amount from their comments. Every chapter of my book was read by at least one expert biblical scholar.
I am a busy university scientist, running a research group of about 20 people, having current research grants of over £10 million and travelling a large amount internationally. My writing and research was performed mainly in the evenings, weekends, at airports and on long flights. I have been thinking, on and off, about the problems of the last week of Jesus for over twenty-five years. I would solve one problem to my satisfaction and then not be able to solve the next. I would come back to it six months or one year later and hopefully solve it and then move on to the next biblical puzzle about the last week of Jesus. My book itself took about three years to write, because I was writing mainly at the weekends, etc, and interacting with the biblical scholars mentioned above.

When my book was complete I sent it to CUP, who sent it to their anonymous biblical scholar for approval. He or she was very kind, said that it should be published and made some very helpful recommendations for changes. CUP then hit me with a bombshell. They reminded me that they had stated in my contract that my book should

be less than 80,000 words. I had totally forgotten this. My book was 94,000 words. CUP said that the 80,000 word limit was important for the price at which they planned to sell the book, in addition, CUP said my book contained some repetitions and it would be better if it was shorter. My first thought was to fight CUP on this, but I then accepted that the book would be better shorter. So I set about reducing the length of the book from 94,000 to 80,000 words. This is a major task which cannot be achieved by simply pruning a few words here and there. It took me another year to shorten and rewrite the book, which I reduced to 78,000 words. CUP seemed surprised that I had shortened it so much and they then asked me to add some illustrations, which I did.

CUP believed that the book might generate some media interest, and they gave the Independent on Sunday exclusive rights to publish an article on my book on Palm Sunday, for which a reporter interviewed me for several hours beforehand. Both CUP and Cambridge University issued press releases about my book. On Palm Sunday, I purchased a copy of the Independent on Sunday and scanned the pages. There was nothing about my book. I contacted the reporter who had interviewed me. He said that the editor rejected his article because readers would not be interested. However, this was not the attitude of other papers! In the week between Palm Sunday and Easter Sunday most UK national papers from the Times to the Daily Mail carried substantial articles about my book. On Easter Sunday it was featured in many Sunday papers. A friend of mine told me that his son had phoned him to say that there was an article about my book in the News of the World. My friend was taken aback, totally unaware that his son read the News of the World! Newspapers around the world, including the USA and Australia, carried feature articles about my book.

I had many interviews on radio and TV, including on the BBC radio Today Programme and the Fox News TV programme in the USA. In these interviews I tried to put across two key points: first, that the four Gospels are in remarkable agreement about the last days of Jesus; second, that I had used science and the Bible, working hand-in-hand, to show this. The interviewers frequently seemed surprised by both of these statements, and it was good to put across a different message from that of Richard Dawkins.

I was invited to speak at the Hay book festival at the end of May. I had not been before. A number of talks were held in parallel in tents of different sizes, and the audience was largely secular. I suspected that only about ten people would attend my talk, and it had been scheduled to be in one of the smaller tents. On the day of my talk it had to be moved to a larger tent, which was packed with over 300 people. There were so many questions at the end of my talk that the person in charge had to stop the questions and clear the audience out so that the next talk could begin. The questions were excellent and there was only one hostile questioner. This shows the considerable interest in Jesus and the Bible which still exists in the general public, which we often forget.

Why did I write this book? In the early 1980s I became interested in the date of the Crucifixion, I enlisted the help of an Oxford astrophysicist to reconstruct the first century AD Jewish calendar, and we jointly published a paper in *Nature* in 1983 called "The Date of the Crucifixion". This paper received considerable publicity at the time. The scientifically reconstructed Jewish calendar provided an objective framework into which to fit the events occurring in the final days of Jesus.

In the course of the above research I found four major problems in the Gospels which puzzled me. The first is the date and nature of the Last Supper. Matthew, Mark and Luke clearly state that this was a Passover meal, with Jesus being crucified later that Jewish day (which ran from sunset to sunset). On the other hand, John equally clearly says that the Last Supper was before the Passover meal. In fact John places the Last Supper , the trials of Jesus and the Crucifixion all before the Passover meal.

The second problem is that if the Last Supper was on Thursday evening and the Crucifixion occurred at about 9:00 am ("the third hour", Mark) the next day, Friday, then it does not seem possible to fit in all the events the Gospels describe between the Last Supper and the Crucifixion.

The third problem is that if the Last Supper was on Thursday evening and the Crucifixion at 9:00 am the following morning, then the Sanhedrin must have met at night, and met on a feast day, or on the eve of a feast day, all of which were illegal according to Jewish law. Yet although the Gospels refer to many false witnesses being called, they implicitly accept the legality of the trials.

The fourth puzzle is that when biblical scholars try to reconstruct what happened in each day in the last week of Jesus, many find that the Gospels record nothing on the Wednesday before the Friday Crucifixion. For example the NIV Study Bible states: "Day of rest: Wednesday: Not mentioned in the Gospels". This is curious. It is clear from the Gospels that Jesus was very busy in the last week before his Crucifixion. Even if Jesus had spent all day on Wednesday in prayer, surely at least one Gospel would have mentioned it. So what did Jesus do on "lost Wednesday"?

I suggest in my book that the solution to these problems is that the Gospels are using two different calendars to describe the Last Supper. John is using the official Jewish calendar, in which the Last Supper, the trials, and the Crucifixion were all before the official Passover meal. Hence according to John, Jesus died when the first Passover lambs were being slain, and Paul could write "Christ, our Passover, is sacrificed". What wonderful symbolism and precise timing! On the other hand, I suggest that Jesus chose to celebrate his Last Supper as a real Passover meal by using an earlier Jewish calendar, the pre-exilic calendar, which persisted down to the first century AD and which I show

was used by a number of Jewish groups. Matthew, Mark and Luke describe the Last Supper as a real Passover meal in this calendar. By using this calendar, Jesus celebrated his Last Supper on the exact anniversary of the first Passover instituted in Egypt by Moses. Jesus thus identified himself as the new Moses, instituting a new covenant. Again, wonderful symbolism and timing.

We can reconstruct these two ancient Jewish calendars using astronomy. When this is done, it shows that the Last Supper was on the Wednesday before the Friday Crucifixion. This solves all four of the problems outlined above. In addition, a Wednesday Last Supper is consistent with a detailed study of the Gospels.

What conclusions can we draw from this? There are many, which I give in my book. However, the main conclusions I would like to leave readers with are those I made near the start of this article. My book studies what the biblical scholar F.F. Bruce called "the thorniest problem in the New Testament". It shows that the Gospels are not "riddled with discrepancies" about the final week of Jesus, as many scholars claim. On the contrary, if the arguments in my book are accepted, then the Gospels are in remarkable agreement. In addition science and the Bible have been used hand-in-hand to solve "the thorniest problem in the New Testament".

It is too early to state whether my book will find wide acceptance among biblical scholars. However, Howard Marshall has written a very generous Foreword to my book and it has been endorsed on the back cover by John Sentamu, the Archbishop of York; Sir John Houghton, Former Chairman of the Scientific Assessment Committee of the Intergovernmental Panel on Climate Change; and Owen Gingerich, Professor Emeritus at Harvard University. CUP has recently informed me that my book is to be translated into Russian, German and Portuguese. In addition, a special lower-price reprint edition will be published for the South Asian market.

Book Reviews

Colin J.Humphreys *The Mystery of the Last Supper :Reconstructing the Final Days of Jesus.* 2011 Cambridge C.U.P. 243 pp. hb. £45.00 pb. £14.99 (ISBN hb.9780 52151 755 3 pb. 9780 52173 200 0)

Colin Humphreys is a professor of materials science and metallurgy at Cambridge University who has been knighted for his outstanding work in science. He is also a keen Christian who has a penchant for using science and historical research in an attempt to solve Bible mysteries. He has sought to discover the true identity of the Star of Bethlehem and has written an interesting study of the miracles associated with the

exodus of the Jews from Egypt in the time of Moses. In the present book he seeks to resolve 'the thorniest problem in the New Testament' namely the date and nature of the Last Supper and the date of Jesus' crucifixion. The book is intended for the man in the street but has sufficient detailed references and information to satisfy the scholar. It is written in the style of a detective story where clues are followed to a logical conclusion.

The problem addressed is the apparent contradiction between the Synoptic Gospels and the Gospel of John as to the timing and significance of the Last Supper. The Synoptic Gospels claim it to be the Passover meal, but John tells us that the supper took place before the Passover. There also seems to be no time to fit the trials of Jesus into the chronology of the Gospels and, in spite of the detailed nature of the reports of that week, nothing seems to have happened on the Wednesday, whereas Friday is overloaded with activity. In 1983 Colin Humphreys, with the help of the Oxford astrophysicist Dr.Graeme Waddington, published a paper in *Nature* on the date of the crucifixion using both ancient Jewish calendars and astronomical data. This material has been revised, taking into account the possibility of the new moon being obscured that day or of it being a leap year. By using the historical details found in both the Gospels and contemporary historical accounts and using the latest astronomical data the author is able to establish the date of the crucifixion as 3rd. April AD 33. Not only does this date satisfy the historical evidence it also sheds light on other details, For instance Pilate is portrayed as more sympathetic to the Jews than we would expect from references in Josephus and Luke 13.1. This could be accounted for in the light of Tiberius' order that Jews should not be mistreated after the execution of the anti-Semitic Sejanus in AD 31. Also there is symbolic significance in the death of Jesus on 3rd. April (14th Nisan) at 3 pm (9th hour) when the Passover lambs were killed (see 1 Cor.5.7) and his resurrection on 5th April (16th Nisan) when the 'first fruits' of the barley harvest were presented. Finally there was only one lunar eclipse during this time, which was also 3rd April 33. A lunar eclipse would give the appearance of the moon turning to blood thus fulfilling Joel's prphecy (Acts 2.20).

The more difficult problem is to account for the apparent discrepancies in the Gospels. The solution offered is based on a close examination of the calendars in use at the time of Jesus. Some had previously argued that perhaps Jesus used the Qumran calendar, but this would not work for the date proposed because the Passover in AD 33 occurred after the official Jewish Passover. Humphreys points out that originally Passover was held on the 14th of the Jewish month Nisan, but after the exile it was celebrated on the 15th. Also the original Egyptian calendar that Moses adopted started the day, like us, at sunrise and not sunset as the official Jewish calendar does. If Jesus had used the original Mosaic calendar as several groups such as the Samaritans, Essenes and Zealots did, then we could solve the problem. Some of these also ate the Passover before the majority of Jews did. Jesus, who saw himself as the new Moses, adopted the ancient sunrise- to- sunrise calendar and ate the Passover meal with his disciples on the Wednesday of Holy Week, the exact anniversary of Moses' first Passover. Humphreys

also suggests that the upper room was in the Essene part of Jerusalem. The man carrying the water jug would more likely to have been an Essene because, as celibates, they had no women to do these menial tasks and Essenes were especially favoured by Herod the Great and hence would be allowed to celebrate feasts on unorthodox days. By using this calendar we are able to fit in the trials of Jesus, which would otherwise be squashed into Friday and would have been illegally held at night. This new scenario allows sufficient time for the trials, Pilate's wife's dream and harmonises the Gospels. It is a happy conclusion to a fascinating book, but does it stand up to scrutiny? The author admits that there is little or no evidence to show that Galileans in general or Jesus in particular adopted the ancient sunrise- to- sunrise calendar. The reader must decide whether the evidence is convincing. Suffice it to say that the book has been warmly received and has been endorsed by a number of prominent Bible scholars.

Reviewed by Reg. Luhman

D.A.Carson *Collected Writings on Scripture* 2010 Nottingham Apollos 335pp. hb £16.99 ISBN 978 1 84474 447 3

Many readers will be familiar with Don Carson through his popular commentaries and exposition of biblical themes and his outstanding preaching ability. Dr. Carson, however, is more than just a popular writer and conference speaker. He is an outstanding biblical scholar with a firm grasp of history, philosophy and, above all, New Testament exegesis. He is also a doughty defender of the historic evangelical view of the inspiration and authority of the Bible. In this volume we have a collection of essays and reviews that deal with various aspects of this important topic. All the essays have appeared before and are readily accessible with the exception of the one dealing with *claritas scripturae*, which appeared in the *festschift* for Gerhard Maier and published in Germany.

The first essay, 'Approaching the Bible' first appeared in the New Bible Commentary and sets out the groundwork for debating Scripture. The author gives an overview of what is meant by revelation, inspiration, canon and the authority of Scripture as well as outlining various principles of interpretation. One of the most useful chapters is concerned with 'recent' developments (up to 1986) when the essay was first published. He reviews the claim of Rogers and McKim that conservative Christians read B.B.Warfield into the Church Fathers and Calvin and claims that Rogers and McKim in turn read Barth and Berkouwer into the Fathers and Calvin and thus distort what the latter said. Carson takes up the issue that the Bible is only inerrant with regard to faith and practice and not when it deals with matters of history and science. Critics accuse the Princetonian scholars, of whom Warfield is one, of being ensnared by Common Sense Realism when they actually were critical of it. On the subject of God's accommodating his words to human fallibility, Carson asks why, if the Bible can

contain errors in science and history because of human fallibility, it cannot equally contain errors is religion and morality and therefore not be a trustworthy guide. He maintains that the Reformers regarded divine accommodation as the use of human words and concepts in the Bible without a loss of truth. Analogies between human finitude and divine inspiration or between the relationship of the divine and human elements in the composition of the Bible and the dual nature of Christ are not seen as persuasive. Certainly the earthly Jesus did not claim to be omniscient but then no evangelical has claimed the Bible to be omniscient. He deals with the conservative scholar William Abraham's claim that biblical inspiration should be likened to how a teacher may inspire a pupil, who in turn, could faithfully give the substance of his teacher's words, even though he has limited ability, without quoting him verbatim. Carson rightly points out that the Bible claims inspiration for the God-given text not the human authors of it. Professor Carson then reviews work on the 'New Hermeneutic', which argues that if the Bible was free from error when it was written it must be free from error at all times. It asks whether the Bible can be perceived at perfectly truthful to people with different presuppositions and paradigms. Taken to its logical conclusion in post-modernism this view destroys any objective truth and substitutes subjectivism in its place. It is equally dangerous to attempt to understand the author's intention independently of what the text actually states. Carson is also dismissive of contextualization that is found in feminist, black and liberation theology because this tends to lead to a total disjunction from what the author intended and the text can be made to authorise anything.

Another chapter deals with unity and diversity within the New Testament which centres primarily on the book by James Dunn, who considers himself a conservative Christian scholar. Dunn claims that there was no single normative form of Christianity in the first century and no agreed canon of scripture. Instead there were mutually incompatible theologies embracing many theological perspectives. He believes the NT writings were not more inspired than later ones. Although Carson applauds Dunn's breadth of learning and clarity he thinks his treatment is one-sided and cavalier. The basic issue is that if diverse theologies existed that were mutually contradictory which, if any, should be regarded as true and on what basis? He concludes that any diversity found reflects the differing interest and styles of the writers and their responses to a variety of different pastoral concerns rather than showing that the early church was characterised by tepid toleration and lack of concern about truth. Another chapter deals with redaction criticism, which is less relevant today and has largely been replaced by other critical tools. The final chapter in the first section of the book deals with the subject of *claritas scripturae* (the clarity or perspicuity of Scripture). In this Carson contrasts the views of the Church Fathers and Reformers with those of post-modernists. The former held that some things in the Bible were hard to understand (cf.2 Peter 3.16) but not impossible to grasp by the individual or group that read them. They believed the Bible was God's self-disclosure and contained objective truth. The post-modernists have, by contrast, claimed the understanding is constrained by the individual or group

and thus is subjective and can have many different 'meanings'. Carson believes that the post-modernists make a false antithesis. They claim that something must either be exhaustively or only relatively known, whereas the doctrine of perspicuity claims not that the Scriptures can be exhaustively known, which is God's prerogative, but truly known.

All the articles reproduced here are from the latter part of the 20th century and Carson has not updated them. In the second section there are a series of extended book reviews, which do bring the debate a little more up to date. This includes a review of Peter Enns' book, the publication of which ultimately led to his dismissal as a professor at Westminster Theological Seminary. Overall the book is a valuable insight into the necessity for, and the problems relating to, the evangelical defence of their faith in the Bible and is to be commended.

Reviewed by Reg. Luhman

Michael R.Licona *The Resurrection of Jesus. A New Historiographical Approach.* 2010 Nottingham Apollos 718 pp. £24.99 ISBN 978-1-84474-485-5.

The resurrection of Jesus lies at the heart of the Christian Faith. Paul argued, 'If Christ has not been raised from the dead our preaching is useless and so is your faith.' (I Cor.15.14) It is therefore not surprising that the topic has been the subject of discussion for many centuries. The author points out that there has been some 3,500 books and articles published about the resurrection of Jesus in the last 25 years. Is there then room for another weighty tome on the subject? Michael Licona claims that his approach is different because, " The objective of this investigation was to learn and apply the approach of historians outside the community of biblical scholars to the question of whether Jesus of Nazareth rose from the dead." (612) He points out that, unlike many biblical scholars, historians have largely abandoned the subjectivist approach of post-modernism in favour of a realist appraisal of the evidence that makes the past knowable to a limited extent. In the opening chapter Licona deals with the role of the historian and the challenges he faces. He looks at the issues surrounding what constitute truth and facts, the possibility of the researcher's transcending his own horizon (intuitions and presuppositions) and the possibility of reaching a consensus about an historical event. He cites five criteria which historians use in weighing hypotheses. (1) Its explanatory scope (2) explanatory power (3) plausibility (4) whether it contains *ad hoc* hypotheses – the simpler the better (Occam's razor) (5) Illumination – does it illuminate other areas? e.g. if it demonstrated that Jesus rose from the dead it might illuminate other claims such as that he was divine. The author later uses these criteria in assessing the validity of hypotheses put forward by various authors – Geza Vermes, Gerd Lüdemann, John Dominic Crossan and Peter Craffert.

The next section deals with the historian's approach to miracles in general starting with a discussion of the classic critique by David Hume followed by an examination of works by various modern authors. Licona not only shows the inadequacies of their critique, but is also prepared to draw lessons from them to guide his research. These lessons include being aware that the criteria used will be laden with interpretation, that they must be applicable to all miracle claims, not just Christian ones, and that in defending miracles we must beware of opening the floodgates of credulity. This leads on to the major part of the book, which is a thorough investigation of all relevant sources for determining whether Jesus' resurrection happened. The sources include the New Testament, ancient Greek, Roman and Jewish sources, the Apostolic Fathers and non-canonical Gospels such as the Gospel of Thomas. To each he assigns a value ranging from 'highly probable' for the earliest accounts in Paul's letters (e.g. the list of witnesses in 1 Cor.15.3-8) to 'unlikely' for the non-canonical Gospels and the rabbinic sources. Josephus and Tacitus score 'possible'. From this he seeks to determine an historical bedrock by a detailed examination of all the source material available. He concludes that there is a consensus among historians and biblical scholars that Jesus believed himself to be God's eschatological agent who performed acts regarded as miracles, predicted his death and resurrection, was crucified and that shortly after his death his followers had experiences that led them to believe he was alive.

In the final part of the book he seeks to weigh the resurrection hypothesis against those presented by Vermes etc. who seek to explain the evidence in terms of hallucinations, delusions or metaphor. He concludes that the resurrection hypothesis is 'very certain but provisional'. Given that the author came from a conservative Christian home and made a profession of faith at the age of ten and is a professor at an evangelical college, such a conclusion might be considered inevitable. Concern might also be raised as to whether he is as objective as he claims to be. In a personal confession contained within the book he maintains that during the years of his research he attempted to divest himself of all preconditioning and sought to be neutral. He realised that if he found the evidence conclusively disproved the resurrection he would feel obliged to abandon his Christian faith and lose his job while still remaining a theist. He says, "I am wrestling with this topic because I am committed to seeking, finding and following truth... and I am more interested in pleasing the true God than I am in hanging unto my job." (132) His friend and mentor Gary Habermas testified to his "...gut-wrenching level of soul-searching before and during this time of study, and can attest that it was a real effort to come to grips with a final conclusion, wherever that might lead." The book is painstakingly researched and thoroughly referenced throughout, which one would expect from something that started life as a doctoral thesis. However Licona writes with a lucid style and it is easily accessible. It is a study I would heartily recommend.

Reviewed by Reg.Luhman

Curt Thompson, *Anatomy of the Soul: Surprising Connections between Neuroscience and Spiritual Practices That Can Transform Your Life and Relationships* – 2010 Tyndale House 282pp. US $14.99 ISBN 978-1-4143-3415-8

Curt Thompson is a psychiatrist in private practice in Falls Church, Virginia. In this book he is revealed as an insightful, compassionate clinician, with a sincere desire to integrate his faith with his work in a way that is completely admirable.

I am an NHS GP in an English market town. Dr Thompson's case studies would suggest that a large proportion of his patients regularly attend church. Few of my patients do and it is a sometimes delicate decision whether to introduce spiritual concepts into an NHS consultation. The back cover describes the aims of the book thus:

'Integrating new findings in neuroscience and attachment with Christian spirituality, Dr Thompson reveals how it is possible to rewire your mind, altering your brain patterns and literally making you more like the person God intended you to be.'

The word 'integration' is very central to the book's purpose and philosophy. As a generalist myself it is superficially very appealing that the worlds of neuroanatomy, psychology, attachment theory, theology, and spiritual development might be pulled together into a coherent unifying narrative. Would Dr Thompson's description of these 'new findings' be of value for the large numbers of depressed and anxious individuals that consult their NHS GP?

The book begins by showing that features of neuroanatomy can relate to types of thinking (much is made of the left-brain right-brain division of function and the role of the prefrontal cortex as the area where we 'integrate' our selves, in particular our emotions and narratives). Hebb's theory is repeatedly quoted ('neurones that fire together wire together') to suggest that patterns of thinking become hard wired in our minds from an early age, which sounds like it explains much of attachment theory. God has created our minds for relationship, so our neurobiology must be 'interpersonal'. When this integration fails we experience anxiety or depression or more especially 'shame' which is explained with extended reference to Adam and Eve, including some wildly speculative 'imagined' dialogues between Adam, Eve and God in which the proposed theories are shown to be consistent with orthodox Christian teaching.

Patients are invited to pay attention to their minds so that they might be renewed in line with Romans 12:2. A case study of Roger and Lydia is one example of the sort of thinking involved:

'As soon as she noticed any of these signs (heart racing, shortness of breath,

ruminating on what she had said) she would imagine what her brain was doing in the process. She learned, for example, to picture the amygdala (the fear center) taking over her limbic circuitry (her emotional modulator) and her brain stem (her fight-or flight center) while bypassing her prefrontal cortex – the part that would normally regulate all of the above in a more flexible fashion'

The problem with all this is whether any of it is 'true' in a meaningful sense. It is possible that we might be pretending to understand more than we really do. GPs (myself included) have for instance sometimes used a neurotransmitter model of depression to encourage patients to consider pharmacological intervention as a part of their treatment for depression. However we now know that there is no evidence to support the overly simplistic claim that depression is a 'deficiency' of serotonin (which is not to say that drugs don't have an important role to play – just that its not as simple as we once thought). Patients deserve the truth and resorting to pseudoscientific explanations, particularly across disciplines, may be deceptive in a way that potentially undermines a doctor-patient relationship based on trust.

So is there in fact an overarching narrative that brings these disciplines together in the way Dr Thompson proposes or is this a form of well-intentioned syncretism that oversimplifies reality to the point of being misleading?

It is telling that throughout the book the words 'mind' and 'brain' are frequently interchangeable. Analogies between neurones and electrical circuitry are extended to imply equivalence and the idea that our 'mind' might thus be 'programmed' is taken as given. Such descriptions are by no means unique to this book, they are in fact such commonly accepted ways of referring to the workings of the human brain that we don't even notice them as analogies. However, Raymond Tallis (another medic) provided a devastating critique of this kind of thinking in his brilliant extended pamphlet 'Why the mind is not a computer – a pocket lexicon of neuromythology'. In a section that deconstructs modern uses of the word 'information' he warns against deriving all encompassing theories of everything by pursuing a *'chain of unchecked metaphors'*.

In juxtaposing key theories of different disciplines this book appears to reconcile them, but the suspicion remains that this reconciliation is more at the level of metaphor rather than science. This is not to say that these metaphorical descriptions might not have some practical value for many people as ways of 'explaining' therapeutic approaches along with the wider question of spiritual development. However other readers seeking to explore what science has to say about the relationship between the brain, the mind and the soul will be disappointed. Maybe there is an as yet undiscovered Rosetta stone to bring together neurobiological, psychological and theological understandings of the human self but regretfully this book is not it.

Reviewed by Dr. Alan Kerry

Dave Bookless *God Doesn't Do Waste – Redeeming the Whole of Life* – 2010 Inter Varsity Press 158pp ISBN: 978-1-84474-473-2

The author is the founder of A Rocha UK, a leading Christian environmental and nature conservation movement. His earlier book *'Planetwise: Dare to Care for God's World'* explores the biblical imperative for caring for our planet. This current book is more of an autobiography, telling the human story behind this movement, and describing a journey of faith that is repeatedly tested and frequently 'messy' but holds fast to the belief that 'in God's economy nothing need be wasted'.

Beginning with a revelation of human wastefulness while holidaying in the Scilly Isles, the author embarks on a journey of responding to God's call on his life. This leads to ordained ministry but at the same time a developing discipleship of environmental stewardship and concern consistent with God's concern for his created world. There is a touching honesty about the struggles the author has faced along the way. His wife has had severe health problems, and their daughter has been through what he describes as a 'major meltdown'. Many people in ministry will recognise the tension between a desire to wholeheartedly pursue God's call, and the sometimes competing need to be present and effective family members for our nearest and dearest. Nevertheless the picture emerges of a close-knit family who are always open to God's leading and who faithfully rise to these challenges with trust that God will sustain them.

After becoming involved in A Rocha internationally Dave felt called to consider a UK base for the organisation. In 1997 an urban wasteland in Minet, West London was identified as the unlikely location for this centre of environmental and conservation activity and education, and from here A Rocha UK was formed. One is challenged by his ability to see the potential in what must have been a rather unlovely area, and the transformation that takes place speaks powerfully of God's heart to reconcile to himself all things. Again and again it is made clear that God values those things that we may be inclined to overlook or throw away – for with God, nothing need be wasted.

Dave Bookless is also a poet and the narrative is interspersed with his poems, which provide a moving and alternative creative counterpoint to the main text.

This is an absorbing and challenging life story. For a fuller description of the theology and philosophy behind the work of A Rocha, the earlier 'Planetwise' is also recommended.

Reviewed by Dr. Alan Kerry

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