

# How religion created science

The 2016 William Orange Memorial Lecture (Handout from lecture included at end of document)

## I Mr Orange's biblical 'science'

On 26 June 1945 in San Francisco the delegates of fifty nations unanimously adopted the covenant of the new United Nations Organisation (UNO). The following Sunday at 3.00 p.m. in Sumner Mr Orange opened the weekly boys' bible class with a reference to the predicament of Nehemiah (6:2). 'Come, let us meet together in some one of the villages in the plain of Ono. But they thought to do me mischief.' It was not Mr Orange's practice to comment on world affairs, so the echoing of old Ono in the new UNO sounded ominous.

Not six weeks later, on 6 August 1945, the atomic bomb was for the first time dropped on a city, Hiroshima. Another biblical premonition was hinted at. Perhaps it was 2 Peter 3:12, 'looking for and hasting unto the coming of the day of God, wherein the heavens being on fire shall be dissolved, and the elements shall melt with fervent heat'?

We students of Canterbury University College (I was in my first year, aged seventeen) needed no prompting on the epoch-making event. The Evangelical Union used to hold its prayer meeting in the very basement that had been the laboratory of Ernest Rutherford. He had gone on to pioneer nuclear science in 1919 at the Cavendish laboratory in Cambridge.

At Boys' High I had followed the war on a daily basis, and not only in the Press. There were the not infrequent days when in assembly we saw our headmaster weep. A.E.Caddick, himself carrying injuries from the Great War, could not complete the Scripture reading: 'Greater love hath no man than this, that a man lay down his life ...' (John 15:13). He would choke, turn on his heel with the final word, 'for his friends', and stride back to the podium to read out the latest casualties. He had taught them at School just a few years before.

On 9 June 1944 I acquired my first Bible. It was *The Scofield Reference Bible* of 1917. It would have been recommended by Mr Orange, or one of the older 'Orange pips'. But no one suggested I should embrace the dispensational history it had been designed to demonstrate. Nor did WAO (as we called him) take a settled position on this or any other systematic theology. Credal paradoxes were sidestepped with a more devotional approach. 'Whosoever will, let him take the water of life freely' (Rev 22:17), invited the pearly gates; 'elect according to the foreknowledge of God' (1 Peter 1:2), it said as you glanced back.

In New Zealand schools we were all required in the weekly Scripture lesson to read the set text in silence. No comment or discussion was permitted (the Irish system). In 1944 Upper Sixth we were to read the epistles of Paul. Having from childhood been an at first involuntary churchgoer, and for several years an in-group attender at the Sumner bible class, I was nevertheless seized by an entirely new experience. In a public classroom I was privately captivated by Paul's letters.

As a scholarship candidate in four languages (and nothing else) I now wanted to know the historical setting of these letters. I asked my mother for money to buy a book (unusual in a depression and wartime household). This was W.Graham Scroggie's *Know Your Bible*. He had been in demand as a Keswick pietist, but one who wanted to undergird personal devotion with historical knowledge. Orange respected the Scottish theologian, his senior by a decade. He had visited New Zealand.

At the end of 1944 I told the school's careers adviser (Gordon Troup) I wanted to work at the juxtaposition of our biblical and Classical heritages, as I still do. A Latin master (E.J.D. Hercus) advised adding Greek at Canterbury. But Mr Orange advised taking Philosophy first. In 1945 I therefore enrolled in Philosophy I (Logic and Ethics). It was the last year before the departure for London of Karl Popper (1902–1994).

An emigre from Vienna since 1936, Popper had written in Christchurch *The Open Society and Its Enemies*, his assault on the idealism of Plato. The latter had in effect legitimised the great nineteenth-century tyrannies, from Marx (1818–1883) to Freud (1856–1939). Their inductive pseudo-sciences merely piled up positive examples to support their theories. The only valid method for science was to seek the one test that would falsify the theory. Popper might well have added Friedrich Nietzsche (1844–1900). His totalitarian Superman was to disestablish our servile 'Jewish' morality in this late post-fascist era of our own times.

Whether Orange had been advising others to hear Popper I do not know. His own BA in 1919 had been in Greek, Hebrew and Philosophy. He had been head student at College House, the Church of England seminary next to the University College, where Orange was independently secretary of the Students' Association. His approach to Scripture was to be undogmatic, a low-level but punctilious working through each book word by word.

In January 1949, as a graduate teacher now myself, I had the opportunity of annotating his exposition of the book of Nehemiah at an in-house Wellington conference of the Scripture Union

council and staff 'leaders'. Mr Orange's parish commitments were then well behind him, as was the unhappy experiment of his being expected to create a study centre at Tyndale House, Cashmere. He was now settled in as precentor at the Christchurch cathedral. The World Council of Churches had been launched a few months earlier in Amsterdam. All the talk was soon to be on the forthcoming visit by the Archbishop of Canterbury for the centenary of the settlement in 1850 of our own Canterbury province.

Archbishop West-Watson of Christchurch, Primate of New Zealand, would retire in 1951. He was still listed in 1953 as the sole missionary of the Cambridge Inter-Collegiate Christian Union to Oceania. The missionary spirit of course had led him to foster ecumenism, as with Archbishop Mowll of Sydney. Mowll had tried to recruit Orange to the academic staff of Moore Theological College as Vice-Principal. But in Christchurch Mr Orange was sceptical of ecumenism, and of the New Zealand Council of Churches. Many of his student followers shared this. It had been an initiative of West-Watson as Primate, disliked also by high-church Auckland.

We Orange pips mocked the great centenary of 1950. The Square as a whole became for the occasion the nave of a new quasi-cathedral with the old one conceived as its chancel. Our guru, the precentor, gleefully confided in us that Simkin, the bishop of Auckland, was 'jealous as hell' (only Christchurch and Sydney maintained proper Anglican choir schools that could carry off such ceremonial). But many of the Christchurch Anglicans had their hearts set on missionary service abroad, a radically different world-wide partnership. See the imprint of this across two or more generations in the recent book from St Martin's, Spreydon, with memoirs of sixty from that parish who served in overseas missions.

The spirit behind their calling was clearly expressed by Mr Orange at the discreet Wellington leaders' conference of January 1949. 'Here is the secret of unity: we are not united on the circumference, but we are united at the centre.' 'The heart of the patriarchs was always in Canaan.' 'We need leaders who are out and out, when so many are in and out, and so many down and out.' 'Little is great if God is in it.' 'Prayer makes us sure of the weakness of the enemy.' 'Prayer without work is presumption; work without prayer is sheer atheism.' Orange's final call was as follows:

'Christ wept over Jerusalem, then went into the house of God and overthrew the tables of the moneychangers. The awful state of the modern world came from Christendom. The judgement will begin with the house of God, and reform must begin there.'

Behind WAO's grand sweep of history lay of course the patient detailed study of the biblical texts that fascinated us all. No-one saw the years of solitary reading that lay behind that. He has been quoted as saying that Genesis 'laid the seed-bed of all biblical themes'. It is this kind of profound knowledge that leads me to call it his biblical 'science'.

William Alfred Orange, born 9 August 1889, Woolston, died 28 June 1966, Christchurch NZ.

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## II The changing face of 'religion'

Those who study 'religion' academically agree that the concept is incoherent. W. Cantwell Smith successfully explained fifty years ago the historical reason for this. But no one has devised a successful alternative. We should of course abandon such a muddle completely. Then we would be able to study each of its senses in terms of their respective historical origins or social situations.

In our Western countries 'religion' appears to be some independently organised way of life with an outlook upon it that is in conflict with the general world-view based on 'science'. It ought therefore to be kept out of the public arena. If it arises from our ethnic background of course it must be respected and even treasured as an historic relic. But in non-Western countries what we see as their 'religion' appears to be an inseparable part of the general culture. It is simply taken for granted. Indeed for them it somehow sustains the whole.

There was no ancient Greek word corresponding with our 'religion'. Instead of saying 'Greek religion' one should then rather speak of 'Greek culture' more broadly. The cultic elements in ancient Greek life were integral to it. Worshipful practice could of course be questioned, as could traditional myths about the gods. But even the Epicureans, who were denounced as atheists, did not eliminate the divine from their view of the world. It was simply the case that the gods must be of the most refined substance and thus not directly concerned with people. Plato refers to those who assumed nothing to exist unless by nature or chance, but the proponents of such theoretical atheism have not been identified. Courteous piety was a public duty anyway.

The same goes for the Romans. Although the Latin *religio* has been taken into our language one should always envisage one of its more particular senses: for example, taboo, scruple, sanction,

awe, ritual or cult. A common facet of all such terms is 'constraint'. It was not a matter of either belief or moral behaviour. The essential point was to perform the customary procedure correctly. Your own safety and that of the community depended upon that.

The case of the ancient Christians is clarifying. The earliest Roman authors who refer to them speak not of *religio* but of *superstitio*. They were noticed because they refused to do what was publicly required. Their reasons were peculiarly dogmatic. Christ was only a quasi-god. Such intellectual principles were treasonable. They only put the security of the community in jeopardy. But, once public recognition had been conceded, the new understanding of the world and its Saviour of course assumed the honourable name of *religio*. *Superstitio* was passed down for the discredited ways of the old gods.

Constantine however was afraid of the judgement of Christ, who had given him victory. He had a guilty conscience. A century later Rome was sacked by the anti-Catholic Goths. How could this be? Starting from the dictum of Jesus, 'Render to Caesar the things that are Caesar's and to God the things that are God's', Augustine defined the way the West has worked until now. We belong not in one city but in two, the secular and the heavenly ones, concurrently. Both are divinely authorised. But only at the last day would the accounts be closed. This produced the unique *religio* of the Christians. Its explosive technology now swamps the world.

The idea that there were world religions in the plural only appears in the early seventeenth century, concurrently with the experimental breakthrough to 'science'. There were four religions, then called: Judaism, paganism (sc. the cults of Greece and Rome), Christianity (which we know had acquired this name only after Constantine), and Mohammedanism. The long-established Buddhism was not included. It has no god, and would have been understood as a philosophical or ethical discipline. By the nineteenth century British missionaries under the Mohammedan rulers of India were able to inform the people that they also had a more ancient 'religion', to be called Hinduism. Hindus of course simply saw this as their national culture. Anthropologically it belongs with the Indo-European language belt, like the religions of Greece and Rome.

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### III The changing face of 'science'

As with 'religion' our term 'science' ('knowledge') is taken from Latin. There was in effect no Greek equivalent, apart perhaps from *episteme* ('understanding'), which survives in the English word 'epistemology'. The Greek *gnosis* is used for personal acquaintance (e.g. with God) in the New Testament.

The early Greek philosophers, however, were the pioneers of the idea of a scientific quest, though they discounted the experimental method which has delivered our recent technological revolution. That has been the long-neglected gift of Jerusalem to the West.

In the last resort there are only two intellectual disciplines, History and Philosophy, both articulated and so named by the Greeks. History came first. It delivers knowledge by finding out what has actually happened. It proceeds by enquiry. Philosophy proceeds by definition and classification. It tells us what must necessarily be the case, the formal truth.

The first historian so-called appears in the epic poems of Homer. His title (*histor*) indicates that he will arbitrate in a dispute. He does this by finding out for himself what happened. This gives him 'empirical' knowledge, that is, the evidence of the senses. The term *histor* is etymologically akin with *eidon* ('I saw') and *oida* ('I know'). He is the founder of the experimental method (the empirical principle).

The first philosophers however turned their minds to a rival method, to rationality itself (*logos*). It is our mind, and not the physical contact, that lays out what must be the case. We perform this calculation ('counting') instantly every day, as we jump to conclusions. Experience may later tell us we were wrong.

The most profound puzzles for science today may well be in the cognitive arena. Logic itself by definition cannot be wrong. But we may be deceived by a psychological trap: analogy. Something looks familiar. So it should be the same!

The Presocratic philosophers boldly projected rationality onto the universe itself. *Logos* must be its ruling principle. The impulse to this was the horror over Greek myths of the fraudulent and fallible gods. The human mind must rise above that. The glorious regularity of the visible heavens must be

analogous with our own rational minds. This was truly a triumph of thought, as the Romans might have said. It was also truly a tragedy, as Greek drama saw with any failed enterprise, when a noble aspiration exceeds its own limits and crashes.

A century before Socrates, at Elea in southern Italy, we have the philosopher Parmenides. Uttering succinct and teasing poetry, he delivered a dogma which in one way or another haunted Greek thought for a thousand years. It still lurks as a hidden trap in the path of our contemporary physical theoreticians. Parmenides said change is impossible. Existence must be all or nothing. The universe itself being rational will be true and good and everlasting. Any change would only show that something was wrong.

So the common assumption of change must be dismissed as an illusion. Our own physical senses are misleading us. Reason itself demands that. Stunned by this irrefutable dictum, and enchanted by the stately changes we seem to experience day and night, Empedocles saved its truth. What we perceive as change, he explained, is only rotation. The whole universe just revolves and thus nothing changes. For Plato the perfect unseen form (or idea) of a thing alone is real.

Across two hundred years a score or more philosophers competed over how to understand this paradox. Ingenious rivals to it were conceived. Most important was the atomism of Democritus, which may seem to be at the opposite extreme. Everything is made up of the tiniest particles, from the essential four elements, water, air, fire and earth. These 'atoms' have a geometrical shape. So they can fit with each other in different ways. As they flow streaming through space they are jumbled together, forming what appear to us to be solid objects. But this action is purely random. It has no meaning. Anything can happen, and nothing matters. There is no development, nothing need be thought of as either old or new.

The high point educationally in all of this was Aristotle, the tutor of Alexander the Great. He systematically defined the curriculum of disciplines we still use. The eighth book of Aristotle's *Physics* was held to prove the eternity of the universe, its ultimate changelessness. Dougal Blyth of Auckland has just published a commentary on its argumentation.

Three centuries after Aristotle the Jewish Platonic philosopher Philo of Alexandria published a work, *On the Creation of the Cosmos according to Moses*. (See the commentary on this by David Runia of Melbourne.) Moses was nevertheless taken to be in harmony with the law of nature.

In the second century AD the great medical philosopher, Galen, protested at the intellectual folly of this: ‘...one would not, at the very start, as if one had come into the school of Moses and Christ, hear about laws that have not been demonstrated...’ Referring to a rival medical authority, Galen added: ‘He did not think it necessary to guide us by any logical method but adopted an empirical fashion of teaching...’, as quoted by Judge below. Galen himself urged the observation of symptoms but his empiricism did not extend to the experimental method of discovering what actually caused them. You had a fever presumably because you were too hot.

It was not until the discovery of infection in the nineteenth century that the experimental principle finally displaced logic in medicine. Galen’s key word (*apodeixis*, in Greek) is rendered in Latin as the logic of ‘demonstration’. This term still functioned in mathematics during my schooldays: *QED*, *quod erat demonstrandum*, ‘which is what had to be proved’. Paul, however, spoke of the ‘demonstration (*apodeixis*) of spiritual power’ (1 Cor. 2:4). Shortly before Galen’s time a century later, Justin Martyr, as a serious philosophical student, was converted. He found the prophets did not rely upon *apodeixis*, but were ‘witnesses to the truth above all demonstration’ (*Dial.* 7).

After a thousand years Aristotle’s eternal universe was philosophically refuted by John Philoponus, a Monophysite theologian of sixth-century Alexandria. Yet it was another thousand years before the experimental revolution in science made its breakthrough. This was perhaps because the Aristotelian curriculum as a whole continued to shape education, as indeed it does today in part.

The churches had of course maintained the doctrine of creation. But its application was compromised by the literary principle of analogy. In Greek education the meaning of poetic or mythical texts was to be found symbolically. Thus when Genesis 1:26 says ‘male and female created he them’ (prior to the creation of Eve) the terms must refer to the hot and dry masculine spirit alongside the cool and moist feminine soul. The Greek axiom of the perfect number four imprinted in the language various essential quartets (four elements, four qualities, four virtues).

The scientific breakthrough of the seventeenth century has been explained by Peter Harrison of Queensland. The symbolic interpretation of Genesis gave way to taking it literally. The natural world could now be tested by experiment to see how it actually worked, and not how it was logically supposed to function.

The permanent universe of the philosophers was now allowed a history. It had once been made after

all. It was therefore purposeful. Things might indeed be changed. It was developmental. All could be made new. The biblical corpus revealed the method for discovering this. God put people to the test. Israel tested God. The reality of human experience was discovered experimentally, not by the hypothetical coherence of logic. Genesis had created science.

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#### **IV Who has caused the explosion of the West?**

There is agreement amongst historians that the breakthrough to the modern world culminates in the discoveries of the early seventeenth century in the West. It is also not in doubt that the experimental method is the key to it. But who taught us that methodology?

A widespread assumption is that it is the triumph of science over religion. Since the ancient Greeks created the ideal of knowledge defined by the mind's own resources, independently of the gods, one tends to assume that Greek philosophy paved the way for it. The long delay then may be blamed on the churches which swallowed it up into their own world-view, latinised in the West.

But the Arabs in Mesopotamia retained Greek science as a vitally independent discipline. It was then exported back to the West by translation from the Arabic into Latin. It is true that much of Greek science, including works of Aristotle and Galen, was preserved this way.

To credit the Arabs with the creation of Western science, as has been done, ignores the fundamental shift in method. That was owed to Jerusalem, and not Baghdad. The profound frustration of the Ottoman Empire and its modern heirs with the explosion of a West they had seen as inferior also casts doubt on the dream that the Arabs gave it to us.

A modern Pakistani scholar has recognised not only that Baghdad saved Greek thought, but that it was a liability to the Arabs. He has probably not recognised the creative methodological shift that Greek science was deprived of by its Mesopotamian exile.

To credit the three-thousand-year continuity of Chinese culture with a vast scientific capital ignores the same fact. For all the talent and ingenuity of China across the ages its cultural strength has lain in conservatism. There was no experimental revolution in Chinese science.

But if the long-gestated Western breakthrough has been biblically inspired, why is it so alarming now? Or do we indeed at last begin to face the final judgement? The methodological revolution is undoubtedly correct on the true nature of the physical process of the universe itself. Why then can we not just enjoy the restoration of paradise? We are happy enough to agree now that the world sprang from a point of infinite density. But no one can as yet grasp the dilemma of the future, and indeed of the human mind itself. Is there really to be an anthropocentric universe?

Everyone must face the reality of the Fall. Paul knew what was right, yet could only do what he did not want. My own solution to the historical question over Western dynamism is this. Deeply imprinted in the language of our culture now are the values of Jerusalem, its compassion and spirit of service. But since Nietzsche denounced this as only the servile morality of the Jews his ‘death of God’ has freed us to celebrate instead the independent ethical virtues of rational Athens, looking for the Superman who will deliver a glorious future.

This built-in cultural tension surely lies behind the explosion of the West. Mr Orange was right more than he knew. The seeds of our whole human predicament are disclosed in Genesis.

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