

## **Polkinghorne – Science and Creation**

*The key points P wants to prove are*

*We can have knowledge –even if not complete knowledge - both about the world and about God.*

*There is a similarity between scientific and theological method. Both involve a combination of interpretation and data*

*There is need for both in order to have full understanding of how things are*

**Preface to 2006 edition** summarises the book's purpose.

Two themes:

Is Natural Theology possible?

What doctrine of Creation fits with modern science?

Chapters 1 and 2 – Natural Theology

Old concept of Natural Theology was weakened by Darwin

Nat Theol revived in second half of 20<sup>th</sup> century, seeing theology as complementary to science

Appreciation of 'the rational transparency and rational beauty order of the universe....arise from the pursuit of science, but lie beyond its self-limited intellectual horizon..... They are signs of the presence of the mind of that world's creator.'

(xi – P rejects ID as an argument for God – emergence of complexity is explicable without divine intervention.

Chapters 3 and 4

Process of the world involves interplay between being and becoming, necessity and chance, order and disorder, determinism and freedom

'Fertility and freedom the creator on creation are bestowed by the Creator on Creation'. How? This implies divine kenosis.

## Chapter 5

‘Dual aspect monism’ as a way of doing justice to both mental and physical levels of experience.

## Chapter 6

P’s confidence in ultimate unity of knowledge.

## **Preface to original edition (1988)**

Science and theology are both necessary in search for full understanding. They enable us to see the world from different perspectives.

Theology must not be ‘a mere speculative system, but a response to what is’, just as science is.

## **Chapter 1 Natural Theology**

*(useful for discussing rationalism v fideism, as well as general science/religion issues and arguments for the existence of God)*

Pages 7-9 What is ‘natural theology’?

Theology committed to seek deepest possible level of understanding... a total view of the world

Therefore must take account of science: must be a degree of consonance between assertions of science and theology.

Natural Theology is the search for knowledge of God by the exercise of reason and the inspection of the world.

Ct. with Revealed Theology which assumes transcendent otherness of God, therefore inaccessible to human reason e.g. Barth

P accepts that nat theol cannot lead to knowledge of God in Christ, but can help in inquiry whether the process of the world is the carrier of significance and the expression of purpose.

10-15 Is there natural theology in the Bible?

‘Wisdom’ writers in OT and Logos and Cosmic Christ in NT show Bible includes recognition that God is made known through creation, but Christianity tended to develop on basis of faith rather than reason.

15 P's view of the relation between belief and understanding: they should cohere in mutual interaction of interaction of theory and experiment in science. Ct with Augustine's 'one-sided' "believe in order to understand".

15-19 Natural theology in the Middle Ages

'First great flowering of natural theology'

15-16 Ontological argument

16-19 Aquinas' Five Ways

P shows how Hume's critique of Aquinas and then the 'bootstrap' theory of the universe have undermined A's arguments, but suggests that Aquinas was not trying to provide proofs of God's existence. The five ways are 'not proofs but insights,... pointers to the divine as the only totally adequate ground of intelligibility... A's rejection of infinite regress... is the assertion that there is an attainable comprehensible understanding of all that is'.

20-1 The 'God of the gaps' is dead

20 Paley's Design argument and the impact of Darwin

21 P wants to get away from the 'God of the gaps' approach

22-4 The need for a revised natural theology

22-23 Thomas Torrance as an example of a theologian who believes in a convergence of natural and revealed theology (*For Torrance see also pp.102-3*)

23 The new Natural theology

## **Chapter 2 – Insightful Inquiry**

*P argues that scientific method requires an act of faith in a) the intelligibility of the universe and b) the ability of the human mind to understand.*

25-28 The scientific task

25 The way science works – similar to theology, because 'both are attempting to explore aspects of the way things are'.

26 1) adoption of a belief

2) its interaction with experience

3) its fuller conceptual exploration

4) its generalisation to the widest possible range of experience

26-7 P rejects positivist and instrumentalist accounts of science, and defends

scientific realism (*what he calls in other writings critical realism*) i.e. he rejects the idea that we do not have knowledge of the world as it really is; words like ‘photon’ are not just human concepts, but describe something that actually exists.

27 ‘Science achieves its success by restricting itself to an impersonal mode of inquiry’.

28 Science has to assume intelligibility of the world. Paul Dirac ‘it was sort of act of faith with us that any equations which describe fundamental laws of nature must have great mathematical beauty.’

29 World might have been chaotic.

29 –31 What is the explanation of the **‘congruence between our minds and the universe’?**

Human ability to discover what is real e.g. Einstein’s discovery of Relativity cannot be explained in purely materialistic terms e.g. for evolutionary usefulness. (*see also p.90ff*)

31-2 the anthropic principle: ‘a delicate balance seems necessary in the universe... if the unfolding of its process is to prove capable of evolving systems.. of a complexity sufficient to sustain conscious life’

32-3 Possible explanations:

- a) There is a multiverse
- b) This is the only universe which can exist
- c) There is one universe, ‘which is the way it is because it is the creation of a Creator who wills it to be capable of evolving creatures who can come to know Him’ i.e. there could be others.

35 Is seeming order imposed by human mind i.e. perceiver-dependent? P says no. ‘We approach the world from a particular point of view, but it receives its confirmation or correction from interaction with the way things are. We have no reason to think the rationality of the world is a human artefact.’

36 P rejects idea that search for explanation leads to infinite regress, and that introduction of god is simply arbitrary way of foreclosing the issue – as argued by Mackie. ‘Theism gains credibility from the cumulative case for God’s existence’.

38-9 P describes, but has reservations about use of argument from probability to support idea that ‘a grand intelligence’ is the most probable explanation for the universe.

40 But won’t future advances in knowledge expose anthropic principle as another

‘God of the gaps’ argument? P thinks that the intelligibility of the world will remain in need of explanation which science can never provide.

41 But what about quantum physics? Doesn’t it suggest that the universe is in fact unintelligible?

42-3 ‘It is still a world marvellously transparent to human reason’.

Bernard Lonergan: ‘if the real is completely intelligible, then God exists. But the real is completely intelligible. Therefore God exists’.

### **Chapter 3 – Order and Disorder**

*Some difficult material for the non-physicist, but a) it’s unlikely to be used for a data response in the exam b) P’s intention and conclusions are clear. And it’s useful material for the freedom/determinism discussion*

P’s aim is, as a physicist, to relate the world as described by physics to the everyday world of experience. In the wider context of the book, this is important in showing how one may combine belief in a creator God with belief both in the laws of physics and in human freedom.

To illustrate difference between world of being and world of becoming, P quotes from Einstein (p.50) and Prigogine (52). Einstein believed that the universe was fundamentally ordered; Prigogine recognised that some features of experience eg time’s arrow imply an element of intrinsic disorder.

54 Since discovery of quantum physics scientists recognise this randomness: ‘Laplace’s demon is powerless’.

59 How chaos at particle level can generate order at higher levels of complexity  
60 e.g. origin of universe and of life

Against Monod (Author of ‘Chance and Necessity’), P argues that role of chance in process of the world does not make life meaningless.

61 P mentions problem of suffering, and quotes Lonergan (Catholic theologian): ‘the imperfection of the lower is the potentiality of the higher’.

### **Chapter 4 – Creation and Creator**

*Can one make sense of the Christian understanding of God as Creator in the world described by modern science?*

63-4 – The Christian doctrine of God as Creator

64 ‘The world created by the God of love and faithfulness may be expected to have both the openness of chance and the regularity of necessity’.

65 – does assuming God to be rational and loving limit his freedom? Danger of anthropomorphism in thinking about God. But also weakness in wholly apophatic theology.

65-6 - Why did God create the universe? P rejects emanationism, panentheism, deism. God is both wholly other, and intimately involved with the world.

67 ‘Creation is a continuing process’, so big bang is no more relevant to doctrine of creation than steady state.

P understands genesis 1-3 as expressing an understanding of the continuing dependence of creation on god, not describing an original event.

He sees no difficulty with evolutionary view of life and the universe, quoting from Darwin (*I give the context*):

I see no good reason why the views given in this volume should shock the religious feelings of any one. It is satisfactory, as showing how transient such impressions are, to remember that the greatest discovery ever made by man, namely, the law of the attraction of gravity, was also attacked by Leibnitz, as subversive of natural, and inferentially of revealed, religion.' A celebrated author and divine has written to me that he had gradually learnt to see that **it is just as noble a conception of the Deity to believe that He created a few original forms capable of self-development into other and needful forms, as to believe that He required a fresh act of creation to supply the voids caused by the action of His laws**'. [XLIX, 239] (*The 'author and divine' was the Rev. Charles Kingsley*)

68-72 Alternatives as Creator, proposed by scientists, to Christian idea of God as Creator.

P notes these are modern forms of Platonic ‘demiurge’.

e.g. Paul Davies, who - P thinks – has wrong idea of Christian God as ‘ a celestial conjuror working against the grain of natural law’, rejects this, but thinks the evidence suggests ‘intelligent manipulation of a purely natural kind, (operating) within the laws of physics... a natural God...But he would not be capable of creation out of nothing as the Christian doctrine requires’. So these theories assume existence of matter in disordered form; '

69 P thinks such scientists ‘are unwilling to take account of the evidence of religious experience... pointing to a God transcendentally other, and yet the ground of cosmic progress’.

72 Christian doctrine of creation ex nihilo. Augustine; there is no time before the world began.

72-3 modern science offers an alternative explanation of something coming from nothing.’ Creation’ as a fluctuation in a quantum vacuum?

But there has to be a quantum field as the source of the fluctuation, so it’s not really something coming out of nothing

74 ‘these views are unconvincing resistance to allowing God to be God.’

God must embrace both the necessary and the contingent

75 ‘the divine complementarity of being and becoming is the theological counterpart of the chance and necessity that the scientist discerns in the process of the world’.

Kenosis of god = an acceptance of the self-limitation inherent in the giving of divine love.

76 So the activity of god in creation must be precarious (Vanstone)

76-7 This helps to explain the relation between God, human freedom and the problem of evil

78 ‘the God of process is to be thought of as the one who is achieving his purpose through the evolution of the world that he maintains in being.’

79-80 Christians look beyond the death of individuals and the eventual end of the whole universe to the new creation spoken of in the NT.

God’s purpose must embrace the whole universe. ‘Matter must have its destiny along with men’.

80 Why such a long slow wasteful route to perfection? ‘it is possible that Love can only work in such a way out of respect for the beloved’.

80-2 summing up of biblical view of God’s role in creation and incarnation

81 ‘the search for understanding is the search for the logos’

## **Chapter 5 – The nature of reality**

*Aims of Chapter:*

*A) to discuss the mind/body problem: ‘Dual aspect monism’ as a way of doing justice to both mental and physical levels of experience*

*B) to argue for the existence of a noetic world (i.e. a world known through noesis, rational intuition rather than sense perception).*

*(Material for mind/body issues, rationalism/empiricism, Plato, miracles and religious experience)*

85 Dual character of the world we experience – mental and physical

86 – P does not think either can be explained away as an aspect of the other, so seeks an understanding of how they are complementary

89 science shows how mental and physical are interconnected. Perhaps the mental is just an emergent property of matter?

90ff P thinks there are purely mental realities, ‘inhabitants of the mental world that are not anchored in the material’ e.g. truths of maths

91 ‘I don’t see any reason why we should have less confidence in this kind of perception, i.e. mathematical intuition, than in sense perception’ (Kurt Godel)

92 ‘Fundamental human experience... By our biologically evolved consciousness we participate in a realm of reality (the noetic world) that has not come into being either with us or with the origination of the physical world in the Big Bang, but which has always been there’.

92-4 P compares and contrasts this with Platonism, and with Popper’s ‘three worlds’ theory.

For P, God is not part of the noetic world but its creator.

95-6 P compares his view to those of the modern theologian Jurgen Moltmann: heaven ‘is part of God’s creative act, but not of His very self’.

96 Miracles: ‘what is conventionally called the miraculous... must be understood as a sign of a deeper rationality underlying the whole, rather than as a divine “tour de force”.’ (Note that P does not distinguish supernatural and natural i.e. everything that happens is part of nature, as God has designed it p.107)

97-8 comparison of ineffability of god to mathematical view of the inconceivability of absolute infinity.



## **Chapter 6 Theological Science**

Aim: ‘a scientist’s approach to theology’

101 P’s perspective on the world is as a scientist

102 The ‘Theological Science’ of Thomas Torrance. His theological writings ‘lay great emphasis on the givenness, indeed the objectivity, of God... “God can only be known through Himself”.’

103 Natural theology can only bring us to the Cosmic Architect’. Worship and prayer is the context in which theology has to be practiced’.

104-5 difference between

science – deals with the recurrent and predictable (impersonal)

theology – deals with the unique and unpredictable (personal)

106-7 But P rejects Gerd Theissen’s strong contrast between scientific and theological method

107-8 P’s aim - to affirm unity of knowledge, while recognising difference between alternative perspectives i.e. don’t try to get unity by e.g. reducing ethics to the issue of genetic survival, as socio-biology does:

108 ‘we should not give way to a “passion for absolutely impersonal knowledge, which, being unable to recognise any persons, presents us with a picture of the universe in which we ourselves are absent” (Michael Polanyi)’.

Hence there is good (scientific) reason for taking religious experience seriously.

109-110 Christology as example of theology using method similar to science i.e. testing a theory by being open to the relevant evidence.

111 Conclusion – union of human and divine in Christ (hypostatic union) – is counter-intuitive, but science is similar in revealing a complex strangeness underlying the world assumed by common sense. P draws parallel between  
human/divine in Christology  
wave/particle in quantum physics

112 P mentions Capra’s ‘The Tao of Physics’, but argues that Judaeo-Christian tradition is closer to modern science than Hinduism or Buddhism, because it does

affirm the reality of the material world. Quarks and gluons cannot be observed directly, but the evidence - eg of symmetry as a property of (observable) matter - shows that there really are fundamental constituents of matter.

113 Similar point can be made about theology, though

‘the nature of its Object transcends us and our power to grasp Him. Thus the language of theology is the language of symbol...we have to surrender precision to flexibility. The scientist may feel uncomfortable with that, until he realises that it is a proper recognition of the nature of the Object with which we have to do.’

114-6 P concludes by affirming the parallel between science and theology

The test of the validity of theological investigation will lie in its ability to discern pattern, to offer coherent understanding of human experience at its most profound. The insight it affords into the way things are is the criterion of theology’s success in corresponding to Reality’.

‘The power of myth and the power of actuality fuse in the incarnation.’

117 P rephrases Einstein religion without science is confined; it fails to be completely open to reality. Science without religion is incomplete; it fails to achieve the deepest possible understanding.’