

New Frontiers in Science and Faith

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1. The growing interest in "anthropic" phenomena, and their importance for the dialogue between science and religion.

2. The recent forceful emergence of a very aggressive "scientific atheism", especially evident in the writings of Richard Dawkins and Daniel Dennett.

3. The increasing importance of the cognitive science of religion, and its implications for the science-religion dialogue.

4. Attempts to use the natural sciences as a dialogue partner in scientific theology.

5. Increasing interest in retrieving the discipline of "natural theology", both as a discipline of interest in its own right, and as a significant platform for the exploration of the interactions of Christian theology and the natural sciences.

6. How can we encourage a new generation of scientists and theologians to develop interests in the field of science and faith?

1. Anthropic Phenomena

The term "anthropic principle" was introduced by Brandon Carter in 1974, to express the idea that the fundamental constants of the universe were such that they appeared to have been "designed" to allow life to come into existence.

It was an unfortunate choice of term;
Carter meant to imply that the universe
appeared to possess an innate
propensity to encourage the emergence
of life, not of *homo sapiens*.

Biocentric might be better

Biocentricity

Lawrence Joseph Henderson (1878-1942)

The Fitness of the Environment (1913)

"The whole evolutionary process, both cosmic and organic is one, and the biologist may now rightly regard the universe in its very essence as biocentric."

John Wheeler

Universe does not properly exist until
consciousness has arisen

Universe described by a quantum
mechanical wave function

Consciousness required to collapse this
wave function

John Wheeler

John A. Wheeler, "Genesis and Observership," in R. Butts and J. Hintikka, eds., *Foundational Problems in the Special Sciences*, Dordrecht, Holland: Reidel, 1977, 3-33.

Therefore the term "anthropic" is appropriate, as it indicates the importance of a participatory conscious observer, not simply generic "life."

But see criticisms of John Earman (1987)

Initially, anthropic phenomena were identified within cosmology, especially the values of the fundamental constants of nature. Yet in recent years, similar phenomena have been identified in chemistry, biochemistry, and evolutionary biology.

Chemistry

Organic chemistry of carbon

Physical chemistry of water

Solvated properties of transition metal
ions

All themes developed over many years by
R. J. P. Williams

Evolutionary Biology

Convergent evolution: Simon Conway
Morris

Evolution as apparently "designed": Denis
Alexander

Evolvability: Ard Louis

So what do they mean?

1. Simply a trivial truism? Ernan McMullan: Strong anthropic principle indefensible, weak anthropic principle trivial.
2. May be true for this universe; others might exist in which this was not the case. Bernard Carr.
3. Nick Bostrom: "observation selection effect". *Anthropic Bias: Observation selection effects in science and philosophy*. London: Routledge, 2002.

So what do they mean?

4. Consistent with the Christian revelation.

NB: This is not about "proof", but about observation of "empirical fit" or "resonance" between theory and observation.

The idea of "empirical fit"

What worldview makes most sense of what we observe in the world?

What "big picture" offers the best account of what we experience?

The idea of "empirical fit"

Richard Dawkins:

"The universe we observe has precisely the properties we should expect if there is, at bottom, no design, no purpose, no evil and no good, nothing but blind pitiless indifference."

Richard Dawkins, *River out of Eden*. London: Phoenix, 1995, 133.

The idea of "empirical fit"

C. S. Lewis:

"I believe in Christianity as I believe that the Sun has risen - not only because I see it, but because by it, I see everything else."

C.S. Lewis, "Is theology poetry?", in *Essay Collection and Other Short Pieces*. London: HarperCollins, 2000, 10-21; 21.

Inference to best explanation

Gilbert Harman, "The Inference to the Best Explanation." *Philosophical Review* 74 (1965): 88-95.

More recent explorations include:

Peter Lipton, *Inference to the best explanation*. London: Routledge, 2004.

"Inference to the best explanation"

There are many potential explanations of the world

So which offers the best fit?

The simplest? The most elegant?

Not a knock-down argument - but an important attempt to evaluate how we make sense of complex situations

"Inference to the best explanation"

NOT "God of the Gaps"

Charles A. Coulson (1910-74):

"There is no 'God of the gaps' to take over at those strategic places where science fails; and the reason is that gaps of this sort have the unpreventable habit of shrinking."

2. The rise of scientific atheism

Sam Harris, *The End of faith*

Richard Dawkins, *The God Delusion*

Daniel Dennett, *Breaking the Spell*

Christopher Hitchens, *God is not Great*

Two of these are strongly grounded in the natural sciences - especially evolutionary biology

Core arguments:

Science and religion at war; only one winner

Darwinism as a worldview that eliminates transcendence (Dennett: cranes, not skyhooks)

Science *proves* on the basis of evidence; religion *asserts*, ignoring evidence.

No limits to the scientific method

God explained by the "meme"

We'll look at these three points in more detail . . .

The limits of science

Dawkins argues that science proves things with certainty

Anything worth knowing can be proved by science

Everything else - especially belief in God!
- is just delusion, wishful thinking, or madness

Science and Knowledge: One Viewpoint

"Whatever knowledge is attainable, must be attained by scientific methods; and what science cannot discover, mankind cannot know."

Bertrand Russell

Science and Knowledge: Another Viewpoint

"The existence of a limit to science is, however, made clear by its inability to answer childlike elementary questions having to do with first and last things - questions such as 'How did everything begin?'; 'What are we all here for?'; 'What is the point of living?'"

Peter Medawar, winner of the 1960 Nobel prize for medicine.

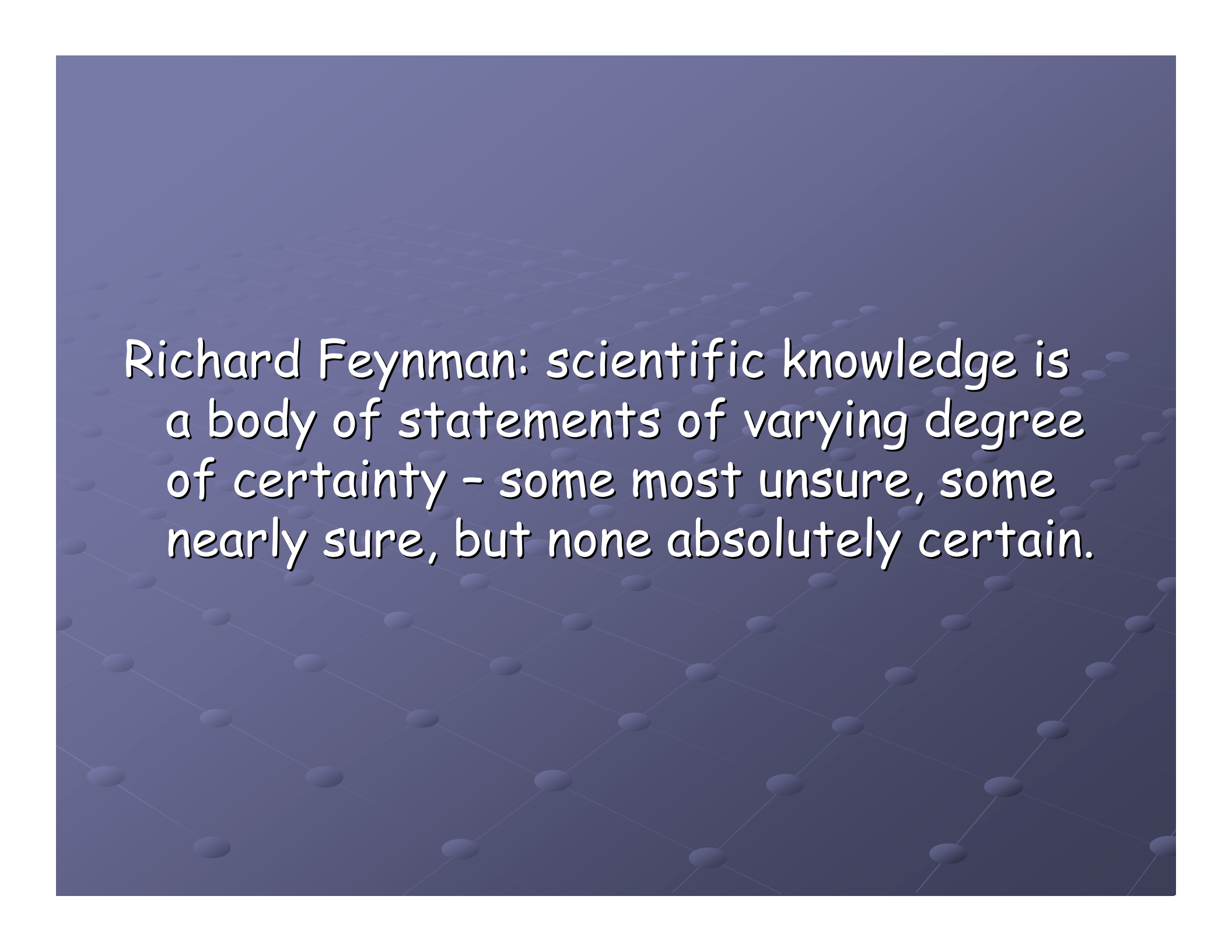
What about questions of meaning?

Roy Baumeister, *The Meanings of Life.*:

- Purpose
- Value
- Efficacy

A question . . .

If the sciences are inferential in their methodology, how can Dawkins and others present atheism as the certain outcome of the scientific project?



Richard Feynman: scientific knowledge is a body of statements of varying degree of certainty - some most unsure, some nearly sure, but none absolutely certain.

Michael Polanyi

The provisionality of scientific knowledge
Scientists not sure which theories,
currently believed to be correct, will be
shown to be wrong in the future.

Is Darwinism one of these?

If so, what are the implications for forms
of atheism that base themselves on
Darwinism?

Richard Dawkins

"We must acknowledge the possibility that new facts may come to light which will force our successors of the twenty-first century to abandon Darwinism or modify it beyond recognition."

Richard Dawkins, *A Devil's Chaplain: Selected Writings*. London: Weidenfield & Nicholson, 2003, 81.

Timothy Shanahan, "Methodological and Contextual Factors in the Dawkins/Gould Dispute over Evolutionary Progress." *Studies in History and Philosophy of Science* 31 (2001): 127-51.

The "meme"

In 1976, Dawkins invented the concept of the "meme" as an explanation for how ideas are transmitted

He argues there is a very effective, "God-meme" which makes people believe in God

Very influential idea!

The "meme"

BUT

1. Where's the science? What's the experimental evidence for memes?
2. On the basis of Dawkins' flawed argument, isn't atheism also the result of a meme?
3. Dawkins versus Dennett: how could this be resolved *empirically*?

Simon Conway-Morris on Memes

"Memes are trivial, to be banished by simple mental exercises. In any wider context, they are hopelessly, if not hilariously, simplistic. To conjure up memes not only reveals a strange imprecision of thought, but, as Anthony O'Hear has remarked, if memes really existed they would ultimately deny the reality of reflective thought."

3. Cognitive Science of Religion

Pascal Boyer

Justin Barrett

Harvey Whitehouse

Robert N. McCauley

Why Would Anyone Believe in God?



Justin L. Barrett

Robert N. McCauley, "The Naturalness of Religion and the Unnaturalness of Science." In *Explanation and Cognition*. F. Keil and R. Wilson (eds.). Cambridge: MIT Press, 2000, pp. 61-85.

"Natural" - i.e., minimally counterintuitive
- beliefs: gods, spirits, forces

"Unnatural" - i.e., counterintuitive: most
natural science, and Christian theology

NB: on this analysis, "religion" is natural,
theology is "unnatural"

So "science and religion" represents a
cognitive mismatch.

McCauley argues that, while religious belief is "natural", the natural sciences are sufficiently counterintuitive to be "unnatural". There is a significant parallel between systematic theology and science in respect of their "unnaturalness".

Lewis Wolpert, The Unnaturalness of Science.

Implications?

Religion will persist naturally

Science needs cultural reinforcement

Atheism is "unnatural"

So is most systematic theology.

Counterintuitive ideas in science and
theology

Bas van Fraassen

"Do the concepts of the Trinity, the soul, haecceity, universals, prime matter, and potentiality baffle you? They pale beside the unimaginable otherness of closed space-times, event-horizons, EPR correlations and bootstrap models."

4. Science as a dialogue partner for theology



Key figure: Thomas F. Torrance (born 1913), for many years Professor of Christian Dogmatics here at Edinburgh University.



Argues that the dialogue between
theology and natural science is not
opportunistic or arbitrary

There is an ontological imperative for the
dialogue, based in the Christian doctrine
of creation

This doctrine affirms a unitary vision of
reality

Focusses on Christian theology, not
"religion" as a generalized category

Argues for a direct engagement between
theology and the natural sciences, not a
mediated dialogue

The model of the *ancilla theologiae* is
helpful here in taking this approach
further . . .

Ancilla Theologiae

Literally, "handmaid" or "helpmate" of theology

Well established method, whose advantages and dangers are well known

Basic idea is that philosophical systems can be a very helpful way of stimulating theological development, and enabling a dialogue to be opened up between Christian thinkers and their cultural environment.

Ancillae Theologiae

Platonism in the early patristic period,
especially in Alexandria: Justin Martyr

Aristotelianism in the thirteenth century:
Thomas Aquinas

Hegelianism in the nineteenth century: F.
C. Baur

Existentialism in the twentieth century:
Rudolf Bultmann

In recent years, I have argued that this approach can be extended to yield a nonfoundationalist critical realism which works well within both a theological and scientific context:

Alistair E. McGrath, *A Scientific Theology*
3 vols. London: T&T Clark, 2001-3.

A Scientific Theology

Volume 1: Nature

Volume 2: Reality

Volume 3: Theory

Time to look at just one theme - the critical realist notion of the "stratification of reality", as developed by Roy Bhaskar

The "Stratification of Reality"

We ought not to speak about different sciences offering different "perspectives" on nature

Rather, we should think of reality as multi-levelled, consisting of various strata

Each distinct stratum demands its own mode of engagement, to be determined *a posteriori*

The ICIDH-2 model of illness

What is an "illness"?

Four levels:

Pathology

Impairment

Activity

Participation

The ICIDH-2 model of illness

Each level must be regarded as a distinct stratum. Pathology is not the same as sociology - but illness has pathological and sociological strata

Each stratum demands its own distinct style of investigation

Illness cannot be reduced to any one of these strata; it embraces them all

5. The renewal of natural theology

William Alston's definition of natural theology:

"the enterprise of providing support for religious beliefs by starting from premises that neither are nor presuppose any religious beliefs."

Not well regarded by many in
recent times . . .

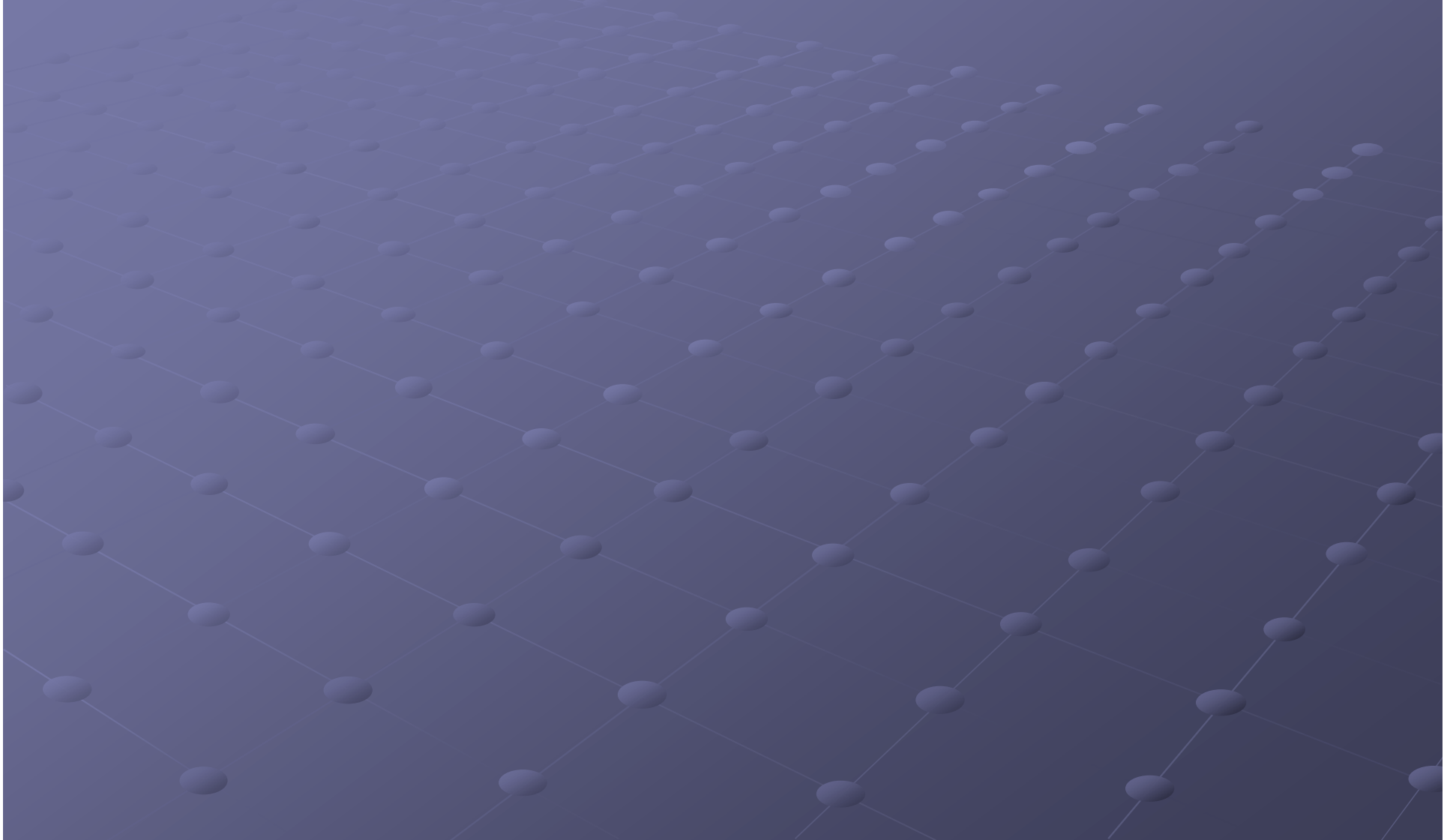
Richard Swinburne, "Natural Theology, its
'Dwindling Probabilities' and 'Lack of
Rapport'." *Faith and Philosophy* 21
(2004): 533-46.

Christoph Kock, *Natürliche Theologie : Ein
evangelischer Streitbegriff*.
Neukirchen-Vluyn: Neukirchener, 2001.

Problems

1. Evidentially deficient - e.g., William Paley's approach as critiqued by Richard Dawkins
2. Theologically redundant? Karl Barth's critique of natural theology
3. Imaginatively impoverished: John Henry Newman's critique of Paley
4. Aesthetically challenged: Hugh Miller's critique of Paley

Possible ways of retrieving a viable natural theology



1. Resonance, not proof

John Henry Newman: "I believe in design because I believe in God; not in God because I see design."

John C. Polkinghorne, "Physics and Metaphysics in a Trinitarian Perspective." *Theology and Science* 1 (2003): 33-49.

2. Natural theology is done from within the context of faith

Natural theology is not to be seen as an independent attempt to "prove" God's existence, or bypass divine revelation

It is the approach to nature that arises from within the Christian tradition, which sees nature as God's creation.

N. D. Hanson: scientific observation is always theory-laden.

T. F. Torrance

3. Natural theology is more than sense-making

Influence of the Enlightenment on much Christian natural theology

Led to natural theology being seen as a rational enterprise of sense-making, functioning as a proof of God's existence

Need to recover a deeper vision of natural theology as the quest for truth, beauty and goodness

4. Natural theology is also about the beauty of nature

This has new importance in the light of Richard Dawkins' argument that people who believe in God experience the natural world in an inferior and impoverished way

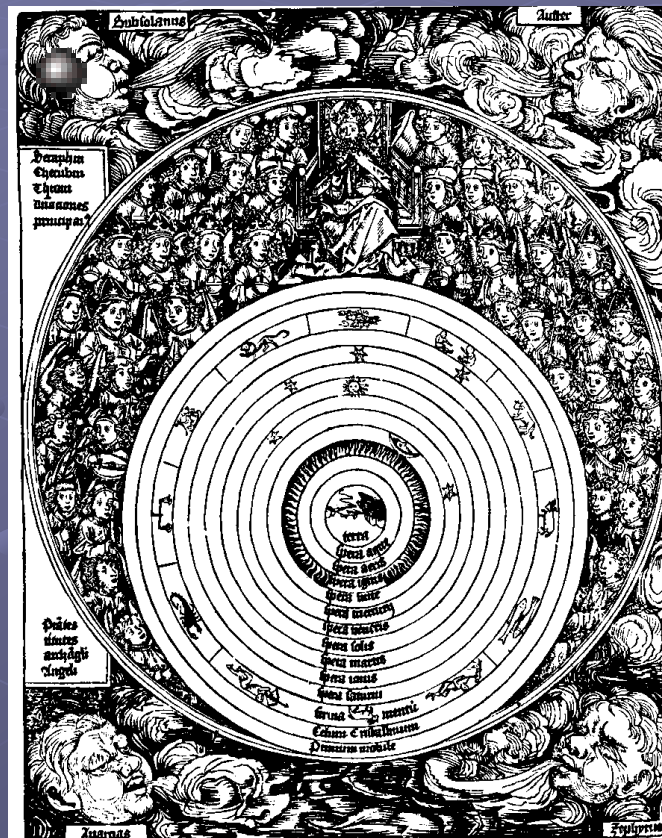
Dawkins: belief in God impoverishes our view of the universe

One of Dawkins' persistent complaints about religion is that it is aesthetically deficient. Its view of the universe is limited, impoverished and unworthy of the wonderful reality known by the sciences

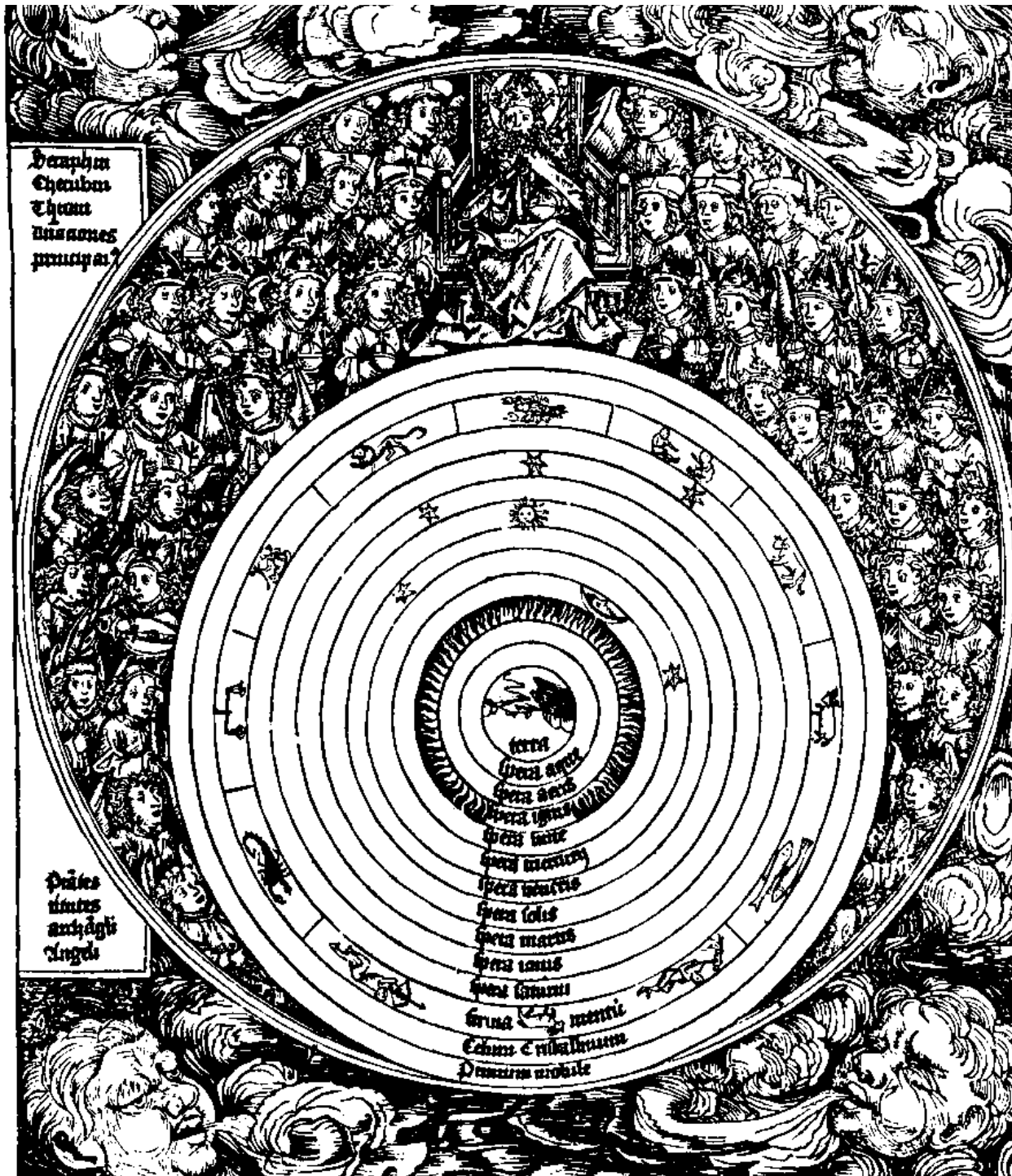
Religion offers a 'poky' view of the universe

"The universe is genuinely mysterious, grand, beautiful, awe-inspiring. The kinds of views of the universe which religious people have traditionally embraced have been puny, pathetic, and measly in comparison to the way the universe actually is. The universe presented by organized religions is a poky little medieval universe, and extremely limited."

The Nuremberg Chronicle (1493)



1. The "Ptolemaic" Universe: the spheres from earth to Prime Mover, with God at the top, surrounded by choiring angels, and with the four winds in their corners. From Hartmann Schedel, *Liber Chronicarum* ("Nuremberg Chronicle"), 1493.



Responding to this criticism

A Christian approach to nature identifies three ways in which a sense of awe comes about in response to what we observe.

1. An immediate sense of wonder at the beauty of nature. This is evoked *immediately*. I can see no good reason for suggesting that believing in God diminishes this sense of wonder.

Dacher Keltner and Jonathan Haidt,
"Approaching Awe, a Moral, Spiritual
and Aesthetic Emotion." *Cognition and
Emotion* 17 (2003): 297-314.

2. A sense of wonder at the mathematical or theoretical representation of reality which arises from this. But why does Christian faith have any problem with this?

James W. McAllister, *Beauty and revolution in science*. Ithaca, NY: Cornell University Press, 1999.

The case of James Clerk Maxwell

James Clerk Maxwell, "A Dynamical Theory of the Electromagnetic Field."
Philosophical Transactions of the Royal Society of London 155 (1865): 459-512.



**Maxwell-Gleichungen
(in differentieller Form)**

$$\nabla \cdot \vec{E} = \frac{\rho}{\epsilon_0}$$

$$\nabla \cdot \vec{B} = 0$$

$$\nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}$$

$$\nabla \times \vec{B} = \mu_0 \left(\vec{j} + \epsilon_0 \frac{\partial \vec{E}}{\partial t} \right)$$

3. For the Christian, there is an additional sense of wonder because the creation bears witness to its creator, "The heavens declare the glory of the Lord!" (Psalm 19:1). For Christians, to experience the beauty of creation is a sign or pointer to the glory of God, and is to be particularly cherished for this reason.

International Conference!

Oxford University, Museum of Natural
History, 23-25 June 2008

"Beyond Paley: Renewing the Vision for
Natural Theology"

Further details as they become available
at:

www.naturaltheology.org

6. Future researchers and supporters

What are we doing to ensure a rising generation is interested in the relation of science and faith?

A copy of this presentation is available free of charge on request to:

Alister.McGrath@hmc.ox.ac.uk

