

Faith in Science? On the relationship between faith, wisdom and science

Professor Tom McLeish September 2015

I'm very grateful in many ways for the invitation to contribute to ISCAST's remarkable programme of lectures and discussions. It's also great honour for to participate in the tradition of theological thinking about science in Australia – I would like to record here my thanks for the wonderful hospitality wherever I have gone, and for discussions and questions that have begun to lead my own thinking in directions that I would have entirely missed without the visit.

Some of you will know that this is, in one sense, "The Talk for the Book" – and it's true that after 20 years and more of discomfort with the current public articulation of the "Science and Religion" debate, trying to work out why one is itching, and beginning to write it down, 10, 000 words rapidly turns into 100,000. "Faith and Wisdom in Science" (OUP May 2014) contains the full story that I can only point to today, but I hope to be able to develop at least one theme of the book in *more* detail here – and that is the critical connection of Old Testament *Wisdom Tradition* to the narratives that underlie public talk about troublesome science and troublesome technology (different things) today.

So I'd like to attempt to persuade those of you who are interested in Science and Religion to look in a few new directions, and to take up some new challenges. In summary:

(1) I'd like to suggest that the tense altercations around biblical interpretation of creation narratives is precisely the *wrong* public place to look for where the problems are (they are just the noisy ones, not the important ones). Instead I propose that the place to look is in public discourse around science-based technologies, and that the first problem we encounter there is the lack of a narrative understanding of what science is, (theologically and anthropologically).

(2) I want to suggest that the right place to *be* Biblically in theological thinking about science is not in contemplation of the ornamental, liturgical and geometrical structure of Genesis 1, but listening and debating in the presence of the suffering, pain and disease of Job's ash-heap.

(3) I propose that the right task before us is not reconciliation of theology *and* science, but to work through a *Theology of Science*, consistent with the long narrative of creation, fall, and resurrection. My claim is that only this move will restore a consistent 'geometry' to the relationship of science and theology.

(4) I'd like to suggest that the carrying out of this task suggests a radical reappraisal of what science is culturally, historically and politically, as well as a new model for the 'interaction of science and religion'.

(1) *Narratives of Nature*

To evidence and explore our first point, I'd like to start with nanotechnology – the application of the phenomena matter at lengthscales 10-100 times the atomic, and its special phenomena of self-assembly, bio-mimetics. Three years ago, a major three-year European research project at Durham University and EU partners explored what was going on behind the ostensibly technical public debate evaluating risks and acceptability. Their project report, *Recovering Responsibility*¹ tells a very different story to that of the claims and counter-claims within official reports of public consultations. Its powerful application of qualitative social science unearths underlying narratives of suspicion - stories and themes that influence and permeate the debate, without necessarily surfacing from the superficial technical discussion. As identified by philosopher Jean-Pierre Dupuy², they draw on both ancient and modern myths, and create an undertow to discussion of 'troubled technologies' that, if unrecognised, renders effective public consultation impossible. The research team labelled the narratives:

1. *Be careful what you wish for – the narrative of Desire*
2. *Pandora's Box – the narrative of Evil and Hope*
3. *Messing with Nature – the narrative of the Sacred*

¹ Sarah Davies, Phil Macnaghten and Matthew Kearnes (eds.), *Reconfiguring Responsibility: Deepening Debate on Nanotechnology*, Durham University (2009).

² J.-P. Dupuy, *The Narratology of Lay Ethics*, *Nanoethics* 4 153-170 (2010)

4. *Kept in the Dark – the narrative of Alienation*

5. *The rich get richer and the poor get poorer – the narrative of Exploitation.*

The first three Dupuy unites in an ‘ancient meta-story’, the last two in a ‘modern meta-story’. It is at first rather astonishing to find as superficially modern a set of ideas as nanotechnology awakening such a powerful set of ancient stories, but in the light of our claim that the problematic engagement of the human with the material is actually very ancient, and embedded in the discourse of sacred texts and the stories of their communities, it becomes less so. Surveying briefly how they play out:

New technologies, especially those whose functions are hidden away at the invisible molecular scale, promise much, and have made exaggerated claims of benefits: longer, healthier lives at low cost, self-repairing materials and machines, built-in sources of energy. But such hubris elicits memories of over-promising – so “be careful what you wish for”.

The Story of Pandora’s Box enters at this point, for this tale of the seductive power of the hidden speaks across the ages to our power to unlock the twinned histories of trouble and hope. The nanotechnological study identifies irreversibility in both knowledge gained and in the ‘release into the environment’ of nanoparticles. Pandora also released hope from her casket – in the original myth usually read as a positive and counteracting good. However, as Dupuy points out, hope can be dangerous: it can drive a course of action onwards beyond the point at which a dispassionate risk analysis would have recommended a halt.

The third ‘ancient narrative’ is a fascinating and perplexing one. Why would a secular age develop a storyline that warns us away from ‘Messing with Nature’ because of its sacred qualities? The secularisation of thought and society has been charted, in the last century, in social theory from Emil Durkheim and in political philosophy from Hannah Arendt³. Even the more recent social analyses of the persistence of religious thought into the modern world, such as that of Jürgen Habermas⁴, have approached religions as minority communities. But “the sacred” persists both within and without official religious communities.

Here is a fascinating example, this time in the context of another troubled technology, the process of fracture-recovery of coal-gas from near-surface shales known as ‘fracking’:

In ancient times, people believed that inclement weather came directly from a divine source: Whether it be Gods, Goddesses, or just the “spirit of the planet”, we have always arranged sacrificial offerings and desperately tried to appease whichever deity has punished us for our wickedness. Although we have somewhat “grown out of” this concept of divine retribution for sin, we kind of have to admit that we have become sinful in our collective attempts to thwart nature and impose our will upon it⁵.

The fourth narrative of being ‘Kept in the Dark’ is at first sight, as Dupuy observes, a more modern one, speaking of asymmetries in political power between the governing and the governed.

The fifth narrative of ‘the rich get richer and the poor get poorer’ extends the fourth: with exclusion comes lack of access to the benefits of knowledge, and worse, unequal exposure to their harmful consequences. This fifth narrative has, for example, been especially prevalent in the resistance to GM crops in India.

The European Nanotechnology study is interesting, not only because it begins to make progress in perceiving why our newest technologies are so troubled, but also through its unearthing of the fundamental importance of underlying narrative: here there are (at least) five ancient narratives coiling around a resistance to new science and new technology. They highlight in the most lurid possible contrast that science itself has no such source to draw on – *there is a narrative vacuum where the story of science in human relationship with nature needs to be told*. What might happen to public debate on contentious science and technology if there were an active ancient narrative that was more neutral, or even positive, in its recounting of ‘love of wisdom to do with natural things’?

Is there any modern articulation of an underlying narrative structure to science? Finding a clue in one example from the academic world, George Steiner writes this about art in his deeply felt discussion of

³ Hannah Arendt, *The Human Condition* (Chicago: University of Chicago Press, 1958), 314

⁴ Jürgen Habermas, “Religion in the Public Sphere,” *European Journal of Philosophy* 14 (2006): 1–25.

⁵ Chris and Sheree Geo, <http://www.geoengineeringwatch.org/> March 13 2013

meaning and language, *Real Presences*: “Only art can go some way towards making accessible, towards waking into some measure of communicability, the sheer inhuman otherness of matter...”. “Only art?” To a scientist this comes as a shock – to me as a wake-up call to think what really motivates us at the deepest level to explore the world. If science is not there to establish lines of communication between our minds and the “sheer inhuman otherness of matter”, then what is it doing? Why does Steiner, so sensitive to our human need for some sort of reconciliation with our world, not see science as part of the answer when it surprises us over and over again with our ability to reveal the patterns beneath the things we see, hear, feel and touch by careful observation, imagination and theory? Perhaps in spite of his apparent familiarity with the parade of the science community, he speaks for many people when he denies it a role in the inspired contemplation and recreation that he does see in art.

(2) *By Job’s Ash Heap*

I have often suggested to my scientific colleagues that they pick up and read through the closing chapters of the Old Testament wisdom book of Job; they later return with responses of astonishment and delight. I did the same on my first reading. Let us taste some of this beauty right away, from the point at which God finally speaks to Job (after 37 chapters of silence!) in chapter 38v4⁶:

*Where were you when I founded the earth?
Tell me, if you have insight.
Who fixed its dimensions? Surely you know!
Who stretched the measuring cord across it?
Into what were its bases sunk,
or who set its capstone, when the stars of the morning rejoiced together,
and all the sons of God shouted for joy?..*

...

We are familiar with this type of language; it is a beautiful development of the core creation narrative in Hebrew wisdom poetry (a form found in Psalms, Proverbs and some Prophets too that speaks of creation through ordering, bounding and setting foundations), but now in the relentless urgency of the question-form, the voice continues:

Where is the realm of the dwelling of light, and as for darkness, where is its place?

...

So from the creative process of ordering, bounding and shaping it asks about the fundamental form of light, then sharpens its questions towards the phenomena of the atmosphere:

*Have you entered the storehouses of the snow?
Or have you seen the arsenals of the hail,
...
Where is the realm where heat is created, which the sirocco spreads across the earth?
Who cuts a channel for the torrent of rain, a path for the thunderbolt?*

...

The voice then directs our gaze upwards to the stars in their constellations, to their motion, and to the laws that govern them:

*Can you bind the cluster of the Pleiades, or loose Orion’s belt?
Can you bring out Mazzaroth in its season, or guide Aldebaran with its train?
Do you determine the laws of the heaven?*

⁶ We take quotations of the text from the magisterial new translation and commentary by David Clines, Thomas Nelson pubs., Nelson, Vol. 3 forthcoming.

Can you establish its rule upon earth?

...

The questing survey next sweeps over the animal kingdom:

*Do you hunt prey for the lion, do you satisfy the appetite of its cubs,
while they crouch in their dens, lie in their lairs in the thickets?*

...

and at the glory of flight in both its migratory navigational intelligence and mastery of the air:

*Is it by your understanding that the hawk takes flight, and spreads its wings toward the south?
Is it at your command that the eagle soars and makes its nest on high?*

It finishes with the celebrated “de-centralising” text that places humans at the periphery of the world, looking on in wonder at its centre-pieces, the great beasts Behemoth and Leviathan:

*Beneath it are the sharpest of potsberds; it leaves a mark like a threshing sledge upon the mud.
It makes the deep boil like a cauldron; it makes the water [bubble] like an ointment-pot.
Behind, it leaves a shining wake; one would think the deep boar-headed!
Upon earth there is not its like, a creature born to know no fear.
All that are lofty fear it; it is king over all proud beasts.*

Where is this voice coming from, that resonates with question after question? The answer is itself a fascinating surprise. At the very start of this passage, known as “The Lords Answer” we are told:

And Yahweh answered Job from the tempest,

so situating the entire monologue within one of the wisdom tradition’s great metaphors for chaos. Commentators have been quick to note that none of the animals appearing in the poem is domestic, nor are any of the cosmic powers of forces it asks about controlled by humans. This is an ancient recognition of the unpredictable aspects of the world: the whirlwind, the earthquake, the flood.

Even these short extracts from the longer poem give something of the impressive, cosmic sweep of this text, the grandeur of its scope, and the urgent, pressing tone with which it peers into the nooks and crannies of creation. In today’s terms, we have in the Lord’s answer to Job as good a foundational framing as any for the primary questions of the fields we now call cosmology, geology, meteorology, astronomy, zoology, ... Of course to use the text in that way is an unwarranted and anachronistic projection of our current taxonomies and programs onto a quite different genre of literature and over a vast gulf of cultures. However, if we are instead alert to the poetic form we can recognise in this extraordinary wisdom-poem an ancient and questioning view into nature unsurpassed in its astute attention to detail and sensibility towards the tensions of humanity in confrontation with nature. There are forces at play behind this text that lie at a depth and draw on an energy that still lie at the roots of the relationship between the human and the inhuman worlds. The public projection of science today is still unfairly dominated by a deterministic Newtonian (or quantum for that matter) paradigm (this is also true of material recruited into most science-religion debate). But a scientist alert to the far more subtle ergodic dynamics underpinning the many-body physics of statistical mechanics, or of the chaotic phenomena in nonlinear dynamical systems theory, will find herself at home in Job’s world of incomprehension in the face of cosmic disorder.

As well as its universal and cosmic content, there is another reason that scientists find this passage in Job so resonant – and that is its *form*. For we know that the truly essential and imaginative task in scientific discovery is not the finding of answers, but the formulation of the fruitful question.

Long recognised as a masterpiece of ancient literature, the Book of Job has attracted and perplexed scholars in equal measures for centuries, and is still a vibrant field of study right up to the present day. David Clines, to whom we owe the translation employed here, reproduced from his recent edition and commentary, calls the Book of Job “the most intense book theologically and intellectually of the Old Testament”. It is intriguing that, ubiquitous in biblical nature-writing, ideas about the created world are woven into a text that takes pain and suffering for its theme.

However, although readers of the text have long recognised that the cosmological motif within Job is striking and important, it has not received as much comprehensive attention as the legal, moral and theological strands in the book. This de-emphasising of cosmology might partly explain why the long passage from which we have taken the extracts above, known as “The Lord’s Answer” has had such a problematic history of reception and interpretation. Does it really answer Job’s two questions about his own innocence and meaninglessness of his suffering? Does the “Lord” of the creation hymns correspond to the creator Yahweh of the Psalms, the Pentateuch and the Prophets? Does the text even belong to the rest of the book as originally conceived? Some scholars have found the Lord’s answer to Job spiteful, a petulant put-down that misses the point and avoids the tough questions. Others, partly in sympathy with that interpretation, have suggested that the entire discourse has been “glued on” to the earlier chapters at a later date and by a different author, pointing out that a simple contrast of God’s knowledge of nature to Job’s ignorance admits of no apparent satisfaction to his complaints. So, for example, Robertson⁷ perceives that this “God” fails utterly to answer Job, finding him a charlatan deity. Even those who take a very different view find the Lord’s Answer presenting an over-tidy view of the world, so Clines claims of it, “There is no problem with the world. Yahweh does not attempt a justification for anything that happens in the world, and there is nothing that he needs to set right. The world is as he designed it.”

But are these interpretations justified? Increasingly scholars have recognised an underlying unity to the book that makes it hard to escape the tough questions around the Lord’s Answer. Even looking at the text through the fresh lens of science today (even if that lens is at the wrong end of a telescope) resonates with the *difficulty* of questioning nature, even its painfulness, as well as its *wonder* – that is how scientists respond at a first reading time and again.

To bring these threads together one can take a journey through the Book of Job, travelling on the ground of a “close reading”, taking one path, albeit a not so well-trodden one, to the snowy peak where the Voice from the Whirlwind speaks. For there is a track through the book that starts with the workings and structure of the natural world, and, while winding through the arguments of the disputations, never leaves it. This is the reading natural to the scientist, and on its pathway one thing we notice is that all the natural images invoked in The Lord’s Answer have actually already appeared in the disputation speeches of Job and his friends, from the great beast Leviathan to the roots of the trees and the birds of the air, from the desert floods filling the wadis below, to the starry heavens above. I want to try to summarise what such a ‘nature’ trail through Job looks like, and how we re-read the Lord’s answer when we reach its endpoint.

There is, furthermore a distinct order, for example, in the realms of creation explored predominantly in the three cycles of speeches:

First cycle: earth, winds, waters, springs, stones, sea

e.g. Eliphaz’ superlative terms in which to frame the rewards of Job’s repentance (5v22):

At ruin and blight you will mock, and you will have no fear of the wild beasts.

For you will be in covenant with the stones of the field, and the wild animals will be at peace with you.

Second cycle: plants, animals, vines, milk, honey

e.g. Job’s final speech of the cycle evidencing the absence of moral code with nature

Their bull sires without fail, their cow gives birth and does not lose her calf...

⁷ D. Robertson “The Book of Job: a Literary Study”. *Soundings*, 56, (1973) 446-468.

How often are they like straw before the wind, like chaff swept away by the storm?

His pails are full of milk, and the marrow is juicy in his bones.

The animate, inanimate and human fields of the physical world all declare with Job that there is no correlation between morality and matter.

Third cycle: heavens, moon, stars, Sheol, the far extremities of the world

E.g. Eliphaz' to our first explicit view of a Hebrew cosmology (22v12-14):

Is not God in the height of the heavens? Does he not look down on the topmost stars, high as they are?

Yet you say, "What does God know? Can he see through thick clouds to govern?"

Thick clouds veil him, and he cannot see as he goes his way on the vault of heaven!"

So the cosmological crescendo matches the ratcheting tension of the drama – it is only in this third cycle that direct accusations of personal wickedness are levelled at Job, a brutal climax where Bildad can only answer Job's searching complaints by an attempt to trump them with their irrelevance. God, all-powerful, may rule with an iron fist if he so desires. Finally there is no human voice worth hearing in such a world: all voices are crushed into silence.

A composer has a hard job when the piece of music they are shaping reaches an ugly and deafening climax. Where do you go when the full forces of the orchestra have once joined their different themes together, taking the listeners to a moment of overwhelming, but also of terror? Perhaps this is one reason why the later editors of the text get confused at this point, why some versions assign no third cycle speech to Zophar at all, and why Job's responses become snatched and stylised. It happens in music too: themes disperse, shattered into different voices, attempting to regroup, to find an answer to the experience they have just lived through (think of the aftermath to the thunderstorm in Beethoven's *Pastoral Symphony*, or the dawning of day in Mussorgsky's *Night on a Bare Mountain*). The alternative, as adopted by Ravel in *Bolero*, is of course just to end the whole thing right there. Some commentators on Job have suggested exactly that of the original text. But that is not what happens in the version we have received from antiquity. More Mussorgsky than Ravel, the disordered and frightening impasse is broken into by a new voice with a new subject. Or perhaps it is really an old subject, deeply buried but now resurfacing. Let's listen to the start of chapter 28, a beautiful and structurally quite new voice sometimes denoted "the hymn to wisdom" (28v1-6):

Surely there is a mine for silver, and a place where gold is refined.

Iron is taken from the soil, rock that will be poured out as copper.

An end is put to darkness, and to the furthest bound they seek the ore in gloom and deep darkness.

A foreign race cuts the shafts; forgotten by travelers, far away from humans they dangle and sway.

That earth from which food comes forth is underneath changed as if by fire.

Its rocks are the source of lapis, with its flecks of gold.

The scene is a mineshaft under the ground, and the voice is a miners' song! Foreign workers in the ancient middle-east were commonly employed in such dangerous occupations; here we picture the mineworkers tunnelling and cutting the rock. Roped to the subterranean rockface, we can just make them out swaying in the gloom. We also begin to see *with* them: a miner's gaze on the earth from below reveals a very different appearance to that from above. The "transformation as if by fire" is a remarkable insight into one of the processes by which minerals separate out, recombine and solidify in the rocks below ground. If we look hard in the dim candlelight we might catch a glimmer of gold. The discourse of earlier chapters

touched in one or two places on smelting and refining metals from ores, but this song takes us much further back into the process of extracting the ores, and in an entirely new setting. It even begins to probe how the ores might have arrived there. The underground world takes us completely by surprise - why did either an original author or a later compiler suppose that the next step to take in the book was down a mineshaft? Reading on,

*There is a path no bird of prey knows, unseen by the eye of falcons.
The proud beasts have not trodden it, no lion has prowled it.
The men set their hands against the flinty rock, and overturn mountains at their roots.
They split open channels in the rocks, and their eye lights on any precious object.
They explore the sources of rivers, bringing to light what has been hidden.*

We begin to recognise a tune that has been with us all along our nature trail through Job; namely that there is something especially human about the way we fashion our relationship to the physical world. It affects where we go (*There is a path*), what we see (*unseen by falcons*), what we understand (*bringing to light what has been hidden*) and what we do (*split open channels in the rock*). This extraordinary power to connect with nature seems so strongly worded that some readers have assumed that here the song is really talking about God, the creator himself, not humans at all. To take a specific example, “overturning mountains at their roots”, sounds like the exercise of divine power, but if we bear in mind that the Hebrew word (*niphal*) translated “overturning” is just the same as that for “changing” (as in “changed by fire”), the metaphor directs us rather to admire the patient and knowledgeable art of mining seams through hard rock, exploring just those places that yield precious ores or stones. But even more significantly, only human eyes can see it from this new viewpoint. It is a sight that asks questions, that directs further exploration, that wonders. No wonder such extraordinary human capacity has been confused with the divine.

Until now, the writer has kept to himself the primary subject of the hymn in chapter 28, which will answer our question of what brought us to this hidden place. But now we are let into the secret, and a new question sounds (28v12):

*But where is wisdom to be found? And where is the place of understanding?
Humans do not know the way to it; it is not found in the land of the living.
The ocean deep says, “It is not in me,” and the sea, “Not with me.”*

We have been on a quest for wisdom and understanding all along! These are two different Hebrew words as they are in English, meaning two different things: the first a general idea of practical knowledge, the second a more intellectual and contemplative grasp. Carol Newsome in her commentary on Job points out that their juxtaposition can signify something more, “the kind of understanding that would provide insight into the nature and meaning of the entire cosmos”⁸. And a timely search it is – Surely wisdom is what the court of appeal will need to resolve Job’s demands and the friends’ unsatisfactory replies. Perhaps the idea that the type of wisdom we will need is the same that searches the workings of the cosmos does not now seem quite so strange after our journey through the circling arguments themselves, and their continual return to the natural world, as it might.

The writer tells us that wisdom is hidden from the eyes of all living things (humans, presumably, included), and that even the deeply buried land of death has only heard enigmatic whispers of it. So is the world simply a collection of “the wrong places to look” for wisdom and understanding? The conclusion of the hymn has driven different readers to opposing views, by “drawing back the curtain” once more (28v23):

*But God understands the way to it; it is he who knows its place.
For he looked to the ends of the earth, and beheld everything under the heavens,
So as to assign a weight to the wind, and determine the waters by measure,*

⁸ C. Newsom, “The Book of Job” in *The New Interpreter’s Bible*. Ed. L.E. Keck et al. Vol. 4, Nashville: Abingdon, 1996, quoted in Clines *op cit*.

*when he made a decree for the rain and a path for the thunderbolt –
then he saw and appraised it, established it and fathomed it.
And he said to humankind,
Behold, wisdom is to fear the Lord, understanding is to shun evil.*

The answer is for some commentators a deep disappointment, even a banality (as Clines) – is it really true that, after all this exploration of nature from above and below in a search for wisdom, all that is futile and one has only recourse to a pious “fear of the Lord”? For an imaginary humanity without history, or rather without an intellectual future that contains more than the present, perhaps this is so. But it is by no means true that the wisdom hymn concludes that wisdom has nothing to do with the created world, for the *reason* that God knows where to find it is precisely because he “looked to the ends of the earth, ..., established it and fathomed it”! It is, as for the underground miners, a very special sort of looking – involving number (in an impressive leap of the imagination in which we assign a value to the force of the wind), physical law (in the controlled paths of rain and lightning) and formation (there is a blurring here between creating the world, and looking at it once it is created). This is an extraordinary claim: that wisdom is to be found in participating with a deep understanding of the world, its structure and dynamics. It is banal and disappointing only if the very final injunction to humans is to be taken as an instruction to turn from numbering, weighing and participating in nature as God’s exclusive domain, and restrict our thoughts and behaviours to the moral sphere alone. Is the writer really saying that that sort of “fear of the Lord” is the end of all wisdom? I’m not sure we really listen properly to the latent meaning of the word “*beginning*” in the closely parallel, and well known, opening to the Book of Proverbs, “The fear of the Lord is the beginning of wisdom” (Pr 1v7). Wisdom, in Proverbs, is not a state but a path – even of course a person - (the writer of Job would employ what is becoming a favourite word: *derek* – “a way”). We know already that the momentum of the Book will not remain circular, nor will God always remain speechless, but will extend to Job, and to the readers of the Book, an extraordinary invitation to engage with him, and especially with his “fathoming” of the universe. If the “fear of the Lord” carries a higher meaning of engagement, following and exploration, rather than a simple moral obeisance, then the end of the hymn to wisdom is far from a banal journey’s end. Instead it becomes a signpost to a mountain top view only currently obscured from us.

Looking back at the three cycles of dialogue with this new perspective, we see not only that they have taken us through ascending levels of the natural world itself, but that they have also introduced us to a series of different interpretations of what a human *relationship* with nature might look like. Getting this relationship right, we now understand from the cornerstone passage of the wisdom hymn, offers us the prospect of a route to the precious possession of wisdom, the quality most starkly lacking from the disputations. However, none of the candidate relational perspectives offered from the clamouring voices within the Book of Job has succeeded. At least 5 can be discerned beneath and between the voices we hear by the time Elihu finishes speaking. It’s worth summarising them.

First is the “simple moral pendulum” – the story of nature as both anthropocentric and driven by a moral law of retribution. This is the central narrative of the first three of Job’s friends - their underlying simplistic, deterministic (and ultimately barbaric) worldview is effectively unmoved throughout the conversation.

Second is the “eternal mystery” – the story that speaks of God’s exclusive understanding of nature’s workings in ways that humans can never know. It picks up illustrative weight in the repetitive use of untamed animals, distant points of the compass, and cosmological structures far removed from us in time and space.

Third is the “book of nature” idea – the story in which nature constitutes a giant message-board from its maker for those who have eyes to read it. Attaining its height in Elihu’s speech, humans are central to this relationship just as are pupils in a classroom, but this classroom belongs in a kindergarten not a university.

Forth is the story of the uncontrolled storm, flood and earthquake. This is uniquely Job’s interpretation of his relationship with nature, but extrapolated in his anguish and exasperation. Through this lens creation is chaotic rather than regulated, and bound over to a crumbling decay. Humanity is swept up in the storm and flood, which God might have held at bay, but chooses not to. *Job uses cosmological chaos in his*

discourse because his accusation is that God is as out of control of human justice as he is of the physical world.

A fifth possible relationship with creation is made explicit only once, by Job himself. It is the relationship of nature-worship. It is dismissed straight away, but not without giving away its allure.

A sixth storyline is hinted at, but not spoken with clarity. It has something to do with the centrality of the created physical world over any claim by humanity to a pivotal place within it yet it is the voice that locates wisdom within the knowledge of nature. It hints at a balance between order and chaos rather than a domination of either. It inspires bold ideas such as a covenant between humans and the stones, thinks through the provenance of rainclouds, observes the structure of the mountains from below, wonders at the weightless suspension of the earth itself.

This is the point at which we first entered the Book of Job, the point at which David Clines admits (surely self-referentially) a “frisson within” on every reading “even for those who have grown old with the Book of Job”. Yahweh finally speaks, at the very point where everyone else has finally fallen silent. He plucks Job up from his ash-heap and takes him, and us, on a whirlwind tour of creation from its beginning to the present, from the depths to the heights and from its grandest displays into its inner workings.

But one thundering question remains for all readers of the book: does Job receive an adequate answer to his two complaints in the Lord’s Answer? But now that we have seen that the question of God’s justice in his management of creation as a whole is woven into Job’s disputations, we can see that it is not by-passing the question for the Lord’s answer to take this thread and expand it into the glorious quest into nature’s workings with which the book finishes (or nearly finishes). With trepidation, and against the weight of opinion, I am therefore suggesting that the “Lord’s Answer” is an answer to Job’s complaint, possibly the only adequate answer.

Firstly it tackles head-on the accusation that creation is out of control by suggesting ways of thinking through what Job’s (and his friends’) idea of “control” might mean. The deterministic and predictable response of a cosmos that metes out retribution on the unjust is not a living universe but a dead one. The axis of control and chaos is subverted by the revelation of a third path of constrained freedom in which true exploration of possibility, of life, really lies.

Secondly it does, against all expectation, achieve what has always been Job’s aim, to be reconciled to his state of physical pain and mental outrage. We are not privy to Job’s inner response to the Lord’s answer, we don’t know the steps that lead him to aver at the end (Ch42v5)

*I have heard you with my ears, and my eyes have now seen you.
So I submit, and I accept consolation for my dust and ashes.*

But we do know that he has been lead towards a radically new perspective, one that in one way totally de-centralises humanity from any claim to primacy within creation, yet in another affirms the human possibility to perceive and know creation with an insight that is at least an image of the divine one

Thirdly it is participative and invitational: the final Voice asks the great questions about nature not, purely to rouse into self-awareness of our own lack of understanding, but as an invitation towards transforming it in encounter with wisdom.

Fourthly it speaks of the fundamental significance and importance of the physical structure and workings of nature. They are not sideshow or an optional hobby for the socially challenged. Our relation of perception, knowledge and understanding is at the centre of our humanity. Job even talks of the direction of human relationship with creation in terms of a covenant.

Fifthly the Lord’s Answer is “eschatological” – its message is one that announces and urges the possibility of a future in which this vital relationship, now broken, becomes healed, not just for Job but for

the species from which he comes. Job may not know the answers to Yahweh's questions, but one day he or his descendents might well do⁹.

(4) *A Theology of Science*

We need to draw together some threads together from readings of wisdom and experience of science. Most of the constitutive themes that I extract in detail in *Faith and Wisdom in Science* have already emerged in our examination of Job, but they are:

Long and linear history,

the surprising human aptitude for reimagining nature,

the search for wisdom as well as knowledge,

the ambiguity and experience of pain,

the delicate balance of order and chaos,

the centrality of the question and the questioning mind,

and above all the experience of love, are the lines that draw us to a larger narrative in which science can be framed.

Within all these themes the pattern of relationship has dogged us constantly. Science experiences the negotiation of a new relationship between human minds and the physical world. The nature-language of the Bible is consistently employed to describe and develop the relationship of care and of understanding between humans and a world that is both our home and also a frightening field of bewilderingly complexity. Although fraught with ambiguity, experiencing pain and joy in equal measure, knowing terror before the phenomenon of chaos as well as experiencing joy before its resplendent order, bewildered by ignorance yet granted hard-won understanding, the Biblical theology of nature is consistently relational.

St Paul invested to a deeply personal degree in the nascent Christian communities with which he worked. Within his most painful correspondence (with Corinth) he re-thinks the entire project of God's creation in relational terms, working around and towards the central idea of reconciliation. The argument begins with the fifth chapter of his second letter to the Corinthians, recapitulating briefly his picture of a "groaning" creation, from the letter to the Romans, in longing for a more eternal form, which he calls *clothed with our heavenly dwelling, so that what is mortal may be swallowed up by life*. Arguing that those who have been baptised into the life with Christ can already view the world from the perspective of its future physical re-creation, he writes (2Cor v17)

Therefore, if anyone is in Christ – new creation;

The old has gone, the new has come!

All this is from God, who reconciled himself through Christ and gave us the ministry of reconciliation:

That God was reconciling the world to himself in Christ

The *ministry of reconciliation* is a stunningly brief encapsulation of the Biblical story of the purpose to which God calls people. I don't know a better three-word definition of Christianity, and it does very well as an entry point for Old Testament temple-based Judaism as well.

There is one relationship that tends to be overlooked in expositions of Christian theology – perhaps humbler than the more obvious broken human ones, but just as profound. It is the relationship between humankind and nature itself. A theology of science, consistent with the stories we have told up to this point, situates our exploration of nature within that greater task. Science becomes, within a Christian theology, the grounded outworking of the 'ministry of reconciliation' between humankind and the world.

⁹ This suggestion has been made at least once before, by David Wolfers in his brief "Science in the Book of Job", *Jewish Bible Quarterly*, 19(1), 18-21, 1990. His conclusion runs, "The majority of these questions [those of scientific purview] are to be found in the Lord's first speech to Job, and there is little doubt that their primary purpose is to expose the abysmal ignorance of mankind of all theoretical aspects of Creation. Is it possible to detect a faint hint, that it might be well for man to set about attempting to remedy this ignorance?"

Far from being a task that threatens to derail the narrative of salvation, it actually participates within it. Science is the name we now give to the deeply human, theological task and ancient story of participating in the mending of our relationship with nature.

It is an extraordinary idea at first, especially if we have been used to negotiating ground between 'science' and 'religion; as if there were a disputed frontier requiring some sort of disciplinary peacekeeping force to hold the line. It also makes little sense within a view of history that sees science as an exclusively modern and secular development, replacing outworn cultural practices of ignorance and dogmatic authoritarianism with 'scientific method' and evidence-based logic. But neither of these assumptions stands up to disciplinary analysis on the one hand or history on the other.

Neither science nor theology can be self-authentic unless they can be universal. We need a 'theology of science' because we need a theology of everything. If we fail, then we have a theology of nothing. Such a theology has to bear in mind the tension that the same is true for science – it has never worked to claim that science can speak of some, but not of other topics. Science and theology are not complementary, they are not in combat, they are not just consistent - they are "of each other". This is the first ingredient of a theology of science.

Just as there is no boundary to be drawn across the domain of subject, there is no boundary within time that demarks successive reigns of theology and science. It is just not possible to define a moment in the history of thought that marks a temporal boundary between the 'pre-scientific' and 'scientific'. The questioning longing to understand, to go beneath the superficialities of the world in thought, to reconstruct the workings of the universe in our minds, is a cultural activity as old as any other. Furthermore, it is a human endeavour deeply and continually rooted in theological tradition. The conclusion is still surprising: far from being necessarily contradictory or threatening to a religious worldview in general, or to Christianity in particular, science turns out to be an intensely theological activity. When we do science, we participate in the healing work of the Creator. When we understand a little more of nature, we take a step further in the reconciliation of a broken relationship.

Participation- in-reconciliation is as strong a theme in the New Testament. There is another surprise awaiting the explorer of this road to a theology of science. Among the 'clamour of voices' contesting the relationship between theology and science has been raised the accusation that scientists today behave like the "priests of a former age". This is meant of course in a pejorative sense: the image projected is the priest as representative of oppressive authority. But the Old Testament notion of priesthood was in many ways the perfect opposite of this dark stereotype. The priests were charged of the festivals that reenacted the foundational acts of Israel's reconciliation to YHWH. The New Testament transformation of priesthood is actually an amplification of a healthy notion of priest as enabler, rather than a negation of it. Scientists are priests in the sense that they are specifically at work in transforming the broken relationship between people and the physical world. Special work is required because the task calls on long training and particular skills, but the contrary their work is on behalf of the people and requires regular participative celebration.

(4) *Consequences*

Does a theology of science do meaningful work for us? Does it provide any avenues to resolve the painful cross-currents around science in society? Does it suggest new tasks? These must be the test for any endeavour of this kind. It has taken long enough to climb the hill from which we might see science within a Judeo-Christian world-view, and outline a theology *of* science that begins to circumvent a relentless territorial contest between theology *and* science. Let's look at just one example;

One leading contemporary commentator whose interest in the 'politics of nature'¹⁰ has not been marginalized is the French thinker Bruno Latour. In a recent edited volume¹¹ he explores the terrifying

¹⁰ Bruno Latour, *Politics of Nature: How to Bring the Sciences into Democracy* (Translated by Catherine Porter) Cambridge, Mass: Harvard University Press, (2004)

¹¹ Bruno Latour, "It's development, stupid!" or: How to Modernize Modernization, in *Postenvironmentalism*, Jim Procter ed., MIT Press (2008)

observation that ‘environmentalism’ has become a dull topic – with conclusions that are remarkably resonant with our own. They break down into four findings, in his own words: *a stifling belief in the existence of Nature to be protected; a particular conception of Science; a limited gamut of emotions in politics; and finally the direction these give to the arrow of time.* This is a grand, overarching critique of the politics of nature, but even so, it homes on to the same narrative analysis as did the specific nanotechnology study we examined at the beginning. Latour’s identification of the ‘stifling’ move to withdraw all human corruption from a ‘Nature’ that should be maintained in some pristine condition, is none other than the ‘messing with sacred Nature’ narrative by another name. Latour extracts the self-contradictory structure of this story of the Golden Age – Nature reserves are artificial by definition. But the alternative ‘modernist’ trajectory is no less problematic. There the story is an overcoming of Nature with control. We disengage from our environment, not through an ‘environmentalist’ dream of withdrawal from the sanctuary, but through technological domination. Here Latour revisits the narrative of Pandora’s Box, because such a modernist hope is dashed on the rocks of the same increasingly deep and problematic entangling with the world that prevents withdrawal. Nature does not respond mildly to an attempt to control or dominate. So neither narrative works – both start with fundamentally misguided notions of the geometries and constraints of our relationship with nature.

Latour’s critique of the conception of science is equally resonant with the flawed view of a ‘scientific priesthood’ we have already explored. Political action on scientific decisions is as paralysed by disagreement as it is by disengagement. Not every expert agrees that blood transfusion might transmit the AIDS virus – so we wait in inaction that condemns children to infection. There is no uniform view on the future trajectory of global warming and its connection with human release of carbon dioxide – so we meet and talk, but do not implement. This is the ‘kept in the dark’ narrative with a twist – the political and public community self-imposes ignorance by demanding that scientists behave as a conclave, reading the same script and praying the same prayers, until the white smoke of expert agreement is released. The political life-blood of a communally-possessed and confident debate, widely shared and energised, respecting where specialist knowledge lies but challenged within a participating lay public, is simply not yet flowing in our national and international veins.

At the close of his contribution to *Postenvironmentalism*, Latour makes an extraordinary move – one that meets our own journey head on. He calls for a re-examination of the connection between mastery, technology and *theology* as a route out of the environmental impasse. We have not yet remarked that the ancient narratives unearthed by the nanotechnology project, and reflected in Latour’s, are all implicitly or explicitly pagan, though we have seen how they might be met with, and transformed by, the more positive themes of a Judeo-Christian ‘ancient narrative’ of nature. So when he refers to the Christological theme of the creator who takes the responsibility to engage with even an errant creation to the point of crucifixion, the contrast with the disempowering and risk-averse narratives of ‘being careful what you wish for’, *Pandora*, sacred nature, and the rest - could not be starker.

The theological wisdom tradition we have been following, especially in the way that it entangles with the story of science itself, has brought us to the same point that Latour reaches from the perspective of political philosophy. One identifies the need, the other the motivation and resource, for a reengagement with the material world, and an acknowledgement that one unavoidable consequence of being human is that we have, in the terms of the Book of Job, a ‘covenant with the rocks’. This extraordinarily powerful collision of metaphors surely points to the balanced and responsible sense of ‘mastery’ that Latour urges that we differentiate from the overtones of exploitative dominance.

More is true – if we take one by one the strands of the ‘theology of science’ that we teased out of our Biblical nature trail, it begins to look as though they might be woven into the story, the missing narrative, that Latour wants to hear told.