**Article**

# A God of Evolution (?): The Case for Quantum Intelligent Design

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## Abstract

The quantum Platonic perspective, which supports the view that species are prefigured as quantum potentiality, is far more consistent with all current scientific evidence than the materialist Darwinian account, which is still the dominant scientific belief system. Quantum physics and the spectacular evidence of evolutionary developmental biology provides cogent support for *quantum* Darwinian evolution, although many evolutionary biologists are desperately trying to force the new Evo-Devo insights, which are contrary to the Darwinian worldview, into an awkward Darwinian demeanour. The materialist worldview, often alongside an atheistic agenda, is generally taken for granted, and therefore proponents of the materialist account of Darwinism assert that the materialist Darwinian account of evolution must be true. In this situation it is remarkable to find some academics asserting both theism and materialist Darwinism at the same time, claiming that these domains should be kept separate. By analyzing some of the arguments of theistic materialist Darwinists such as Robert Asher much can be learned about fundamental flaws in the materialist account of evolution. It does not take a great deal of contemplation to see that the various pieces of evidence which are claimed to be evidence for the materialist Darwinian account of evolution do not constitute a watertight and irrefutable case. It is, rather, the case that these various claimed evidences are fitted into a preconceived materialist Darwinian account of evolution. Furthermore it is easily demonstrated that the notion of an intelligent source of the process of reality is entirely inconsistent with materialist Darwinian notions of 'random mutation' and 'natural selection'. The Quantum Platonic perspective and quantum Darwinian evolution (QDEism) provides a 'middle ground' which undercuts the incoherencies in both atheistic materialist Darwinism and theistic materialist Darwinism.

**Keywords:** God, theism, materialism, Darwinian evolution, random mutation, natural selection intelligent design (ID), quantum intelligent design, quantum Platonic paradigm, quantum Darwinism, Evo-Devo, QDEism, belief, Robert Asher, Dawkins, Bohm, Mensky, Zurek.

In the margins of the intellectual "battle for hearts and minds", as Richard Dawkins describes the desperate slanging match between proponents of intelligence and meaning within the process of the universe, otherwise known as proponents of 'Intelligent Design' (ID), and those who have randomly evolved a vision of random meaninglessness, there is a strange intellectual mutation which one would surely have expected to have lost the race for survival. This is the notion that the materialist account of evolution as a matter of random mutation and environmental winnowing is entirely coherent and consistent with a faith in, or assertion of, a creator God of the Christian variety. This notion comes in various flavours, such as that presented in the works of

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Simon Conway Morris, but in this article I will chiefly investigate those advanced by Robert J. Asher in his book *Evolution and Belief: Confessions of a Religious Paleontologist*.

Incoherence and conceptual confusion begins at the outset of Asher's work. In the opening paragraphs of the prologue to his book he writes:

> I believe in God; therefore, I am religious … I'm also a paleontologist. That is, I'm an academic who studies evolutionary biology for a living … This profession has enabled me to observe firsthand just how right Charles Darwin was about how all mammals share a biological history amongst themselves and with other forms of life on this planet. At no point has this observation led me to a spiritual "crisis," or to the feeling that God and Darwin are somehow antagonistic.[1]

However, rather than indicating Asher's subtlety of understanding, his urbane breadth of 'accommodation', this admission indicates his incapacity for recognising contradictions and incoherencies, a failing which is continuously exhibited in his exposition.

Asher proclaims full allegiance to a naturalistic and materialistic account of the process of evolution, involving 'descent with modification':

> Attributes of plants and animals have the capacity to be inherited across generations, these attributes may change slightly from one generation to the next; more offspring are produced than can actually survive; some members of a generation may be particularly good at contributing their offspring to successive generations. Over the vastness of time, this process has yielded the biological diversity we see today.[2]

But Asher seems curiously unaware that the notion of an immaterial God creating a fully paid up material universe has serious scientific and philosophical problems. One of the major scientific problems being the fact that modern quantum theory indicates that the crude type of 'matter' envisaged by materialists "does not exist in nature", as quantum physicist Henry Stapp has pointed out.[3]

Although Asher believes in God, he claims to eschew Creationism. At many points he joins in the crude lambasting of the cruder forms of Creationist belief which is indulged in by his more hard-headed atheist cousins. Reading the weirdly convoluted and contorted 'language-games' employed by Asher, to try and upbraid what he considers to be the silly mistakes of creationists, all the while keeping his own incoherent version of a supposedly non-Creationist Christian 'God' in the wings, swings between the hilarious to the irritating. Asher seems to be unaware that his Christian type of God must have indulged in something akin to Creation in order to get His, Her or Its materially-mechanistic production under way.

Asher's type of God, which apparently does not 'create' the universe, is just one of the multitude of inconsistencies and obfuscations in Asher's exposition, and one can only wonder why he would want to concoct such a divinely incoherent monstrosity! He surely must have something at stake here. However according to Asher it is creationists who are guilty of personal investments:

> The creationist has something at stake, some worldview or allegiance, that makes a fair, honest view of the data behind Darwinian evolutionary biology impossible.[4]

But by his own admission it actually appears as if this observation is equally applicable to Asher, if not more so, as he tells us that his belief in a God is likely to be a result of his conditioning and has very little evidential backing:

> Probably from years of conditioning, and definitely from a personal "feeling" that is not defensible from material evidence, I admit that I want to believe in a Creator, and more specifically a Christian one.[5]

It seems that he has been brainwashed and, strangely, is quite happy to admit it!

According to Asher, many people are mistaken in their belief that Darwinism is at odds with a coherent spiritual worldview, and he upbraids hard-headed Darwinists such as Richard Dawkins and Jerry Coyne who also hold this view of incompatibility. He commends Coyne's exposition of evolutionary nonsense *Why Evolution is True* as being one of the "best all round discussions of the plurality of the evidence in favour of Darwinian natural selection" but rejects Coyne's assertion that:

> … one cannot be coherently religious and scientific at the same time. That alleged synthesis requires that with one part of your brain you accept only those things that are tested and supported by agreed-upon evidence, logic, and reason, while with the other part of your brain you accept things that are unsupportable or even falsified.[6]

Coyne also wrote in this article, which is entitled '*Seeing and believing: the never ending attempt to reconcile science and religion, and why it is doomed to fail*':

> The real question is whether there is a *philosophical* incompatibility between religion and science. Does the empirical nature of science contradict the revelatory nature of faith? Are the gaps between them so great that the two institutions must be considered essentially antagonistic? The incessant stream of books dealing with this question suggests that the answer is not straightforward.

Here we see one of the major problems which often undermines any possible resolution, the notion that religion is entirely a matter of the "revelatory nature of faith" whilst only science has any empirical dimension. It is by this enforced definition of religion as being only a matter of 'beliefs' founded upon unfounded 'revelation' that proponents of materialist evolutionary theory malign all versions of Intelligent Design (ID) proposals. It seems that the materialist ultra-Darwinian (MUD) camp seems unaware that it is possible to articulate a spiritual and an ID perspective without recourse to a God. However, Coyne is correct to indicate the importance of philosophical considerations, which also indicates the necessity for the employment of rationality and coherence.

Asher, however, is quite content to admit to a penchant for irrationality. In the Prologue to his book he proclaims the possibility of 'irrational truth' and identifies religion as such a species of 'truth'. At the outset then, Asher sets out to rescue his 'faith' by cheapening it, happily proclaiming its irrationality and thus vindicating Coyne's depiction of those who see science and religion as being compatible as being irrational. The degree to which Asher cheapens his faith is surprising, and, furthermore, he undertakes the cheapening whilst making a rather thin, nebulous and dubious comparison, comparing his 'faith' to his ardent support for an American ice hockey team:

> I have an affinity for my hometown ice hockey team, the Buffalo Sabres. As a metaphor for the point I'm trying to make, ice hockey is not much better than the caricature of superstition that makes up Coyne's view of religion. However, it does say something about 'truth' in what I hope is an accessible way.[7]

He then describes his deep and enthusiastic affection for the Buffalo Sabres as well as the TV and radio commentator Rick Jeanneret, also a fan of the team, at some length. He then indicates how irrational this enthusiasm is. For example, his air travel to see the team play undermines the environment:

> As a human, much of how I define myself, including tribal affinities toward sports teams, is not particularly rational by any empirical standard. Multiplied by 6.5 billion, this is a very bad thing for planet Earth, at least insofar as we expect this place to keep supporting our eclectic tastes. However, there is nothing illusory about human devotion to obscure pastimes, such as my attachment to the Sabres. I wouldn't rule out attempts to make ice hockey more environmentally friendly. However, if this is your "goal," you will not get anywhere by telling fans they're idiots for enjoying the sport, or by claiming that their emotional attachment to it is irrational and stupid. For better or worse, we've got the attachment, which is no less irrational than our taste for wings, bleu cheese, and canned beer. Consumed in excess they may be damaging, and you may prefer something else. However, we're talking about identity rather than some purely rational choice.[8]

He then proceeds to claim that Dawkins' view that it is immoral to make children adopt the religious identities of their parents is mistaken because religion is nothing other than cultural identity:

> …the majority of a given creed's adherents classify themselves as such for no other reason besides the cultural heritage into which their born. This fact is important to consider for those who claim that their particular religious worldview is the most "rational," but that is another issue.[9]

Here Asher is quite happy to accept the adoption of blind irrational adherence to a religion simply as a means to cultural identity. But nowhere in his prologue does he discuss religious ideas as having metaphysical weight, as describing a 'rational' truth about the metaphysical-ontological makeup of the process of reality. Religious ideas for Asher are nothing beyond supporting a kind of divine ice hockey team; which is an approach to religion that completely empties it of any metaphysical or spiritual depth or significance. As the reviewer Derek Turner points out:

> The problem here is that if the only form of religion that turns out to respect the boundary that accommodationists draw between religion and science is thin-theism-plus-cultural-affiliation, the religion we're left with seems diminished. To his great credit Asher recognizes this problem and faces it with admirable intellectual honesty. He just thinks that thin-theism-plus-cultural-affiliation is enough.[10]

Turner is here far too accommodating himself. Just how "intellectually honest" is it to claim a rapprochement between science and religion by emptying religion of any significant content and thus turning it into a parody of what *seriously* committed religious people claim about the metaphysical depth of the process of reality. How much credit should we give to someone who claims to rescue religion by turning it into irreligious superstition?

It seems as if Asher is almost going out of his way to undermine his own position by admitting to its frailty:

> Christianity is my faith. It is not an unshakable faith, nor do I believe literally in many parts of the Bible. Indeed, much of the text in this chapter disqualifies me as a theistic Christian by most evangelical standards. Nevertheless, Christianity seems to me a legitimate account of the agency behind life, and while the causes behind life's diversity are fascinating, they are not of immediate relevance to this faith.[11]

Here Asher indicates the philosophical distinction that he employs to justify his embracement of an "irrational truth" of the same sort as a supporter of an ice hockey team. Many people, he says, are unaware of the vital distinction between *agency* and *cause*. However, it should be noted here that the use of this claimed philosophical distinction, which we shall shortly find to be entirely spurious, is otiose from Asher's own point of view. If religion is, as Asher suggests, nothing other than a vague notion of commitments to divine hockey teams or cultural identities, why is there any necessity to draw philosophical distinctions to argue for a rigorous demonstration that religious notions actually have metaphysical depths? In the philosophical portions of Asher's book we are not, as Turner suggests, witnessing "intellectual honesty", we are, rather, in the midst of intellectual incoherence and confusion.

However, it is worth considering Asher's claims in order to unmask their confusion and mistakenness, and in so doing see how some metaphysically potent religious notions are consistent with modern science. In this context it is worth noting Henry Stapp's evaluation of quantum physics and the idea a creator God:

> This [quantum] situation is concordant with the idea of a powerful God that creates the universe and its laws to get things started, but then bequeaths part of this power to beings created in his own image, at least with regard to their power to make physically efficacious decisions on the basis of reasons and evaluations.[12]

We shall then investigate how materialist-evolutionary theory is entirely inconsistent with modern science and is in fact full of ridiculous nonsense that no sane and rational person should entertain as plausible, such as Asher's belief (an irrational belief common to all MUD believers) that a group of land animals took to the sea and then millimetre by material millimetre transformed by natural section into various kinds of whales:

> Of all the groups of tetrapod vertebrates, none has done better at recolonizing the sea than mammals. And among the many mammals that make a living in water, none has done better than cetaceans, or whales. In this group are fully aquatic forms such as dolphins, porpoises, orcas, sperm whales, minke whales, blue whales, and humpbacks. The nature of their transition from terrestrial, to semiaquatic, to fully marine animals is very well documented in the fossil record. In the following pages, I wish to add only slightly to previous accounts of their origins from terrestrial, even-toed ungulates (including such animals as camels, pigs, deer, and hippos) …[13]

Whilst on this subject of the sheer silliness of some of the assertions of the materialist vision of gradual evolution on a fully material level it should be pointed out that such is the cultural power and intellectual entrenchment of this absurd worldview that apparently sane and intelligent people utter dismal stupidities under its baleful influence. In a recent BBC programme devoted to

perpetrating the myth of materialist evolution, *First Life*, for example, David Attenborough told his audience that at a certain point in the mists of time the seas were teeming with life but there were absolutely no animals on land, where there was only rich vegetation. This situation, Attenborough said with a straight face, resulted in the sea animals being "tempted" out of the sea in order to avail themselves of all the tasty land vegetation. It did not occur to him to wonder how the teeming sea life had any idea of the existence of the land vegetation and how they could possibly have any idea that they could eat it. Such notions are clearly nonsense, and surely one might expect an intelligent child to see through them. The only way in which such notions, of sea animals being "tempted" to come on land, could make any sense is if the process of evolution had both purpose and some kind of 'look-ahead' mechanism.

Asher outlines his claimed 'philosophical' distinction between 'agency' and 'cause' using the example of the invention of the steam engine. With reference to Darwin's theory of the process of 'natural selection' he writes:

> Please note that this process explains how biological change occurs. It does so in the same way that you might explain how a steam engine works, or the process by which its action is caused: water heated to 100$^{o}$C boils into steam, which rises and powers the rotation of a turbine, which then generates electricity at the local power plant, and spins the wheels of your nineteenth-century train, Mississippi riverboat, etc. As an analogy this is a bit dated, but the point should be clear: both explanations are natural processes responsible for something we observe. It is equally valid to note that Thomas Savery designed the first steam engine, or that James Watt (among others) later improved it. However, the latter is an explanation of a different sort: it is one of agency, not cause. Riverboat passengers at some point may have expressed great admiration for Savery and Watt, the "creators" of their momentum. How does the engine work? Savery did it, helped by Watt. Such an interpretation is true in the sense that Savery and Watt deserve credit as the agency behind the steam engine. However, it says nothing about how the steam engine actually works. There is a materialist, or naturalistic, cause behind the function of their steam-propelled craft which is not changed by recognizing the agency of Savery and Watt in the development of its engine. This kind of natural causation is what I meant earlier when I referred to the "materialist orientation", of science.[14]

Asher is very dismissive of any 'creationist' notion, and yet he adopts, at least in this section of his exposition, a rigid division between an ultimate and presumably 'creative' 'agent', Who, or Which stands beyond the causal processes of the natural world and the details of causal processes of the natural world. Such a division clearly implies that the agent must be a 'supernatural' *Creator* of some kind. Given this obvious implication, Asher's attacks upon Creationists seem more than a little hypocritical.

How is Asher's view different from a 'creationist' account that also suggests a 'supernatural' agent behind the natural world? Well the first piece of obfuscation Asher indulges in is the notion that the nature of the agency is entirely irrelevant to the details of the Darwinian mechanism:

> Whether or not Darwin himself actually believed in supernatural agency is irrelevant to this point. Furthermore, it doesn't matter at all if you personally believe that there is a

> God-like agency behind biological diversity. The point is that Darwin's mechanism does not concern the subject of who did it, or why, and that Darwin recognized that his mechanism could not rule out a creator. Rather, however life may have first appeared, he outlined a mechanism that humans can observe and understand. Once started it allowed life to unfold into the diversity we see today. Whatever his personal beliefs may have been, based on his writings in the Origin, Darwin was a theistic evolutionist, i.e., one who permitted a divine agency behind the mechanism of biological evolution.[15]

Not everyone would agree with this evaluation of religious beliefs of Darwin of course, but, for our purposes, Darwin's views are irrelevant. However, the notion that a immaterial entity might cook up a fully material world, which in fact we now know does not exist as classical physics envisaged it, has a large degree of incoherent randomness going for it! The notion that an immaterial and spiritual entity could conjure up a *really* material world, rather than an immaterial appearance of such a world, and could produce a world made up of the hard-core real 'matter' worshiped by materialists, is simply metaphysically incoherent, involving an entity producing something which is in all respects antithetical to its own nature.

Asher clearly demarcates off his ultimate supernatural agency from the details of the natural processes that it supposedly gave rise to. For Asher this demarcation is rigid and inviolable, according to him the details of the natural world can have no implications for what kind of ultimate agent one might envisage. Asher's supernatural deity is well up to the task of designing His, Her or Its creation to make it look as if randomness has created the illusion of design. When Asher discusses Phillip Johnson's assertion that an active God and evolution are incompatible: "God as a remote first cause remains a possibility, but a God as an active creator is absolutely ruled out by the blind watchmaker thesis" he proclaims:

> But isn't this just a little bit presumptuous? Why can't the erosional happenstance that carved out the Grand Canyon be regarded as divine design? Couldn't the products of "design" result from an intelligence that is not quite like our own, to the point that the process behind them might seem 'random' to us? What Phillip Johnson actually means when he says that the god of a theistic biologist cannot be an "active creator" is that this deity cannot be human-like Deity in Her/His/Its activity. Forgive me if I'm a bit underwhelmed. [16]

In other words, in addition to having a penchant for irrational and superstitious faith, Asher is quite content with an irrational deity who designs things to make them appear random. However, a problem with this assertion is that for a great many people, sentient and intelligent life does not "seem random". In fact, entirely the opposite is the case. It is only for an entrenched academic enclave engaged in a desperate rear-guard action against the demise of crude materialism that the process of evolution appears to be random.

The main point to grasp is that, according to Asher, the details of the workings of the natural world have no implications for the nature of the ultimate source; or even whether there is an ultimate source. Agency is, according to him entirely divorced from causal mechanism of the natural world:

> …understanding the mechanics of biology does not concern the agency behind it, just as understanding the how a light bulb works does not concern the existence of Thomas Edison.[17]

Such a view, however, is clearly arbitrary, mistaken and absurd. In this example, wherein there are a multitude of possible makers, it may not be possible to know exactly who made the artefact, although in this case we do. However, understanding the purpose of the light bulb might give an indication of some aspects of the maker, i.e. the usefulness of light for their existence; and one could also deduce intelligence from the nature of the design!

Another facet of Asher's attempt to disconnect his deity from the details of the workings of the natural world is his assertion of the necessity of what the materialist-evolution lobby call 'methodological naturalism'. Here is Asher's definition:

> "Methodological naturalism" is the rule of science that says one should not use supernatural causation in the natural world. This is what I've outlined above: science is about the *how* behind nature not the *who* or *why*.[18]

The claim that 'methodological naturalism' is a "rule of science" is contentious and debatable. Such an assertion clearly depends upon what one places in the category of the 'supernatural'. Whilst materialists might claim that mind and consciousness are 'supernatural', there are now many quantum physicists who are increasingly questioning the ontological primacy of Cartesian 'matter' and view the quantum realm as having a mind-like aspect. From the materialist point of view such physicists have to considered as being outside the scientific fold. But this is clearly nonsense, quantum theory is the foundational science. And this is not the only problem for Asher's dogmatic assertion. The evolutionary biologist Sean B. Carroll disagrees with him:

> Is dark matter supernatural. No, it's not. Don't be alarmed: nobody is claiming that dark matter is supernatural. That's just the provocative title of a blog post by Chris Schoen, asking whether science can address "supernatural" phenomena. I think it can, all terms properly defined.[19]

But of course the issue of exactly what 'supernatural' amounts to, is a matter of contention, materialists generally use the term as a term of abuse. For most people an immaterial disembodied deity would surely be a supernatural agency. But what about immaterial quantum fields, which according to modern science, are the ultimate *immaterial* sources of the experiential, and *apparently* material world. Here is what physicist Lisa Randall, who is also a proponent of 'methodological naturalism', tells us about quantum fields:

> Quantum field theory, the tool with which we study particles, is based upon eternal, omnipresent objects that can create and destroy those particles. These objects are the "fields" of quantum field theory. … quantum fields are objects that permeate spacetime … they create or absorb elementary particles … particles can be produced or destroyed anywhere at any time.[20]

Quantum fields are "eternal" and immaterial infinite expanses of potentiality out of which apparently material 'particles' pop in and out of existence for fleetingly small moments of time. All phenomena, however apparently long lasting and apparently 'material', are comprised of these fleeting 'particles' which flit in and out of existence from the potentiality of quantum fields.

Are quantum fields supernatural? Presumably not, for they are the ultimate entities of physics, investigated with expensive technological wonders such as the Large Hadron Collider.

It also seems that the hardened materialist Jerry Coyne appears to agree with Carroll and even seems to go further (in the following quote the 'NCSE' is the United States National Council for Science Education):

> This is where I agree with Sean, the philosopher Maarten Boudry, and, I think, Brother Blackford, and where we part company from P.Z Myers, The Great Decider, Eugenie Scott and the NCSE – and nearly everyone else. At least I (and probably Sean) could envision theoretical cases where we'd see behavior as sporadic and lawless – and provisionally indicative of a god. Others would not.[21]

The 'methodological naturalism' position is closely related to what is called 'philosophical naturalism' and stern warnings are often issued not to conflate the two. The former is said to be the commitment to the practice of using a materialist-naturalistic paradigm in scientific research without necessarily making a commitment to full blown materialism, which is the metaphysical assertion that 'matter' is the ultimate 'stuff' of the process of reality. 'Philosophical naturalism' is the commitment to full blown materialism. In practice the two come down to the same thing, a viewpoint that is ultimately irrelevant because modern physics has shown that the crude 'matter' conceived of and dreamed of by proponents of modern materialist evolutionary theory (Neo-Darwinism) does not exist. As Jim Baggott points out in his book on the Higgs particle:

> It seems logical that there should be some ultimate constituents, some undeniable reality that underpins the world we see around us and which lends it form and shape. If matter is endlessly divisible, then we would reach a point where the constituents themselves become rather ephemeral - to the point of non-existence. Then there would be no building blocks, and all we would be left with are interactions between indefinable, insubstantial phantoms which give rise to the appearance of substance. Unpalatable it may be but, to a large extent, this is precisely what modern physics has shown to be true. Mass, we now believe, is not an inherent property or 'primary' quality of the ultimate building blocks of nature. In fact, there is no such thing as mass. Mass is constructed entirely from the energy of interactions involving naturally massless elementary particles. The physicists kept dividing, and in the end found nothing at all.[22]

In other words modern science has clearly shown that the 'matter' conceived of by the scientists of Darwin's day has been shown to be an illusion. This is why Stapp tells us that such 'matter' "does not exist in nature."

Evolutionary biologists such as Asher (and Coyne and Dawkins and Dennett and .. and…) , however, carry on as if such modern discoveries were irrelevant and still bandy about entirely irrelevant 'philosophical' distinctions such as that between 'methodological naturalism' and 'philosophical naturalism', 'agency' and 'cause' in order to erect spurious arguments in the face of scientific evidence. Asher asserts that 'methodological naturalism' is an absolute and ultimate rule of science; a view not shared by all of his compatriots, who are equally misguided for different reasons. In this context it is worth considering the words of the geneticist and outspoken evolutionist, Richard C. Lewontin from Harvard University, who asserts that:

> It is not that the methods and institutions of science somehow compel us accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our a priori adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated**.** Moreover, that materialism is absolute, so we cannot allow a Divine Foot in the door.[23]

Which would seem to suggest that Lewontin does not care if science has disproved the existence of 'matter', he is determined to mislead his students and the general public in order to keep divinity at bay; a viewpoint that is definitely not in Asher's camp!

For completeness we must mention Asher's appeal to another of his putative 'rules of science', 'Uniformitarianism'.[24] In defining this mouthful he also has a dig at non-Asherian 'Creationists':

> Uniformitarianism is a kind of naturalism … As understood today, it is not quite the same as the "laws" advanced by Lyell in the early nineteenth century, which included now-outdated ideas about an overly monotonous pace of geologic change. Nevertheless, the naturalistic essence of uniformitarianism, i.e., the notion that processes observable today are applicable to the past, represents the core of the scientific method. Creationists don't like it when science is bound by natural processes, because to them science so defined excludes at the outset their favoured "explanation" of a supernatural role in the origin of species…[25]

Uniformitarianism, then, means that we should be able to rely on the fact that there will not be an abrupt change in the 'laws' and processes of the natural world as we go back in time. The major problem with this claim on the part of Asher is that his uniformitarianism does not seem to go back uniformly in time as his uniformity stops abruptly, both at the origin of life and also the supposed creative act of the deity. Here is a relevant passage on this topic:

> …science generally (and evolution in particular) is about *how* and not *who* or *why.* Understanding the meaning behind the first "breath" of life is beyond the scope of evolutionary science, which simply does not concern supernatural agency or purpose. While scientists can and do ask about the conditions under which life began, even if this is no longer within the realm of evolutionary biology but more relevant to chemistry and cosmology, science remains decidedly silent in attributing meaning to life's origins, and does not take up the teleological slack if we are to abandon any given religion.[26]

Science may not be about *who*, but there is no reason that *why* might not be included in its remit, except that it is inconvenient for Asher's materialist evolutionary perspective. Furthermore, it is surely revealing that Asher leaves out the question of *WHAT*, which *can* be answered. The '*what*' located at the edge of time are the infinite quantum fields of potentiality, which, as we shall see, have a cognitive aspect. This is a '*what*' which is very inconvenient for Asher's viewpoint because it is a 'what' that has implications for our understanding of evolution, implications that undermine Asher's, and in fact *all*, materialist claims. It is also a '*what*' which is also truly uniformitarian in that it does not take a leap into the supernatural when confronted with accounting for the "first 'breath' of life". Asher, on the other hand, claims that uniformitarianism only applies *after* the claimed materialistic mechanisms of evolution become operative. How convenient for him!

It is surely ironic that Asher should attempt to conflate Creationism and ID and claim that *they* invoke the supernatural; for *he* actually suggests that an immaterial deity gives rise to a fully material world and mechanistic processes in an entirely unspecified way. If this is not a supernatural account nothing is. Asher finds 'Creationists' (or rather those who are not *his* kind of creationist) and IDists (although he does not see much of a distinction between these two) frustrating:

> The line between methodological and philosophical naturalism can be subtle and is frequently crossed, often by those who conflate agency and cause. This is one of the issues that makes the current debate on evolution versus religion so frustrating. Proponents of ID want to identify agency in biological diversity; evolutionary biologists want to identify the cause or mechanism by which diversity arose. Regardless of your opinion on the scientific status of the search for agency, it cannot replace or preclude the search for natural cause. Conversely, scientifically resolving the specifics of natural selection does not address the who or why behind the biological diversity on our planet.[27]

However, what really is frustrating is the irritation of being confronted with someone claiming to be a scientist who:

1) Ignores the latest findings of physics, which clearly indicate that crude materialism, or even methodological naturalism/materialism, has been shown to be false and is entirely vacuous.
2) Considers as a matter of personal decree that 'agency' and 'cause' must be absolutely separate and independent of each other. (Although in his concluding remarks he seems to note the invalidity of this ridiculous assertion and tries to rescue it by making it paradoxically self-contradictory – "agency and cause are independent and not mutually exclusive."[28]
3) Also asserts as a matter of personal decree that 'agency' cannot be 'natural' but must be 'supernatural' and then accuses ID of stupidity because of its supernaturalism.

In his section headed 'Uniformatarianism and Intelligent Design' Asher begins by making the appallingly misleading statement that:

> Intelligent Design (ID) advocate Stephen C. Meyer professes a low regard for naturalism, but a high regard for uniformatarianism.[29]

Here is one of Meyer's assertions on this issue:

> Of course, many simply refuse to consider the design hypothesis on grounds that it does not qualify as "scientific." Such critics … affirm the extra-evidential principle … known as methodological naturalism or methodological materialism. Methodological naturalism asserts that, as a matter of definition, for a hypothesis, theory or explanation to qualify as "scientific," it must invoke only materialistic entities. Thus, critics say, the theory of intelligent design does not qualify.[30]

Here it is clear that it is not 'naturalism' that Meyer holds in 'low esteem', it is a discredited materialist ideology he takes to task. According to the ID perspective, 'intelligence' *is natural to*, and innate within, the process of reality, it is the mistaken identification of 'naturalism' with 'materialism', an invalid identification dogmatically asserted by materialists, that Meyer rejects.

Asher, however, is entirely disinterested in precision, clarity, or veracity, preferring instead to indulge himself in incoherent critiques of a misrepresentation of the ID perspective that verge on the laughable. The first of these is that the ID view presented by Meyer amounts to the much cruder view presented in the nineteenth century by the English Christian apologist William Paley, who suggested that just as a watch must have watchmaker the design of the universe must have a designer. Paley's argument is actually for a supernatural Creator and so is a species of Creationism:

> . . . when we come to inspect the watch, we perceive. . . that its several parts are framed and put together for a purpose, e.g. that they are so formed and adjusted as to produce motion, and that motion so regulated as to point out the hour of the day; that if the different parts had been differently shaped from what they are, or placed after any other manner or in any other order than that in which they are placed, either no motion at all would have been carried on in the machine, or none which would have answered the use that is now served by it. . . . the inference we think is inevitable, that the watch must have had a maker -- that there must have existed, at some time and at some place or other, an artificer or artificers who formed it for the purpose which we find it actually to answer, who comprehended its construction and designed its use.[31]

Meyer's position, however, is that the extraordinary complexity and interdependences of biological organisms require an 'intelligence' which is innate and internal to those processes, not an *external* 'designer':

> The propositional content of the theory of intelligent design … differs from that of creationism. Creationism or Creation Science, as defined by the U.S. Supreme Court, defends a particular reading of the book of Genesis in the Bible, typically one that asserts that the God of the Bible created the earth in six literal twenty-four hour periods a few thousand years ago. … Intelligent design is an evidence-based scientific theory about life's origins that challenges strictly materialistic views of evolution. … the theory of intelligent design holds that there are tell-tale features of living systems and the universe - for example, the information-bearing properties of DNA, the miniature circuits and machines in cells and the fine tuning of the laws and constants of physics - that are best explained by an intelligent cause rather than an undirected material process.[32]

The "tell-tale features of living systems and the universe" referred to by Myers are multiple, complex, and embrace several areas of science: biology, quantum physics and cosmology. On the basis of these, a very significant case can now be made for an innate intelligence in the process of reality, including evolution, which is why many physicists, biologists and philosophers are moving towards embracing an ID perspective. A famous example of a philosopher abandoning atheism and embracing ID is Anthony Flew who in late 2006, joined 11 other academics in urging the British government to teach ID the state schools. In an interview with Benjamin Wiker in 2007, Flew said:

> There were two factors in particular that were decisive. One was my growing empathy with the insight of Einstein and other noted scientists that there had to be an Intelligence behind the integrated complexity of the physical Universe. The second was my own insight that the integrated complexity of life itself – which is far more complex than the physical Universe – can only be explained in terms of an Intelligent Source. I believe

> that the origin of life and reproduction simply cannot be explained from a biological standpoint despite numerous efforts to do so. With every passing year, the more that was discovered about the richness and inherent intelligence of life, the less it seemed likely that a chemical soup could magically generate the genetic code.[33]

Note that he says that "with every passing year" the evidence for innate intelligence mounts. Flew is a respected philosopher who would have known about Paley's arguments at an early stage in his career, they clearly did not impress him which is why for most of his life he was an atheist. It was the insights of Einstein and other modern scientists that began to impress him. Flew wrote concerning Dawkins' treatment of Einstein views in his book The God Delusion:

> The fault of Dawkins as an academic (which he still was during the period in which he composed this book although he has since announced his intention to retire) was his scandalous and apparently deliberate refusal to present the doctrine which he appears to think he has refuted in its strongest form. Thus we find in his index five references to Einstein. They are to the mask of Einstein and Einstein on morality; on a personal God; on the purpose of life (the human situation and on how man is here for the sake of other men and above all for those on whose well-being our own happiness depends); and finally on Einstein's religious views. But (I find it hard to write with restraint about this obscurantist refusal on the part of Dawkins) he makes no mention of Einstein's most relevant report: namely, that the integrated complexity of the world of physics has led him to believe that there must be a Divine Intelligence behind it.[34]

Since Einstein's day there have been extraordinary new developments such as Epigenetics and Evolutionary Developmental Biology which further indicate the utter bankruptcy of crude materialistic evolution theory. Asher, however, attempts to be scornful of, and thereby cheapen the new evidence by suggesting that Meyer's arguments are childish and that they are nothing much different from Paley's nineteenth century arguments:

> Biology is particularly complicated, ergo, "intelligent design." Meyer repeats an argument articulated long ago by scholars like William Paley, but applies to areas about which Paley knew nothing, such as cellular microbiology and DNA.[35]

It is worth noting that the fact that Paley knew nothing about cellular microbiology and DNA does not imply that his arguments do not apply, this is faulty logic (again!); they may or may not, it depends on the arguments. Some of Meyer's arguments have a 'family resemblance' to those of Paley's, but they are used in a different context, the context of DNA, and they do apply.

Asher makes the confident assertion that: "There are three broad (and overlapping) categories in which portrayals of intelligent design as a mechanism behind biodiversity are wrong: philosophical, theological and biological."[36] The philosophical category concerns Asher's philosophical gibberish about the separation of 'agency' and 'cause' and the other incoherent bits and pieces covered above. No philosophical content we need to be philosophical about then.

The notion that someone who thinks that asserting the existence of a deity is analogous to supporting an ice hockey team, would have something of merit to say about theological matters should surely fill an intelligent and reflective person with foreboding, and one would be right in this trepidation. Here is what Asher's thinks is his 'theological' quibble with ID:

> Theologically, ID advocates constantly invoke words like "undirected" or "random" when they refer to Darwinian evolutionary processes, perpetrating not only the myth that natural selection is random (it isn't), but also the vain supposition that what they deem to be "undirected" cannot be the result of an agency. Conversely, they define "directed" or "non-random" relative to human intelligence. Theologically speaking, it would be an impoverished Creator indeed who suffered from our human limitations concerning perception and time, and could only create like we do. This is the other edge of the theological sword that Meyer has made for himself. If you agree with Meyer that supernatural intelligence equates with what humans perceive as non-random, it follows that what is random (by human standards) is not within the creative capacity of that intelligence. Some deity![37]

This is not only confused and incoherent; it is also a blatant misrepresentation of the views of Meyer and ID in general. To begin with, why Asher thinks that "the fact that ID advocates constantly invoke words like 'undirected' or 'random' when they refer to Darwinian evolutionary processes" is a "theological" issue is a divine mystery itself. There seems to be no rational reason why this should be considered a "theological" matter. If one looks at a definition of "natural selection", the theological heart of the materialist theory of evolution so to speak, there certainly seems to be randomness involved. However, MUDs claim that the overall process is non-random. According to one website devoted to explaining evolution:

> …natural selection is sometimes interpreted as a random process. This is also a misconception. The genetic variation that occurs in a population because of mutation is random - but selection acts on that variation in a very non-random way: genetic variants that aid survival and reproduction are much more likely to become common than variants that don't. Natural selection is NOT random!

The following formula is given:

$$\text{variation} + \frac{\text{differential}}{\text{reproduction}} + \text{heredity} = \text{natural selection}$$

In their book W*hat Darwin Got Wrong* Jerry Fodor and Massimo Piattelli-Palmarini give the picture shown in figure 1 and write that the picture is:

> A schematic representation of the standard neo-Darwinian model of evolution by natural selection. The square on the left represents random genetic mutations, the arrow the expression of those mutations as manifest traits (phenotypes), and the filters the action of natural selection.[38]

Dawkins also thinks of 'natural selection' as a kind of sieve through which the single step chance events of random mutation are sequentially fed through:

> … the result of one sieving process are fed into a subsequent sieving, which is fed into …, and so on.[39]

Dawkins also goes to great pains to emphasize non-randomness, despite the fact that the actual mutation side of the process *is* said to be random:

> The great majority of people that attack Darwinism leap with almost unseemly eagerness to the mistaken idea that there is nothing other than random chance in it[40]

And:

> …people, …. often expert in their own field … seem sincerely to believe that Darwinism explains living organisation in terms of chance – 'single step selection' – alone. This belief, that Darwinian evolution is 'random', is not merely false. It is the exact opposite of the truth. Chance is a minor ingredient in the Darwinian recipe, but the most important ingredient is cumulative selection which is quintessentially *non-random.*[41]

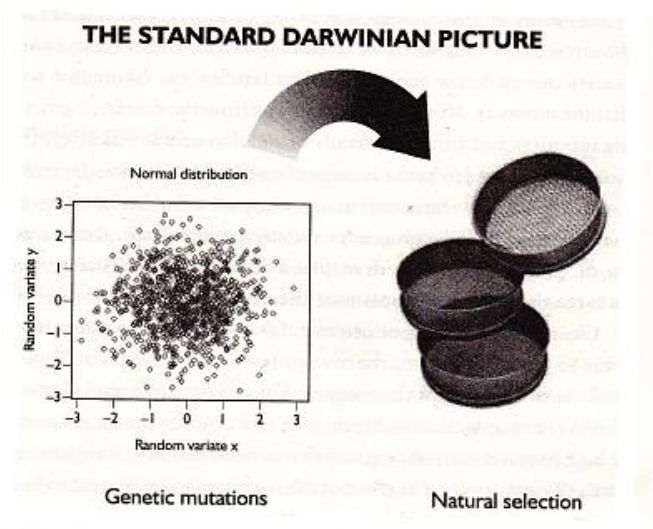


Figure 1[(42)]

The evolutionary sieve is said to be provided by the environmental conditions that phenotypes are 'expressed' into and within which they try to survive; those that are better suited, due to random mutations, are more likely to survive. So another way of representing the picture presented by the materialist Darwinian evolution picture is:

**random variation + non-random environment + heredity = natural selection**

Figure 2

The much, and over, admired twentieth century philosopher Ludwig Wittgenstein refuted his initial 'picture-theory' of language by saying that "a picture held us captive" and that he needed a

way of showing "the fly the way out of the fly bottle". The power to 'hold captive' that the materialist Darwinian picture of the process of reality seems to hold over many minds, despite the huge scientific and philosophical flaws, is awe-inspiring. A central idea in this picture is that the overwhelmingly non-random nature of the environment within which creatures 'fight' for survival is not random. As Dawkins says the environment conditions is like a 'sieve'. This process is one wherein:

> …gradual step by step transformations from simple beginnings, from primordial entities sufficiently simple to have come into existence by chance. Each successive change in the gradual evolutionary process was simple enough, *relative to its predecessor*, to have arisen by chance. But the whole sequence of cumulative steps constitutes anything but a chance process when you consider the complexity of the final end product relative to its starting point.[43]

According to Dawkins, each little step of the process, including the original spark of life out of complete random lifelessness, is a chance event. However, because the end result is a complex organisation, which has been directed by 'non-random survival', which is the effect of the environmental 'sieve', 'cumulative selection' is 'a fundamentally non-random process' Dawkins offers a few examples to try and get us into his mode of thinking. The simplest example is that of a hole which is able to sort balls into those bigger than it and those smaller (figure 3). The hole here represents the non-random environment.

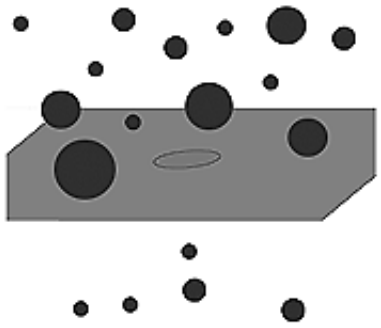

Fig 3 - Dawkins' Balls

However, there is an important question, a question not addressed by Dawkins and others of his persuasion. This question is: 'where does this claimed non-random sieve/hole of the environment come from and what validates the assertion that it is non-random. The materialist-evolutionary worldview relies on the fact that we can all see in our everyday lives that there is a large degree of coherency and non-randomness in our environment. Although there is a great deal of randomness, the overall operation of the environment of the natural world appears essentially non-random, rice seeds grow into rice plants not barley plants and so on. So it is easy to accept the picture of a non-random environment in an everyday sense because it pretty much conforms to our experience. However, this notion that the environment is non-random is not consistent with

the overall picture presented by materialist evolutionary RM+NS (random mutation + natural selection).

In order to appreciate the truth of this we can begin by considering an argument that Asher tries to employ against Paley's watchmaker analogy. In Paley's 1802 book *Natural Theology* he argues that someone who found a watch lying on the ground, even if they were not familiar with the use of the watch, could upon examination deduce a designer:

> The watch was clearly the product of an intelligence, said Paley, unlike the stone lying nearby. Paley claimed that biological complexity such as that present in an eye is no less deserving than the watch of the design inference. In a very insightful critique of Paley's argument, the philosopher Elliot Sober points out that Paley's inference of a designer: for the eye, and rejection of one for the stone, are inconsistent.[44]

And Asher quotes Sober:

> If Paley gets to help himself to assumptions about the goals and abilities of the putative designer that are favourable to the design hypothesis in the case of the eye, why should he abstain from doing so in the case of the stone? ... The design argument has no more basis for claiming that design is the better supported hypothesis in the case of the eye than it has for saying that chance is the better supported hypothesis in the case of the stone.[45]

Asher say concerning this:

> In other words, terms as "designed" and "random" are dependent upon our peculiar, human understanding of creative expression.[46]

Now, whilst there is an element of truth in this, it misses the essential point. Asher is actually alluding to his notion that a divine 'Creator' might easily 'design' some things to look 'designed' from the human point of view and 'design' other things to look 'random' from a human point of view. This is why he says: "theologically speaking, it would be an impoverished Creator indeed who suffered from our human limitations concerning perception and time, and could only create like we do" (and this is why he erroneously thinks he is dealing with a 'theological' issue). For Asher the human mind has no hope in comprehending the purposes of his divinity, we just have to be fans as we might for an ice hockey team!

The really significant issue in Sober's observation is that if ID claims that organic life is designed, then to be consistent it must also assert that random looking 'stones' are also 'designed'. Once someone deduces a divine designer for the eye, it then follows that, according to Sober, although the stone may look to be randomly shaped and lying about on the ground in a random fashion, it is inconsistent to assert that it is in actuality a 'random' product. If the eye is designed by an all-encompassing designer, then the stone must, *ultimately*, also be a product of that same designer. In ID terms, which need not have any truck with disembodied designers, we can say that if the eye is a product of an innate intelligence within the process of reality then the stone must also be a product of the same innate intelligence. In other words any ID account must account for aspects of the process of reality that appear to be designed as well as those which do not. But this is no problem, in fact Sober's point is easy to rebut. It is quite clear that the designed aspects inhere mostly in organisms performing complex processes such as surviving. Stones are

not part of the evolutionary survival race, they therefore require a very rudimentary level of design. They are simply a part of the overall design of the environment within which organisms vie to survive, a large measure of design is not required for their function.

Asher, however, seems entirely oblivious to the fact that, by symmetry, the same argument can be advanced against the materialist evolutionary perspective. Sobel's insight can be inverted:

> If proponents of NS (Natural Selection) can help themselves to assumptions about the lack of goals and the abilities of random NS that are favourable to their hypothesis in the case of the eye, why should they abstain from doing so in the case of the environment? ... The NS argument has no more basis for claiming that randomness is the better supported hypothesis in the case of the eye than it has for saying that non-randomness is the better supported hypothesis in the case of the environment.[47]

In other words, on the basis of the materialist's own worldview the assertion of a non-random environment is invalid.

To see this we must investigate the question as to what exactly the survival environment in the MAterialist account of Darwinism (MAD) consists of. Well, what does the survival environment of any species consist of? The first component is the non-vegetative, non-animate environment, the land, seas, mountains, sky, volcanoes and so on. We can assume this is, in its details and according to the MAD perspective, random. Secondly, there is the plant kingdom, all of which, according to MAD perspective, subject to random mutations; and, finally, there are all the other animal species, all of which are, according to the MAD perspective, continuously randomly mutating. This means that all three components of the survival environment are subject to randomness! This situation is represented in figure 4. From the point of view of Asher's own utilisation of Sober's philosophical insight and also from a logical analysis of the details of the MAD NS perspective, MAD NS looks as if it is riddled with randomness. It is only by cloaking the details with a convenient and yet, *from its own perspective*, invalid picture of environmental non-randomness, that the spurious case for non-random MAD NS can be, invalidly, asserted.

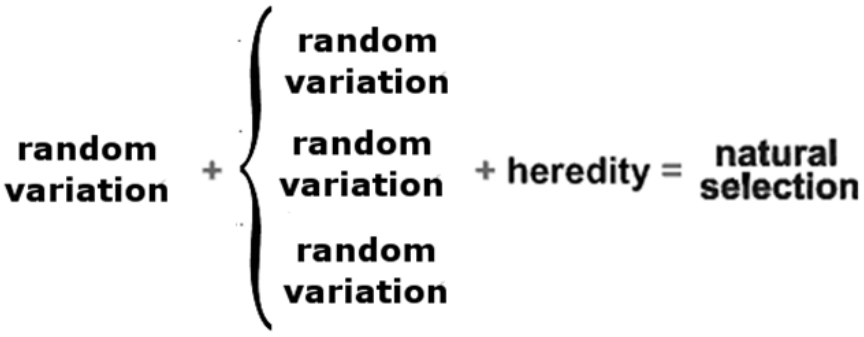


Figure 4

You need to think about this very hard because we all know that the environment is not irredeemably random, although there is many apparently random aspects. The MAD case relies on people not submitting it to rigorous analysis. The point is that if the essential mutational

development of all organisms is claimed to be random, then the mutational and non-mutational (stones etc.) development of everything making up the environment, certainly stones and other non-organic features, will also be random. On the basis of the MAD worldview there is no way a non-random environment could arise.

The next piece of strange nonsense Asher indulges in is the assertion that the ID argument appeals to what it claims is the 'undirected' nature of the MAD worldview in "the vain supposition that what they deem to be "undirected" cannot be the result of an agency." The ID argument is, however, not targeted at convoluted and incoherent notions of divine agencies that manage to design and direct a universe by making it function so that it appears random to human intelligence. The ID perspective is targeted precisely at materialist perspectives that assert that there is no internal intelligence within the process of evolution.

The rest of Asher's 'theological' issue with the ID perspective seem to involve the limited nature of what Asher calls the 'ID "god"', "some deity!" he proclaims, in that it cannot do its designing randomly! All this is irrelevant gibberish, fantasies of a mind designed by an ice hockey playing deity taking time out to do some non-random designing to give the appearance of randomness. The ID perspective does not posit a 'god' of any kind, be it a designer of randomness to look like design or designer of design to look like randomness, or a designer of design that looks like design. The ID perspective asserts a natural process that is innately intelligent and therefore looks like intelligent design in aspects of the process that require complexity. ID is thoroughly uniformitarian, all the way down to the intelligent, or at least proto-intelligent, quantum energy field of the ground of the process of reality.

Asher, despite his claim to be a proponent of uniformitarianism, which is the doctrine that the nature of natural processes and laws do not alter catastrophically at one moment in time, embraces uniformitarianism only back to a point, the point of the origin of life. In the concluding chapter of his book he quotes a blurb from the back cover of Stephen Meyer's book *Signature in the Cell* which tells us that "Meyer develops the case for [intelligent design] using the same scientific method that Darwin himself pioneered."[48] He then proceeds to claim this is an "odd focus" because Darwin did not claim to have solved or even seriously addressed the issue of abiogenesis, the ultimate origin of life. In fact, Darwin observed, in a letter to Joseph Hooker, that "It is mere rubbish thinking, at present, of origin of life; one might as well think of origin of matter."[49] In this context Asher asks:

> Should Darwin be cast as a failure for his lack of detail on life's origins? Of course not. Evolution by natural selection is not about the origin of life, but what happened after it first appeared. …. recognizing that the scope of evolutionary biology does not include the study of life's origins is not a concession that the latter is impervious to a natural, causal explanation. I have little doubt that further progress will be made toward scientific theories of abiogenesis during the coming years. But if you want to bemoan the current uncertainty about how life began, you should criticize someone else besides Charles Darwin. He did not discuss black holes or atmospheric carbon in his writings, either. Yet no sensible person should view a theory of biological evolution for the worse because its author does not simultaneously come up with a theory for stellar origins or global warming. Darwin regarded life's origins as important and interesting as any

> intellectual would both then and now but this issue was independent of his main interest - explaining how life attained its current diversity after it began.[50]

But in his book Meyer does not suggest that Darwin was a failure in his own time. Darwin lived at a time when materialism was gaining great influence. The notion of the possibility of a background of immaterial quantum 'dream-stuff', which is how quantum physicist and originator of the 'quantum Darwinism' perspective Wojciech Zurek describes the quantum realm, was just under a hundred years in the future.

There were some at the time who were prescient, the philosopher and psychologist F. W. H. Myers for instance suggested that: "The impenetrability of matter, which seems to be our ultimate sensory fact, may be as relative and contingent a property as colour itself."[51] However, the discovery of the phenomena of quantum immateriality caused incredulity and consternation amongst some early quantum physicists, so one can hardly castigate Darwin for not knowing about this possibility, Darwin was a materialist. Within the context of his time, the materialist-mechanistic image of evolution presented by Darwin made a great deal of sense to many. However, in the context of today's science the crude materialism of Darwin's vision, which has carried over into Neo-Darwinism, or Ultra-Darwinism, is entirely inappropriate. If we embrace a true uniformitarianism then we would expect that the mechanisms of evolution to be consistent and coherent, or uniform, with the mechanism of the origin of life, and these are likely to be immaterial and quantum in nature, involving an innate cognitive dimension of universal intelligence.

Asher, like most biologists, is determined to isolate himself from any of the important insights of other fields of science such as fundamental physics, which is essentially quantum theory and quantum field theory. In the final paragraph of his chapter entitled 'Science and Religion' he asserts a mistaken view which is tailor made to avoid confronting important and significant indications and implications which have come to light in the quantum age:

> In The Beginning, long before the origin of life on Earth, there was no understanding, no rationality, no evidence; there was nothing, or at least nothing that is relevant to science. Such a cosmic "Beginning" is far away from anything touching upon evolutionary biology on Earth, which is what this book is really about. Despite the fact that many debates between creationists and evolutionists eventually degrade to arguing about the origin of life, this is completely irrelevant. Evolutionary biology is not about The Beginning. It is about the process that has been going on ever since, one which joins together all of the living, biological points we happen to observe in our present slice of time.

In the light of the recent developments in quantum theory and quantum field theory, however, such a claim that materialist ultra-Darwinism can be divided off from other departments of science, and that it also stands independent of the details of 'the Beginning' are both unsupported, non-uniformitarian, and unacceptable. We now know what stands at 'the Beginning', the eternal quantum fields of potentiality, and this clearly has implications for our understanding of the process of the origin of life and the subsequent evolution of sentient organisms.

In the following important passage, Asher correctly argues for a naturalistic intelligence within the process of reality. However he incorrectly thinks that such a *natural* innate intelligence supports his predilection for his irrational supernatural type of Christian God, which at the outset of his exposition stood entirely absent from the causal process of reality as 'agent' but now somehow paradoxically gets involved with the details:

> Do I believe in miracles? If by "miracle" you mean the spontaneous failure of a natural law due to the contrary influence of some supernatural agency, then no. I don't believe that such things happen - not now, not 2000 years ago. However, this is not at all the same thing as denying the power or existence of divinity, including the Christian sort. For example, God most definitely can turn water into wine: a minute fraction of the rains in southern France end up in vineyards, and some small proportion of that water ends up in grapes, some of which ultimately winds its way into bottles, fermented. There's your miracle (and the process works even without the bottles). Remember the quote from Joseph Butler, given by Darwin on the title page of the second through sixth editions of the Origin …? "What is natural as much requires and presupposes an intelligent agent to render it so, i.e. to effect it continually or at stated times, as what is supernatural or miraculous does to effect it for once." The "do you believe in miracles?" question assumes an opposition between "nature" and "god" that is wholly our own fabrication, as if the two compete with one another for our attention. This question presumes a philosophy that the two things are independent, even antagonistic - but I don't think they are. Rather, one is an expression of the other. God cannot "intrude" into the normal operation of nature because, the way I see it, nature is a part of God; it presents God's thought, or laws, in action. He cannot intrude upon Himself.[52]

Once again, Asher demonstrates an almost supernatural ability for confusion and incoherence. The assertion "This question presumes a philosophy that the two things are independent, even antagonistic" beggars belief because it is Asher who is, or should we say *was*, suggesting a separation of agency and cause! He seems to have taken on a different tack now! We must ask here, if nature is "part of God" how can it also be completely and drastically discontinuous with God's nature? If Asher really wants to maintain such an immanentist vision of God and nature, "God's thought" being the driving force within the processes of reality, then Asher's rigid division between 'agency' and 'cause' is entirely spurious.

It seems that at this point in his exposition he realizes that he went too far in the early chapters, so far in fact as to leave no room for him to get God involved in the natural world. So he now seeks to modify his early notions, now claiming that "agency and cause are independent and not mutually exclusive"[53] However, he does not seem to appreciate that this new formulation undermines what he calls the 'philosophical' analysis of what he thinks are the deficiencies of ID. If agency and cause are not 'mutually exclusive' then his earlier rigid separation is invalid and he should have modified the earlier parts of his argument to make an effort in the direction of consistency and coherence.

It is extraordinary that Asher does not notice that this new turn in his thinking, wherein he sees nature as "a part of God; it presents God's thought, or laws, in action", corresponds far more closely with the ideas of Darwin's intellectual adversary Louis Agassiz than Darwin's:

> Agassiz saw the divine plan of God omnipresent in nature, and could not accept a theory that denied the intelligent design he saw everywhere in the natural world. Agassiz even once defined a species as "a thought of God." As Agassiz wrote in his *Essay on Classification*, his lifelong study of the natural world eloquently documented the "premeditation, power, wisdom, greatness, prescience, omniscience, providence" of God. He declared that "all these facts in their natural connection proclaim aloud the One God, whom man may know, adore, and love; and Natural History must in good time become the analysis of the thoughts of the Creator of the Universe."[54]

Asher thinks that "nature is a part of God; it presents God's thought, or laws, in action" and Darwin's opponent, Agassiz, asserted in Darwin's time that "Natural History must in good time become the analysis of the thoughts of the Creator of the Universe". This is an extraordinary agreement given that at the same time Asher, inconsistently and incoherently, sides with Darwin's mistaken materialism.

If, instead of giving in to the currently academically required obeisance to a clearly discredited materialist view of evolution, we accept the evidence of the most spectacularly successful field of investigation of the nature of reality, quantum theory and quantum field theory, then we must come to a clear conclusion in support of an Intelligent Design version of Agassiz's perspective, a Quantum Platonic view. To do this need identify the notion of 'God' with the infinite immaterial quantum potentiality fields of the process of reality. We may as well consider these as being a single field with multiple aspects, including an internal cognitive function or field of ground level consciousness-awareness, which operates in order to manifest as embodied in sentient forms.

More appropriately we can just drop the notion of 'God' as being too redolent of fundamentalist Creationism and instead simply assert that at the point of the Big Bang, prior to manifestation there must have been an infinitely potent field of vast potentiality, a potentiality that contained within it all possible future forms of manifestation as potentialities. Furthermore, this primordial 'sea' of potentiality, according to the details of quantum theory will have within it an internal cognitive aspect, perhaps even a vast unified incomprehensibly potent field of energy-consciousness, capable of unfolding, in a coordinated and interconnected manner, a vast subset of the potentialities it contains. In this Intelligent Design hypothesis, which I have called Quantum Darwinist Intelligent Evolution (or Quantum Darwinist Evolution with Intelligence – QDEIsm) the 'Thoughts of God' can be metaphorically identified with the potentialities which must be dormant within the eternal quantum fields, and these potentialities are activated when the universal internal cognitive intelligence stirs into movement. In this version of ID both the potentialities for manifestation and the energy-intelligence that unfolds potentialities into manifestation are inherent and innate within the fundamental quantum fields which underlie the process of reality.

This perspective is completely consistent with recent developments in quantum theory and quantum field theory. As we have seen physicist Lisa Randall characterizes quantum fields as follows:

> Quantum field theory, the tool with which we study particles, is based on eternal, omnipresent objects that can create and destroy those particles. These objects are the "fields" of quantum field theory.[55]

Randall also describes quantum fields as "eternal, omnipresent objects that … permeate spacetime … they create or absorb elementary particles … particles can be produced or destroyed anywhere at any time."[56] The 'particles' that flicker out of the potentialities of the fields are fleeting flashes of semi-existence with all together produce the extraordinary appearance of what sentient beings take to be the vast material universe that contains the multitude of organisms each of which carries a infinitesimal portion of the universal field of consciousness.

In this context it is worth briefly examining a controversy which was prompted by the claim by Lawrence Krauss, a theoretical physicist and Director of the Origins Institute at Arizona State University, in his book *A Universe From Nothing: Why There Is Something Rather Than Nothing*, that the entire universe could have emerged from 'nothing.' By 'nothing' what Krauss is referring to is quantum field theory. The physicist and philosopher of science David Albert rightly took Krauss to task for claiming that quantum fields are 'nothing'. Albert wrote in a New York Times Review of the book:

> The particular, eternally persisting, elementary physical stuff of the world, according to the standard presentations of relativistic quantum field theories, consists (unsurprisingly) of relativistic quantum fields. And the fundamental laws of this theory take the form of rules concerning which arrangements of those fields are physically possible and which aren't, and rules connecting the arrangements of those fields at later times to their arrangements at earlier times, and so on — and they have nothing whatsoever to say on the subject of where those fields came from, or of why the world should have consisted of the particular kinds of fields it does, or of why it should have consisted of fields at all, or of why there should have been a world in the first place. Period. Case closed. End of story. … Relativistic-quantum-field-theoretical vacuum states — no less than giraffes or refrigerators or solar systems — are particular arrangements of *elementary physical stuff*. The true relativistic-quantum-field-theoretical equivalent to there not being any physical stuff at all isn't this or that particular arrangement of the fields — what it is (obviously, and ineluctably, and on the contrary) is the simple *absence* of the fields! [57]

The assertion that "giraffes … are particular arrangements of elementary physical stuff" obviously indicates that in fact all the organisms generated through the process of evolution are particular arrangements of quantum fields. Evolution, then, is essentially a process through which eternal quantum fields organize themselves to produce a world teeming with life forms.

Albert points out that Krauss:

> …complains that "some philosophers and many theologians define and redefine 'nothing' as not being any of the versions of nothing that scientists currently describe," and that "now, I am told by religious critics that I cannot refer to empty space as 'nothing,' but rather as a 'quantum vacuum,' to distinguish it from the philosopher's or theologian's idealized 'nothing,' " and he does a good deal of railing about "the intellectual bankruptcy of much of theology and some of modern philosophy." But all there is to say about this, as far as I can see, is that Krauss is dead wrong and his religious and philosophical critics are absolutely right.[58]

'Eternal' quantum fields are quite clearly not 'nothings' but are fields of potentiality for universes containing sentient beings to come into 'existence'. Physicist Sean Carroll tells us that:

> The world is made of *fields* – substances spread out through all of space that we notice through their vibrations, which appear to us as particles.[59]

But not only this, Carroll also points out that:

> We are part of the universe which has developed a remarkable ability: we can hold an image of the world in our minds. We are matter contemplating itself.[60]

Here Carroll, like many physicists, betrays a materialist leaning in his mistaken notion that it is "matter contemplating itself". If the "world is made of *fields*", as he himself says, then ultimately it is the immaterial quantum fields which organize themselves into the appearance of 'matter' in order to manifest and contemplate their own internal qualities, and they clearly can only do this by organising themselves into a multitude of sentient organisms. This suggests that quantum fields have a fundamental cognitive aspect, an internal cognitive pressure. This quantum cognitive pressure is responsible for the process of evolution. It is this innate and naturally intelligent cognitive pressure that drives what Zurek has called 'quantum Darwinism', which itself is the process which underlies the process of Darwinian evolution, although the materialist version of natural selection has little to do with it. For as Zurek points out: "the ultimate evidence for the choice of one alternative resides in our illusive "consciousness"[61]

As shown in other articles, this quantum metaphysical view, that required the primary role of consciousness, is required by recent significant formulations of quantum theory such as Stephen Hawking and Leonard Mlodinow's *The Grand Design: New Answers to the Ultimate Questions of Life*, which tells us that it is the operation of the observations performed by the consciousnesses of sentient beings that unfolds quantum potentialities, even backwards in time. John Wheeler also suggested a version of this quantum metaphysics:

> Directly opposite to the concept of universe as machine built on law is the vision of *a world self-synthesized.* On this view, the notes struck out on a piano by the observer participants of all times and all places, bits though they are in and by themselves, constitute the great wide world of space and time and things.[62]

This new quantum perspective, which supports the general view of Darwin's intellectual adversary Louis Agassiz that species are prefigured as potentiality, is in fact far more consistent with the evidence. The spectacular evidence of evolutionary development biology, the Evo-Devo perspective, in particular provides cogent support for QDeism, although many evolutionary biologists are desperately trying to force these new insights, which are contrary to the Darwinian worldview, into an awkward Darwinian demeanour. In this context, it is worth contemplating what the philosopher of science Thomas Kuhn pointed out concerning the circularity of the Darwinian worldview:

> The similarity of forms was explained by evolution, and evolution in turn was proven by the grades of similarities. That here one has fallen victim to circular reasoning was hardly noticed; the very point that one set out to prove, namely that similarity was based on evolution, was simply assumed, and then the different degrees in the gradation of the (typical) similarities, were used as evidence for the truth of the idea of evolution. Albert Fleischmann has repeatedly pointed out the lack of logic in the above thought process. The same idea, according to him, was used interchangeably as assertion and as evidence. However, similarity can also be the result of a plan, and morphologists such as Louis

> Agassiz, one of the greatest morphologists that ever lived, attributed the similarity of forms of organisms to a creation plan, not to evolution.[63]

It is truly shocking that proponents of the materialist Darwinian worldview fail to see this simple fact. The materialist worldview, often alongside an atheistic agenda, is generally taken for granted, and therefore proponents of MUD (Materialist Ultra-Darwinism) assert that the materialist Darwinian account of evolution *must* be true. But it should not take a great deal of contemplation to see that what is happening here is not that the various pieces of evidence which are claimed to be evidence for the materialist Darwinian account of evolution do not constitute a watertight and irrefutable case. It is, rather, the case that these various claimed evidences are fitted, or perhaps *forced* is a better word, into a preconceived materialist Darwinian account of evolution.

In his final summing up of why his readers, having been presented with the various stories that he presents in his book, must accept his materialist Darwinian version of things, Asher writes:

> We have looked at numerous, specific examples of how certain living organisms exhibit intermediate morphologies between other modern groups, …We examined in some detail paleontological evidence documenting the evolution of the mammalian ear … You have seen a basic outline of the fossil record of elephants, terrestrial and baleen whales … You know the basic outline of the vertebrate evolutionary tree …. And you have read about examples of natural molecular change … I have made a case in this book for the mechanism of natural selection as a major, driving force behind the biodiversity of life that exists on this planet today.[64]

It is true that a case has been made; but it is a case that can easily be refuted as being inconsistent with important modern evidence. None of the list offered by Asher, taken singly, proves evolution by natural selection, and neither do they do so taken together. And there is a much more coherence account, QDeism, which accounts for all the above phenomena and more. In contrast to the Darwinian account, the QDeist account is coherent with crucial modern discoveries such as Evo-Devo (which implies body-plans predating the appearance of animals), quantum theory and quantum field theory. Materialist Darwinism is at odds with such modern discoveries. In this regard, it is worth considering Stapp's views on the academic promulgation of theories that are contrary to modern science:

> …the re-bonding [between mind and matter] achieved by physicists during the first half of the twentieth century must be seen as a momentous development: a lifting of the veil. Ignoring this huge and enormously pertinent development in basic science, and proclaiming the validity of materialism on the basis of an inapplicable-in-this-context nineteenth century science is an irrational act.[65]

Indeed!

In his concluding chapter 'Evolution, Education, and Conclusions' Asher refers to the case of "alleged persecution" which involved the Minnesota high-school teacher Rodney LeVake. This took place in the 1997-1998 school year when LeVake expressed discomfort with teaching evolution:

> As the year progressed Mr. LeVake expressed reservations to his colleagues about teaching evolution to his students. Court documents state that he marginalized the chapter relating to evolution because he was "not allowed to cover the criticisms and weaknesses in the theory." After it became clear to his fellow teachers and administrators that Mr. LeVake was not covering parts of the standard mandated curriculum, he was reassigned to a ninth-grade general science course the following year.[66]

LeVake "was careful not to mention creationism or God in his classes" and only wanted to be able to discuss "some of the holes in Darwin's theory," but he lost his suit against the school. Subsequently the Discovery Institute claimed that this was an example of unwarranted censorship. Asher quotes from the Discovery Institute interview with LeVake where he presents his quibble with the standard Darwinian viewpoint:

> The fossil record for years, when I was growing up and in school, and even in college … was almost put on a pedestal as the "proof" for … evolution. And when you get right down to it, studying the fossil record, actually it … not only doesn't support evolution it really kind of flies in the face of evolution … You would expect, if macroevolution, changing from one cell to larger animals, were true, you would expect in the lower rock levels, the Cambrian levels in this case, you would have simple organisms, and that … as you would increase layer upon layer … of rock, you would expect to see more complex organisms … until you come to more present day fossils. The truth of the matter is just the reverse, almost upside down. In the Cambrian layer, in fact they have a name called the Cambrian explosion … there's many fully formed complex creatures already on the … very low levels of the rock layers. And there is very little change throughout the rock layers … There's kind of an observed stasis of animals as they progress up through the layers of rock. And so the idea of change over time, starting with simple organisms going to complex, is not borne out by the fossil record.[67]

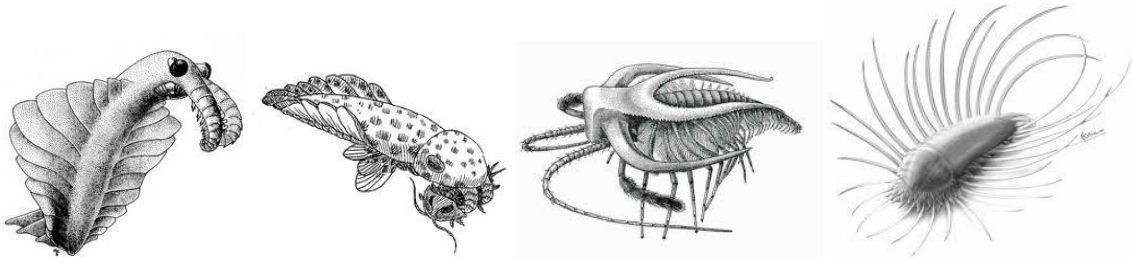

Figure 5 – Cambrian Animals[68]

Now any reasonable intelligent person would surely take this observation as being directed at the fact of the sudden appearance of fully formed creatures at the beginning of the Cambrian era, a phenomenon, which is termed 'the Cambrian Explosion' and occurred about 540 million years ago. The point that LeVake is making is that there does not appear to be a gradual transition in the fossil record from an extremely simple cell-like animal through to the diverse kinds of animal that came into being in the oceans of the Cambrian period (figure 5), there was no life on land at this time. Asher, however, misreads, perhaps intentionally, LeVake as asserting that there has

been little change "since the Cambrian." He therefore claims that this indicates LeVake's "profound ignorance." This is surely a disingenuous misrepresentation.

Darwin was aware of this issue. In *On the Origin of Species* he pointed out the missing Precambrian fossil record and the problem it posed to his theory of evolution:

> There is another … difficulty, which is much more serious. I allude to the manner in which species belonging to several of the main divisions of the animal kingdom suddenly appear in the lowest known [Cambrian-age] fossiliferous rocks … If the theory be true, it is indisputable that before the lowest Cambrian stratum was deposited, long periods elapsed … and that during these vast periods, the world swarmed with living creatures … [But] to the question why we do not find rich fossiliferous deposits belonging to these assumed earliest periods before the Cambrian system, I can give no satisfactory answer. The case at present must remain inexplicable; and may be truly urged as a valid argument against the views here entertained" [69]

The relevant issue then is whether this problem has been solved since Darwin's time. According to some evolutionary biologists prior to the Cambrian explosion there was a mass extinction of very different types of life forms known as "Ediacaran biota" (figure 6). If this is correct then the Cambrian animals could not have 'evolved' from the earlier organisms. In any case, the Ediacaran biota are very different form Cambrian animals, and the 'sudden' (from the point of view of evolutionary time-scales) appearance of the relatively complex animals of the Cambrian period is a puzzle for many interested parties.

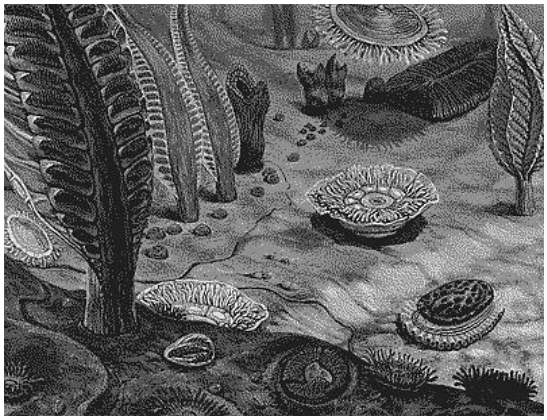

Figure 6 - Artist's representation of Ediacaran marine organisms, based on fossil discoveries.[70]

The paleontologist Stephen J. Gould said of the fossils of the Cambrian Explosion:

> The Cambrian explosion is the key event in the history of multicellular animal life. The more we study the episode, the more we are impressed by its uniqueness and of its determining effect on the subsequent pattern of life's history. These basic anatomies that arose during the Cambrian explosion have dominated life ever since, with no major additions. The pattern of life's history has followed from the origins and successes of this great initiating episode.[71]

Furthermore, according to Gould:

> Contrary to Darwin's expectation that new data would reveal gradualistic continuity with slow and steady expansion, all major discoveries of the past century have only heightened the massiveness and geological abruptness of this formative event...[72]

And he also concluded that:

> The Cambrian explosion was the most remarkable and puzzling event in the history of life.[73]

Paleontologist Simon Conway Morris is a specialist and expert in the Cambrian who has concluded:

> The Cambrian explosion is real and its consequences set in motion a sea-change in evolutionary history. Although the pattern of evolution is clearer, the underlying processes still remain surprisingly elusive.[74]

However, despite the wide consensus amongst experts there are some MADs (Materialist Advocates of Darwinism) who discount the puzzling and challenging nature of this event for their worldview on the basis of remarkably flimsy and implausible grounds. Professor of Genetics Steve Jones instance simply indulges in unsupported fantasy completely at variance with most experts such as Conway Morris and others. According to Jones:

> Take those evolutionary celebrities, the trilobites, the first animals to lay claim to jointed limbs. They are close to the roots of a tree that later grew branches as flamboyant as the insects and a living fossil called the horseshoe crab. If - as the record suggests - trilobites burst into existence within five million years at the base of the Cambrian, one brief event changed the whole direction of evolution. In fact, a closer look shows that among the earliest to be preserved were many distinct kinds. Such diversity shows that trilobites had a past dating to long before that famous era. What made them seem new was no more than their skeletons. Their predecessors had died and decomposed, but their more solid descendants were preserved in millions. The Cambrian was a busy time for trilobites, but it marked their middle age and not their infancy.[75]

It is true that there were many types of trilobite. Figure 7 shows four types that are part of the Hazen collection of Trilobites which includes approximately 2,000 specimens representing almost different 1,000 species from six continents.[76] But Jones' claim that the fact of this variety of types proves that they must have had pre-Cambrian ancestors begs the question. The notion that the softness of the assumed ancestors supplies the reason that there no fossils prior to the development of the Cambrian hard shells is refuted by the fact that, as Stephen Jay Gould and Simon Conway Morris have pointed out, the majority of Cambrian fossils are soft-bodied.

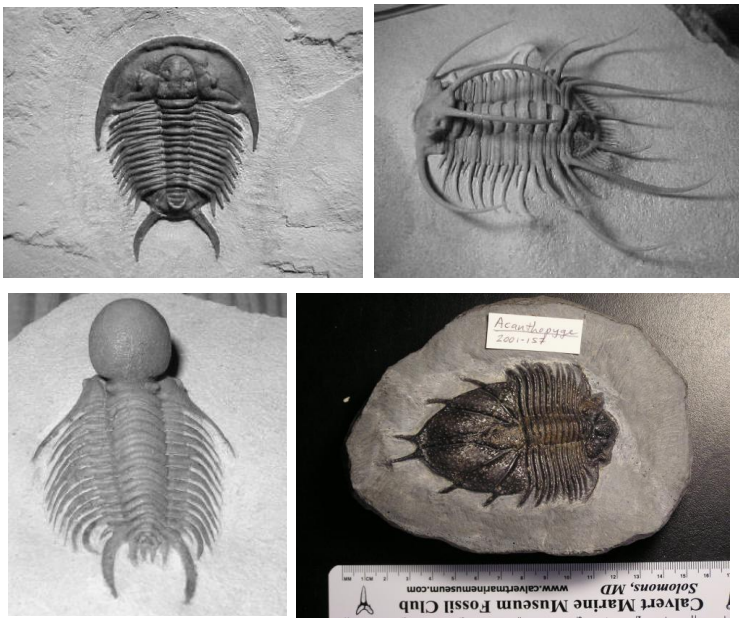


Figure 7 - Trilobytes[77]

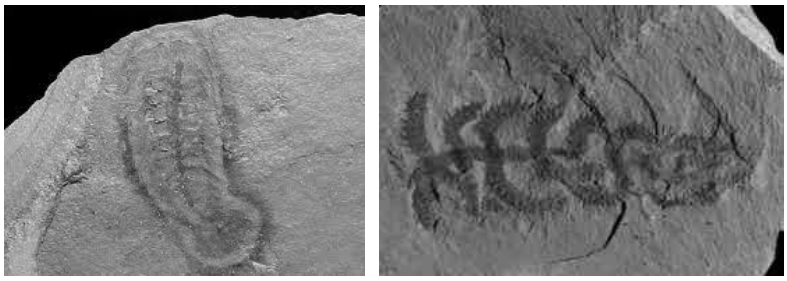

Figure 8: Soft bodied Cambrian fossils[78]

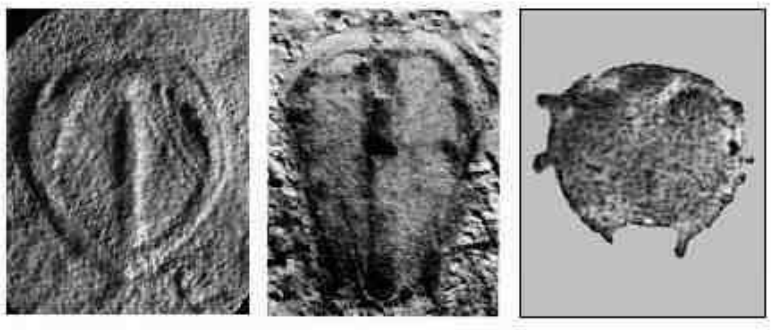

Figure 9[(79)]

There are some pre-Cambrian fossils that are claimed by some to be possible candidates for pre-Cambrian ancestors of trilobites (figure 9)[80], but such claims are speculative and contentious. The fact remains that the sudden burgeoning of the diverse spectrum of life, including hard exteriors, which had only a tenuous, if any, connection with what had gone before remains

paradoxical for the Darwinian perspective. The fossil evidence points to the appearance of many new body plans in the Cambrian, not just the acquisition of hard parts by existing phyla. According to Berkeley paleontologist James Valentine, the Cambrian explosion "involved far more major animal groups than just the durably skeletonized living phyla." There were "new kinds of organisms, and not old lineages newly donning skeleton-armour, that appeared"[81]. Valentine concluded: "the record that we have is not very supportive of models that posit a long period of the evolution of metazoan phyla" before the Cambrian.[82] In other words the Cambrian 'explosion' of a variety of new body plans and types, breaking with the meagre types of life existing prior to the Cambrian, is a real and significant evolutionary event.

The fact that "new body plans" come into being in the Cambrian period is hugely significant. For example *Markuelia* is an early Cambrian fossil worm-like bilaterian animal. X-ray tomographic microscopy has been applied to *Markuelia* fossils found in Hunan province in southern China and in eastern Siberia. The features observed indicate that the genus had a mouth surrounded by a ring of teeth, an alimentary canal, and an anus, being the earliest known examples of this set of features. This is also an example of an interdependent *set* of features which, according to the Darwinian perspective would have needed to emerge originally via a random mutation. This is important to comprehend, according to the canonical and MAD Ultra-Neo-Darwinist worldview, at some point in what is supposed to be a gradualist step by step by random mutation followed by fortuitous random mutation there had to have been one random mutation which produced a mouth, gut, and anus, and all the organic details of the processing of food required for effective functioning. Producing a mouth without a gut and anus is hardly likely to enhance survival!

The materialist evolutionary biologist Sean B. Carroll has written a wonderful book about the Evo-Devo revolution in evolutionary biology called *Endless Forms Most Beautiful*. The only drawback with the book is the lengths to which Carroll goes to try to pretend that the Evo-Devo revolution does not completely overturn the MAD neo-Darwinian dogma. However, Carroll does not misrepresent the facts and he describes the essential revelation of the Evo-Devo perspective:

> The first shots in the Evo Devo revolution revealed that despite their great differences in appearance and physiology, all complex animals - flies and flycatchers, dinosaurs and trilobites, butterflies and zebras and humans - share a common "tool kit" of "master" genes that govern the formation and patterning of their bodies and body parts. … The important point to appreciate from the outset is that this discovery shattered our previous notions of animal relationships and of what made animals different, and opened up a whole new way of looking at evolution.[83]

This discovery was completely contrary to canonical Ultra-Neo-Darwinism. The Ultra-Neo-Darwinian synthesis required the view, dogmatically asserted on the basis of little, if any, evidence but burning belief in materialistic Darwinism, by one of the founding fathers biologist Ernst Mayr that as species diverged so the genes became increasing distant. Myers wrote confidently in the 1960's that:

> Much that has been learned about gene physiology makes it evident that the search for homologous genes is quite futile except in very close relatives. If there is only one efficient solution for a certain functional demand, very different gene complexes will come up with the same solution, no matter how different the pathway by which it is

> achieved. The saying "Many roads lead to Rome" is as true in evolution as in daily affairs. [84]

So Mayr here was asserting that he had definite evidence ("much has been learned") to say that the genes of distant species were completely different. The Evo-Devo discoveries showed that this materialist dogmatic fantasy was absolutely misleading, mistaken and devoid of any evidence! In fact, there is a shared body-plan, implemented through a set of common '"tool kit" "master" genes, underlying all animals. An astonishing discovery which undermines MAD materialistic Darwinism, although the dogmatic ranks have closed and are trying to carry out damage limitation by pretending that this is all just footnotes to Darwin, but this is incorrect. The Evo-Devo discoveries are far more in line with the views of Agassiz which, when translated into a modern idiom, clearly suggested the necessity of primordial body templates residing in some kind of quantum information space of potentiality.

In his discussion of the Cambrian explosion, Carroll tells us that:

> …the similarities among the species were astounding … Such sequence similarity was just stunning. The evolutionary lines that led to flies and mice diverged more than 500 million years ago, before the famous Cambrian Explosion that gave rise to most animal types. No biologist had even the foggiest notion that such similarities could exist between genes of such different animals.[85]

This quote come from a remarkable section of Carroll's book which is headed with the section title 'Animals Before the Big Bang'. Of course, the only animals which could possibly be in any way 'existent' before the Big Bang would be the Agassiz-style quantum field potentialities for all possible manifestations that must reside within the overall eternal quantum field underlying the process of reality. Carroll's eye for an effective metaphor had actually led him towards the truth, the Evo-Devo revolution, which tells us that the body-plans for all evolved organisms reside within a hierarchical system of quantum potentiality templates, also points towards the pre-existence of those potentiality templates. As Adrian Woolfson, in his book *Life Without Genes* puts this:

> In the beginning there was mathematical possibility. At the very inception of the universe fifteen billion years ago, a deep infinite-dimensional sea emerged from nothingness. Its colourless waters, green and turquoise blue, glistened in the non-existent light of the non-existent sun … A strange sea though, this information sea. Strange because it was devoid of location …[86]

This is the quantum field of potentiality which contains the body-plans for all possible creatures and environments:

> An information space of this sort would furnish a complete description of all potentially living and unrealizable creatures…[87]

Carroll, however, still operating within an outmoded materialist worldview, wants to think in terms of pre-Cambrian ancestors but is forced to accept that they do not seem to be there: "without confirmed body fossils, paleontology is reluctant to conjure up more than a vague image of a featureless, wormlike creature for the last common ancestor." However, says Carroll, by extrapolating back from the features shared among the descendants, a picture of what kind of gene structure the ancestor must have had can be worked out:

> One feature we can assert is that the last common ancestor of protostomes and deuterostomes were bilaterally symmetrical … we can confidently add that the common ancestor of bilaterians (an animal that Eddy De Roberts at UCLA has dubbed Urbilateria, meaning primitive bilaterian) has a toolkit of genes of at least six or seven *Hox* genes, *Pax-6*, *Distal-less*, *tinman*, and a few hundred more body-building genes.[88]

*Hox* genes control the body plan, *Pax-6* genes control the development of eyes and sensory organs, *Distal-less* genes are responsible for limb formation, and *tinman* concerns the development of the heart. Carroll continues:

> It is intriguing to ponder just what so many genes were doing in Urbilateria. Was this really a featureless wormlike animal? What might the possession of so many genes signify in terms of anatomical and behavioural complexity?[89]

He then proceeds to speculate on the actual construction of the putative Urbilateria animal:

> And, using gene and developmental logic, we can say that it certainly had a throughgut with a mouth and anus. We can also confidently say all sorts of cell types - muscle, nerve, contractile, photoreceptive, digestive, secretory, and phagocytic - existed because these exist in all descendants. The uncertainty about Urbilateria is the degree of organization of these cells into organs that we would call eyes, hearts, limbs, etc. The organization was complex enough to lock in the function of *Pax-6*, *Dll*, *tinman*, *Hox* genes, etc., into roles that have been preserved in all of this ancestor's descendants for more than 500 million years. I have to be tentative here because we can't and won't know for certain until we find the fossils (and the search for new sites and types of deposits is ongoing). But the important new sketch that Evo Devo has provided is that of an animal equipped with all of the necessary genes for building complex bodies and possessing some initial level of anatomical complexity.[90]

The obvious inference that Carroll does not consider, however, is that the existence of this clearly complex and interconnected body plan suggests that at some point there must have been an anticipatory body plan. Furthermore, if we view this in the light of the quantum evidence that we have surveyed previously then the only conclusion we can consistently come to is that this proto-structure for the construction of the animal kingdom ultimately must 'exist' as a quantum potentiality field, a deep level quantum 'implicate order'.

In their article 'Fossils, molecules and embryos: new perspectives on the Cambrian explosion' Valentine, Jablonski and Erwin write that:

> While the timing of the evolution of the developmental systems of living metazoan body plans is still uncertain, the distribution of Hox and other developmental control genes among metazoans indicates that an extensive patterning system was in place prior to the Cambrian. However, it is likely that much genomic repatterning occurred during the Early Cambrian, involving both key control genes and regulators within their downstream cascades, as novel body plans evolved.[91]

Valentine is one of the world's leading experts on the Cambrian Explosion. According to Valentine and colleagues: "the pattern of the Cambrian explosion creates the impression that metazoan evolution has by and large proceeded from the 'top down'"[92]

Evolutionary biologist Jeffrey Levinton acknowledged that the Cambrian explosion, which he called "life's big bang," remains "evolutionary biology's deepest paradox". Although "the body plans that evolved in the Cambrian by and large served as the blueprints for those seen today," Levinton saw "no reason to think that the rate of evolution was slower or faster than it is now. Yet that conclusion still leaves unanswered the paradox posed by the Cambrian explosion and the mysterious persistence of those ancient body plans."[93] It appears that the diversification of species took place on the basis of the existence of an ancient body plan which underlay the development of all future variations. According to Carroll:

> Simon Conway Morris, one of the leading paleontologists deciphering the events of the Cambrian, has likened this early phase of diversification to a trail of gunpowder leading back into the 'mists of time', whatever the length of this trail, by the late Early Cambrian, it reached the powder keg and the diversity of forms exploded. This is not just the appearance of individual representatives of major groups, but a parade of variations on basic body types.[94]

Like Carroll, most mainstream current biologists seem determined still to think in terms of a fully material Urbilateria animal swimming about in the primordial oceans as a preconceived viewpoint, rather than seeing the obvious implications of the Evo-Devo evidence in the light of quantum revelations. The only way in which the insights of quantum theory and those of Evo-Devo can be rendered coherent is by accepting that evolution is ultimately driven by an internal energy operating to unfold the potentialities that pre-exist as potentialities within the quantum field of potentiality. Woolfson poetically calls this field of potentiality an 'information sea':

> The information sea is thus a quantum mechanical sea, composed from infinite repertoires of entangled quantum descriptions. Although defying description, they appear nevertheless to be completely objective … It is possible that the ultimate description of reality is not written in the language of quantum wavefunctions. Indeed quantum wavefunctions might themselves constitute incomplete pictures of a still more fundamental level of description. But until such a time as an alternative or modified quantum theory is proposed and substantiated, we will have to accept the disconcerting but nevertheless experimentally verifiable picture of reality that quantum theory presents. [95]

This, however, is something that materialist proponents of orthodox Ultra-Neo-Darwinism, even God-fearing ones like Asher, are loath to do. In the concluding remarks to his book *Evolution and Belief* Asher indicates that although the world operates according to thoroughly 'natural' mechanisms, by which ne means materialist mechanisms, nevertheless in the background "God is the author." He concludes that:

> Without endorsing or committing ourselves to any specific cause, it is rational to believe that an entity beyond our comprehension was the agency by which something was derived from nothing at the beginning of time. But it is not rational to assume a human mode of operation for that entity or to assume that "He" performs miracles among us like a magician conjures tricks. The point made above - that God is not exterior to our cosmos, that he is not to our world as a mechanic is to a car - means that the actions of natural law themselves comprise "His" activity as we perceive it. Relatedly, it means that the term "miracle" is simply a placeholder for our ignorance.[96]

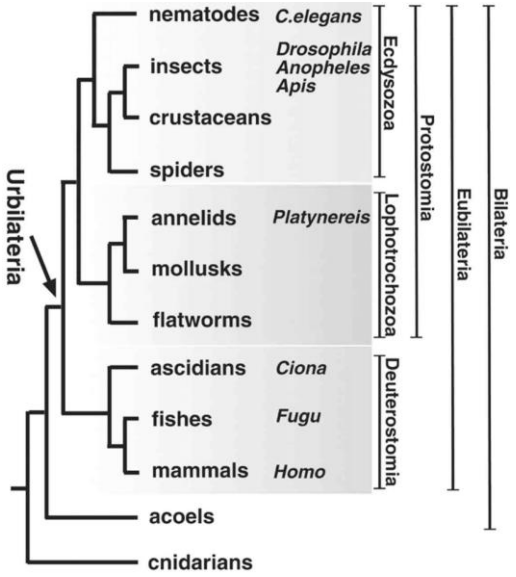


Figure 10 – Urbilateria – common ancestor of the bilateria[97]

Why abjectly point to our assumed ignorance in the light of the fact that we do know a great deal? We can put together a coherent, consistent and entirely plausible metaphysical-physical account that takes into account all the evidence. The only reason to appeal to ignorance is in order to maintain a thoroughly incoherent and inconsistent account of the supposed paradoxical relationship between a 'divine' "entity beyond our comprehension" and the 'natural' world.

In the light of the completely consistent and coherent account of the process of evolution as the unfolding of a subset of pre-existing quantum potentiality patterns for all possible organisms and environments, Asher's appraisal of the situation is not "rational" but thoroughly *irrational*. How rational is the claim that "something was derived from nothing at the beginning of time", when quantum field theory now tells us that the 'eternal' quantum fields of potentiality, not "nothing", stand at the edge of time and manifestation. If one wanted to develop a rational theology starting from science one would clearly have to start here. A truly intelligent Intelligent Design perspective, however, is not in the business of theology; it stays within the limits of proposing a metaphysics that is derived from, and coherent with science as a whole. As Meyer has pointed out:

> ID is not based on religion, but on scientific discoveries and our experience of cause and effect, the basis of all scientific reasoning about the past. Unlike creationism, ID is an inference from biological data. Even so, ID may provide support for theistic belief, but that is not grounds for dismissing it. Those who do confuse the evidence for the theory with its possible implications. Many astrophysicists initially rejected the Big Bang theory because it seemed to point to the need for a transcendent cause of matter, space and time. But science eventually accepted it because the evidence strongly supported it[98].

An important aspect of the notion of an ultimate unified quantum field is that it must have an internal energetic cognitive aspect. It is this cognitive aspect, which must lie deep beneath the cognitive powers of sentient beings but must also be the source of those powers, which is responsible for unfolding potentialities. The physicist Sean Carroll (not biologist Sean B. Carroll) in his recent book on the Higgs which is entitled *The Particle at the End of the Universe*:

> The physicist John Wheeler once proposed a challenge: How can you best describe quantum mechanics in five words or fewer … When I posed this question about quantum mechanics the best answer was …"Don't look: waves. Look: particles."[99]

In quantum field theory creation or annihilation of 'particles' is represented by 'creation operators' and 'destruction operators', operators which conceptually act upon immaterial quantum fields of potentiality. These operators, however, are mathematical representation of events, mechanisms, or processes actually going on within the quantum realm. These are the quantum events that are responsible for creating the apparent realm of materiality and eventually the individuated consciousnesses of the organisms, including human beings, inhabiting a small portion of the universe. Such quantum events, operating at an incomprehensible rapid rate at the deepest level of the process of reality, are able to manifest a world of apparent materiality and consciousness out of the quantum 'dream-stuff' of quantum fields.

In his article *The Computational Universe* Seth Lloyd suggests that the process of reality is fundamentally an information processing system. The quantum events driving this process are the means by which the universe 'computes itself' by 'registering itself'[100] and this process must begin long before life gets on the scene:

> Life is not the original information processing revolution. The very first information processing revolution, from which all other revolutions stem, began with the universe itself. … The big bang was a bit bang. Starting from its very earliest moments, every piece of the universe was processing information. The universe computes. It is this ongoing computation of the universe itself that gave rise naturally to subsequent information-processing revolutions such as life, sex, brains, language…[101]

But there is a crucial element missed out in Lloyd's list - embodied consciousness. Without this aspect of reality, information would hardly mean very much! As life arose so did the ascent towards ever greater degrees of consciousness and awareness embodied within increasingly complex organisms. Lloyd's approach here is a typical example of the general suspicion amongst physicists and scientists in general of notions that consciousness is actually a real and effective qualitative aspect of the process of reality. He actually says that he is "very suspicious of consciousness" and thinks that it is "way overrated"[102]. However, if we adopt Lloyd's proposal that a quantum event, or a 'qubit,' is a result of the universe 'registering itself' then it would seem that we would have to say that such events are the result of a deep level of consciousness acting within the quantum field in question, how else could the universe register itself? This corresponds to the "Look: particles" portion of the best answer for quantum theory ("Don't look: waves. Look: particles.") given above, the fact that consciousness and cognition are entangled at a deep level of the quantum realm indicates that the quantum realm itself has an internal cognitive aspect. This is indicative of the energetic intelligence that is internal to the process of reality. It is this internal awareness-intelligence that eventually becomes embodied to various degrees in

sentient beings, before sentient embodiment this unconscious universal ground awareness-intelligence operates 'unconsciously', i.e. without full individuated awareness.

The notion that the processes of the physical world are derived from processes within fundamental intelligent energy fields is becoming increasingly acceptable within physics, biology and consciousness research. The first suggestion of this sort to be made by a quantum physicist was David Bohm's notion of the 'implicate order', or a hierarchy of implicate orders starting from the deepest level of abstract potentiality and increasingly becoming more manifest through the unfoldment of 'active information.' As F. David Peat, who has continued and extended Bohm's ideas, has pointed out:

> When ideas begin to come together in this way it suggests that a fundamental break-through may not be far behind. One thinks of the web of approaches and notions being debated in the first years of this century and the how they finally coalesced into quantum theory and relativity. Similar unresolved discussions abound today, about the nature of mind, brain function and consciousness, … algebras that lie below quantum theory, and the nature of health and healing. Information is something that could play a significant role in understanding the nature of the physical universe and, at the same time, have a key role in the operation of consciousness. Concepts of meaning, form and information could well play an integrating role in bringing unity to whole areas of speculation.[103]

We generally think of information as being entirely non-physical, being simply the meanings of words and sentences and images and so on. Bohm, however, in the 1980s proposed that information could be considered as physical in nature and thus be able to play a role in physical processes, directing configurations of energy and matter. Bohm later spoke of the quantum 'implicate order' as a field of 'active information' which gave form to the manifestation of the 'explicate order' of the manifested world. This type of information has an objective nature and plays an active role in giving form to energy and is responsible for quantum processes and thereby the forms of the manifest world.. As a 'field' of 'active information' it provides a collective, global form for a superconductor of information from one point to another in space and time in a nonlocal instantaneous manner. It also underlies aspects of subjectively experienced individual 'meanings'. At its deepest level, this field of active information can be identified with the quantum field of potentiality that holds the infinite possibilities for the forms of organic sentient life.

Another aspect of Bohm's perspective is that 'meaning' itself becomes part of the physical world, matter being externalised 'active information' and experienced meaning being the subjective internal operation of 'active information'. The following passage from Bohm gives an insight into this mode of thought:

> We can say that human meanings make a contribution to the cosmos, but we can also say that the cosmos may be ordered according to a kind of 'objective' meaning. New meanings may emerge in this over all order. That is we may say that meaning penetrates the cosmos, or even what is beyond the cosmos. For example there are current theories in physics that imply that the universe emerged from the 'big bang'. In the earliest phase there were no electrons, protons, neutrons, or other basic structures. None of the laws that we know would have had any meaning. Even space and time in their present well-defined form would have had no meaning. All of this emerged from a very different

> state of affairs. The proposal is that, as happens with human beings, this emergence included the creative unfoldment of generalized meaning. [104]

And then:

> Later, with the evolution of new forms of life, fundamentally new steps may have evolved in the creative unfoldment of further meanings. That is, we may say that some evolutionary processes occur which could be traced physically, but we cannot really understand them without looking at some deeper meaning which was responsible for the changes. The present view of the changes is that they are random, with selection of those traits that were suited for survival, but that does not explain the complex, subtle structures that actually occurred. [105]

For Bohm 'meaning' is considered as being an intrinsic qualitative aspect of quantum implicate orders. They may be considered to be energetic meaning-fields taking on material and experiential forms according to the active information that they contain. The evolution of the embodied 'meanings' which are sentient organisms is not random, but the unfoldment of the structures of the meaning potentialities of the fields of active information.

The Russian physicist Michael Mensky has investigated and written cogently about the implications of the quantum formulism for our understanding of the goal-oriented nature of organic life: "Evolution of living is thus determined by goals (first of all by the goal of survival) as well as causes." In this context it should be pointed out that the materialist Ultra-Neo-Darwinian perspective makes appeals to survival of the species without any explanation of where this desire for survival derives from. It should be quite obvious that, if matter were to be the kind of stuff that Descartes defined it to be, the notion that it should suddenly organize itself in a manner which is desperate to survive is absurd. As Mensky points out:

> Life is a phenomenon which is realized by living matter consisting of living organisms (living beings). Living-matter differs from non-living matter in that its dynamics is determined not only by causes, but also by goals i.e. by the state this matter should have in future. First of all the goal of survival (prolongation of life) is important in this context. However, in case of sufficiently perfect forms of life more complicated goals are also actual. They can be formulated in terms of quality of life. In the real conditions on Earth, important features of the phenomenon of life are connected with the balance between all organisms. However, the very definition of life and essential features of this phenomenon may be illustrated in case of a single living being. Let us first consider this simple situation … An organism consists of atoms interacting with each other, therefore it is in fact a physical system. According to the modern view this is a quantum system.[106]

It is important to notice that Mensky type 'matter' is derivative from a deeper quantum realm with mind-like qualities. Mensky then proceeds to outline his theory that there is a fundamental quantum Life-Operator (*L*) (as well as a Death-Operator) which operates upon future potentialities in order to produce, as far as possible, optimal outcomes, this is not to say that this life-operator is always successful in maximising optimal outcomes for there are multiple factors as work. For example for an individual organism the death-operator will become more significant with age. The life-operator then operates within a matrix of multiple causes, but for a surviving organism, the life-operator is functioning successfully, mostly unconsciously. The manner in

which this quantum life-operator functions is through a quantum 'look-ahead' mechanism which Mensky calls 'postcorrection'. According to Mensky quantum systems, which have a degrees of primordial awareness, have access to a kind of knowledge of future potentialities and the evolutionary paths that lead towards possible future states. In the following passage *LH* represents the subspace of future potentialities which are advantageous to life, they are determined by the operation of the life-operator *L* on all possible future possibilities *H*:

> In the simplest case the goal is survival. According to this goal the living being has to remain alive, i.e. the state of the living system should be in the subspace *LH* at a distant future moment of time. This is provided by correcting the initial condition in such a way that the evolution of this state brings it into the subspace *LH* in the future. Such correction may be called *postcorrection*. The operation of post-correction is a correction of the present state of the living system, but it is performed according to the criterion which is applied to the future state of the system.[107]

According to Mensky the operation of the life-operator produces a subspace of future quantum states which are favourable to survival and a quantum level of biological awareness is able to 'correct' the current quantum state in order to anticipate those favourable future states. This provides a mechanism by which we can understand how the Hawking-Mlodinow mechanism of 'choosing a universe' can take place. And, as H&M state this is 'not science fiction', it is in fact a mechanism used by photosynthesis, one of the most important biological mechanisms for the maintenance of life. Mensky point out that:

> Selecting favorable scenarios does not suggest violating the laws of nature as such. The material world is described as usual by all scenarios obtained by the action of the unitary evolution operators on the arbitrary initial state vectors. This conventional presentation of the evolution of matter is sufficient to describe how non-living matter evolves. However, the phenomenon of life is represented by only a part of the set of all scenarios of evolution. "Unfavorable" (for life) scenarios are left "outside the sphere of life". The picture appearing in the consciousness of an observer may include only one of the favorable scenarios. Subjectively this looks as if the living being could find out what should be its state in a distant time … and correct the state at [that] time … in such a way that it provides being alive at [that] time?.

Mensky is suggesting here that the operation of life-operator and a quantum 'look-ahead' mechanism enables an organism to (unconsciously) 'see ahead' on the quantum level and guide development towards a future favourable state in order to maximise survival potential.

In his introduction, *A Quantum Origin of Life*, to a recent set of essays on quantum theory and biology *Quantum Aspects of Life* Paul Davies also suggests a Mensky-type account of the origin of life itself:

> The hypothesis I am proposing is that the transition from non-life to life was a quantum mediated process and that the earliest form of life involved non-trivial quantum mechanical aspects. The power of quantum superpositions is that the system can explore many alternative pathways simultaneously thereby potentially shortcutting the transition time by a large factor. Because life is a highly unusual state of matter. Its formation from an arbitrary initial slate is presumably extremely improbable. Quantum mechanics provides a way to drastically shorten the odds and fast track matter to life by exploiting

> the parallel processing properties of superpositions. There is, however, a deep philosophical issue that must be con-fronted. I am defining "life" as a certain state of low probability. Quantum mechanics enables the space of possibilities to be much more efficiently explored than a stochastic classical system. Now, if there are branches of the wave function "containing life"- (e.g. a quantum replicator), they will, by assumption, have very small amplitudes. We must therefore explain why the wave function of the system "collapses" onto one of these states of such low intrinsic probability. Expressed differently, how does a quantum superposition recognize that it has "discovered" life and initiate the said collapse? There seems to be an unavoidable teleological component involved: the system somehow "selects" life from the vastly greater number of states that are nonliving.[108]

This suggestion is couched in language which is tinted with the general suspicion with which the scientific establishment treats notions of teleology, or for that matter the notion of quantum origins. There is a subtle materialism which still taints many insightful minds, minds that are still burdened with the weight of the late nineteenth century scientific "rationalist" rejection of any perspective which even has a hint of an opening for spiritual dimensions. The following is a Telegraph report of the 'Quantum Life' conference:

> Although there is scepticism that quantum mechanics is the midwife of life, the British physicist Dr Paul Davies, director of Beyond: Centre for Fundamental Concepts in Science, Arizona State University, Tempe, believes that important progress was made at the workshop, though he admits it is "tantalising and less than totally convincing." He points out that the idea that quantum mechanics is key to explaining the riddle of the origin of life was first raised as far back as 1944 by the Austrian quantum pioneer Erwin Schrödinger's in his book What is life? Dr Davies said that quantum theory fills a missing link in existing models of the origins of life, of which there are many. While all traditional theories suggest chemistry provides the hardware of life, quantum mechanics could provide the software, he said. "Today the cell is regarded not as magic matter but as a computer - an information processing and replicating system of astonishing precision." In the beginning, Dr Davies speculates that once "Q life", in the form of self replicating information at the atomic level, got going on Earth, this paved the way for replicating chemicals, the best known of which is DNA. "What we don't know is whether life has evolved over billions of years to the "quantum edge" to exploit those tricks, or whether it's the other way: quantum mechanics was the midwife of life and a few quantum tricks are left as a hangover," he says.[109]

The only reason that Davies could possibly think that the idea that the quantum level is involved in the creation of life is "less than totally convincing" is the general distain within the scientific community for notions which move in the direction of teleology; such notions, although gaining in acceptance, still face a great deal of prejudice.

Perhaps this prejudice leads Davies to adopt a conservatism that almost leads to absurdity. For example, it is quite clear that, as H&M point out "We are the product of quantum fluctuations in the very early universe," [110] which certainly means that life is a product of quantum fluctuations in the very early universe. Furthermore, according to the accounts of H&M and other physicists we also know that a deep non-individuated or collective level of consciousness and cognitive activity is operative in the process of the emergence of a manifested universe containing sentient

beings. Given this Davies' suggestion that it might be the case that "life has evolved over billions of years to the 'quantum edge' to exploit those tricks" is simply nonsensical. The notion that a quantum fluctuation would immediately give up its quantum nature, becoming 'classical' and losing access to the internal quantum cognitive drive, and then "life" develops non-quantumly until it somehow rediscovers the "'quantum edge' to exploit those tricks" is incoherent and absurd!

It is intriguing to note that Davies' characterization of the cell as an integrated "information processing and replicating system of astonishing precision", an approach which is clearly moving in the direction of ID. In this context it is useful to compare this with Meyer's observation that:

> The informational features of the cell at least appear designed. Yet, to date, no theory of undirected chemical evolution has explained the origin of the digital information needed to build the first living cell. Why? There is simply too much information in the cell to be explained by chance alone. The information in DNA (and RNA) has also been shown to defy explanation by forces of chemical necessity. Saying otherwise would be like saying a headline arose as the result of chemical attraction between ink and paper. Clearly, something else is at work. DNA functions like a software program. We know from experience that software comes from programmers. We know that information - whether, say, in hieroglyphics or radio signals – always arises from an intelligent source.[111]

In his book Asher consistently and disingenuously interprets such observations as amounting to the claim that a "human-like intelligence"[112] underlies the emergence and evolution of life. This, however, is a cheap trick designed to parody the Intelligent Design viewpoint. The reference to software deriving from "programmers" is, of course, an analogy. The intelligence-energy driving the manifestation of the cosmos and the life within it would have to be of cosmic proportions, human intelligence is surely a mere shadow of its power. A significant point, which appears to be denied by Asher, is that animal and human intelligence partakes to various degrees of the nature of its source in the universal intelligence-energy.

Another quantum physicist who has embraced an ID quantum origin of life perspective is Amit Goswami:

> …quantum physics demands that biologists give up their materialist prejudice and base biology on the metaphysics of the primacy of consciousness. One of the most important rewards of such a change of paradigm is no less an accomplishment than being able, for the first time in biology, to clearly distinguish not only between the conscious and the unconscious, but also between life and nonlife. So, yes, not only we humans but cats and lizards and even one-celled organisms can collapse possibility waves into actual events of experience. Incidentally, this distinction will make use of the third characteristic of consciousness introduced above, the characteristic of self-reference.[113]

This is a view shared by quantum evolutionist Johnjoe McFadden, Professor of Microbiology at the University of Surrey. Figure 11 shows an image that he uses to illustrate the process of quantum self-observation which he suggests is the driving force for evolution:

> …we are now on the brink of a new adventure which will bring about the synthesis of physical and biological sciences through quantum mechanics. On the one hand,

> electronic engineers are constructing nanotechnology devices – electronics on the scale of living cells – manipulating single atoms and single electrons, on a level where they invariably confront the quantum nature of their raw materials. Biologists are coming to appreciate the fact that living cells have been performing nanotechnology for billions of years…[114]

There is now mounting evidence that the processes of life may be 'evolved' through a quantum process through which nature tests out various possible 'paths' of development at the quantum level, before 'collapsing' into the most appropriate one. It would seem that nature and evolution might, contrary to the view proposed by MAD materialist Ultra-Neo-Darwinists, to be able to 'look', or 'perceive' ahead to see where it is going, so to speak.

Thus we see that the most coherent account which is consistent with all the current evidence of the way in which life emerges and begins to evolve is that an intrinsic and innate cognitive intelligence-energy acts upon the infinite potentialities latent within the quantum field of reality which stand at the dawn of time. This activity is an internal quantum self-reference, self-observation, or self-registration that triggers manifestation and evolution. Mensky provides an account of the manifestation of a 'local', which means a dualistic world of 'classical' experience, from the nonlocal quantum potentiality:

> If the picture of the world as it appears in consciousness were far from classical, then, due to quantum non-locality, this would be a picture of a world with 'locally unpredictable' behaviour. The future of a restricted region in such a world would depend on events even in very distant regions. No strategy of surviving could be elaborated in such a world for a localised living being. Life (of the form we know) would be impossible. On the contrary, a (close to) classical state of the world is 'locally predictable'. The evolution of a restricted region of such a world essentially depends only on the events in this region or not too far from it. Influence of distant regions is negligible. Strategy of surviving can be elaborated in such a world for a localised living being.[115]

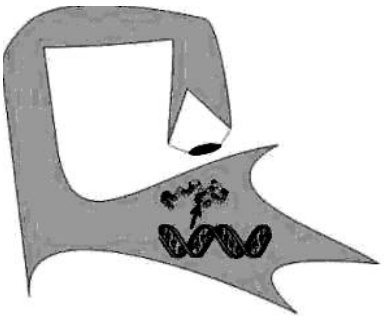

Figure 11(116)

We start with an image of the fundamental ground of primordial energy-awareness potentiality as it 'exists' in a non-differentiated, nonlocal state prior to all manifestation. This field of quantum potentiality is nonlocal, which is to say that every point is instantaneously interconnected with

every other point. The quantum field of potentiality is non-locally instantaneously interconnected, but when manifestation towards a 'classical' experiential world begins to manifest, this interconnection is broken, this is what physicists call 'symmetry-breaking'. As an experiential universe manifests the original unity and undifferentiated nonlocal quantum field becomes broken into increasingly 'classical' types of localised entities.

Mensky, in his 'Extended Everett Concept' proposal (EEC – Mensky begins with Hugh Everett's 'many-worlds' description of quantum potentialities), describes this process in a way that is consistent with the approaches we have previously surveyed:

> There is one more unsolved problem in biology that also could obtain its explanation in EEC. This is the problem of morphogenesis. How an embryo is constructed starting from a single cell? Where is a plan of the process of constructing it, step by step, or how constructing is controlled and directed? …consciousness (the primitive-level consciousness, or ability to somehow perceive, which is connected with a living being from the very beginning) periodically addresses to the quantum world as a whole, compare various scenarios of constructing embryo (various 'building plans') and then, returning to the usual state, increase probabilities of those scenarios that lead to the right construction, Of course, this is only a sketch of a possible explanation of the phenomenon, its main idea.[117]

This is a stunning insight into how the process of Life generates itself from quantum potentiality using a mechanism like the quantum 'look ahead' mechanism demonstrated within photosynthesis. The cognitive intelligence-energy that is organizing the quantum potentiality into biological structures is able to 'feel' its way ahead by addressing the "quantum world as a whole". The morphogenetic structures are already within the quantum ground as potentialities, but they need to be actualised into more 'explicate', 'solidified' or materialised versions. Mensky indicates that the level of consciousness at which the process begins is:

> …the most primitive, or the most deep, level of consciousness, differing perceiving from not perceiving.[118]

Such deep levels of quantum potentiality and cognitive intelligence-energy contain morphogenetic structures of potentiality for the manifestation of the dualistic world. And the first act of symmetry-breaking is the first act of internal quantum perception, or cognition, which triggers the start of evolution.

In this context it is necessary to mention the ideas of Wojciech Zurek who is the instigator of what he calls the 'quantum Darwinism' perspective. Zurek has pointed out that:

> …quantum states, by their very nature share an epistemological and ontological role – are simultaneously a description of the state, and the 'dream stuff is made of.' One might say that they are *epiontic*. These two aspects may seem contradictory, but at least in the quantum setting, there is a union of these two functions.[119]

This observation reiterates two important points that have been covered previously from different perspectives. Firstly, the ultimate 'stuff' of the process of reality is not 'matter', but is informational quantum 'dream stuff'. Secondly, the process by which ontology comes into being is through an 'epiontic' mechanism, which means that perception is the means by which an

experienced world of apparent materiality comes into being. This is fully consistent, of course, with H&M's perspective. Zurek's notion of the 'epiontic' nature of the quantum realm reiterates the fact that there must be an internal cognitive pressure within the process of reality. This cognitive energetic force is responsible for the activation of quantum potentialities. This in line with Wheeler's understanding that:

> The universe is a self excited circuit. As it expands, cools and develops, it gives rise to observer-participancy. Observer-participancy in turn gives what we call tangible reality to the universe … Of all the strange features of the universe, none are stranger than these: time is transcended, laws are mutable, and observer participancy matters.[120]

The fundamental internal cognitive 'pressure' triggers the 'self-excitation' of the universe and then eventually produces participating observers.

A further important aspect of Zurek's 'quantum Darwinism' lies in what Zurek considers as being the Darwinist aspect:

> … the appearance of the classical reality can be viewed as the result of the emergence of the preferred states from within the quantum substrate through the Darwinian paradigm, once the survival of the fittest quantum states and selective proliferation of the information about them throughout the universe are properly taken into account.[121]

An important issue, of course, is exactly what does 'fittest' mean in this quantum context. One of the indications Zurek gives is that "'states that exist are the states that persist", suggesting that it is the ability for quantum states to persist over time that defines their fitness, but this is clearly a circular definition. What we need to know is what entails that states persist?

An answer to this question lies in the quantum Zeno effect. The quantum Zeno effect refers to the fact that rapidly repeated observations of a quantum state will fix that state and not allow is to fade away into quantum uncertainty and spread of potentiality. If one observation of a quantum system is made, the system will 'choose' a state and then afterwards spread out into potentiality over many states. Rapid observations, however, will fix the state. Zurek tells us that:

> The main idea of quantum Darwinism is that we almost never do any direct measurement on anything … the environment acts as a witness, or as a communication channel. … It is like a big advertising billboard, which floats multiple copies of the information about our universe all over the place.[122]

This means that the states that are somehow chosen, and then reinforced by observer-participating perceptions, actually become imprinted as 'preferred states' at the quantum level. These constitute a "big advertising billboard". Prior to the evolution of sentient observers, the universe must be epiontically creating the conditions and paving the way for the emergence of such observers. And the fact that the universe and the contained sentient beings have evolved must mean that there is an amplificatory aspect to the Zeno effect. The more often an 'epiontic' perception occurs the more likely it will be in the future. This is how the experiential universe is built-up through the operation of the internal quantum 'epiontic' cognitive pressure over vast time scales. This is a perspective which leads directly to the framework of 'formative causation' of morphogenetic fields, involving 'morphic resonance', which guide development, as proposed by Rupert Sheldrake. The more often a form is stabilised in the past the more potentiality its

morphogenetic field has to resonate at a future point. Thus Zurek's 'quantum Darwinism' and Sheldrake's ideas resonate with and reinforce with each other.

There is also an inverse Zeno effect that was originally proposed by Aharonov and Vardi, who showed that by performing a dense sequence of measurements along a particular path a quantum system can be forced to follow an arbitrarily chosen path. Johnjoe Mcfadden has proposed that the inverse quantum effect may be a crucial factor in the evolutionary process:

> Both the quantum Zeno effect and the inverse Zeno effect are really aspects of the same phenomenon: the ability of quantum measurement to interact with, and *shape* the dynamics of a system. The special relationship between quantum objects and quantum measuring devices draws out classical reality from the quantum world. … measurement of a quantum system *draws out* from the quantum superposition of all possible states, a single reality for the physical world. As Niels Bohr said, '*one must never forget that in the drama of existence we are ourselves both actors and spectators*'. [123]

It must be emphasised, however, that before sentient observer participant beings come on the scene the universal cognitive pressure will be operating to unfold potentialities from the information "dream-stuff" of the quantum realm, bringing a world of manifestation into being in an interconnected and co-ordinated manner. One aspect of 'fitness' is that an environment and all the interacting animals within the environment 'fit together' in an exquisitely interconnected and interdependent manner, although the co-ordinated manner may not be exquisite for all of the participants, as when an insect egg hatches within the body of a host victim. Materialist Darwinism, wherein a randomly mutating organism is supposed to be 'adapted' by its environment, cannot account for the astonishing precision of unexpected interconnections which are now being discovered by investigators. Each animal in the system is part of the environment for all the other animals; it is the overall system that evolves in an interconnected and interdependent manner. Quantum nonlocal interconnections are required to achieve such extraordinary biological fine-tuning.

The necessary inclusion of quantum dimensions of the process of reality in the account of the origin of life and evolution introduces a more complex and multidimensional perspective into the account. In particular, we cannot just think in terms of a simplistic materialist-mechanistic process occurring through time. Although it is the case that evolution does occur through time, this process takes place, and depends upon, potentialities and processes within the deeper, hidden informational quantum 'implicate' levels. Goswami refers to the intelligence-energy of quantum potentiality as 'creative nonlocal consciousness' which is an aspect of quantum 'potentia'. In the following passage, he is referring to the production of the first living cells:

> For creative nonlocal consciousness, this is not a step-by-step process. The proteins are part of the phenotype of the cell, the observed characteristics at the macrolevel of the genes. Quantum consciousness, while unconsciously processing the possibilities, processes the phenotypes (including the proteins) in potentia, that is, within the plane of quantum possibilities. When a fit is found between the blueprints of life in the vital-body domain and the cell (including the proteins) that represents them in the physical domain, a choice is made. The collapse of the cell (including the proteins) collapses automatically the genes that causally must precede the proteins. All the components of the cell remain in possibility until consciousness chooses to actualize them.[124]

A crucial aspect of this view is that the details of cell-organization is worked-out, so to speak, within non-manifested quantum implicate levels, which Goswami terms the 'vital-body domain', before being manifested into the grosser non-quantum 'material' level. In other words, the quantum 'life-operator' investigates the possibilities for manifestation of the cell at the material level by testing out the possibilities at a quantum level. When there is a fit with all the surrounding conditions, the cell, and at a 'higher' the organism, level can manifest.

This process applies to the evolutionary development of all species; there is evolution over time dependent upon the 'designs' which are potential within the quantum levels of the process of reality. This means that only coherent and consistent designs, including environments and interconnections between various species, can manifest. Furthermore, these designs will be 'felt out' for coherence at the quantum 'implicate' levels before appearing at the more manifest 'material' level. When this viewpoint is comprehended, it becomes quite clear that the templates for species will reside at the quantum level of potentiality. In fact it is not quite as simple as that, for what is potential within quantum implicate layers is all possible modes of modifications of body plans, sensory apparatus, modes of locomotion and so on, these will be combined in coherent combinations according to target environments. This is exactly the situation that is indicated by the Evo-Devo evidence. The important point in this perspective is that what appears as species transforming and evolving at a fully materialised level are in fact interconnections or an evolution at the quantum level before manifestation. Although it may appear to materialist Darwinians that a hippo like creature took to the sea and then, ludicrously, transformed millimetre by millimetre into a whale, the evidence upon which this absurd notion is based actually indicates interconnections at the deeper quantum levels of the process of evolution and not a fully material transition.

This also means that the "common ancestor" of all creatures is a quantum template deep in the quantum implicate domain, not a fully paid up material creature blobbing about the primordial landscape. If we recall the gene structure of the primordial Urbilateria prototype animal then we see that it is exactly that, a prototype, a template which can be filled in with various kinds of features:

*Hox* genes – overall basic body plan. This virtual plan can be expressed in numerous ways to produce the bodies of flies, fish, mammals, birds and so on. The *Hox* genes supply just the most basic fundamental template of a virtual body.
*Tinman* – supplies the virtual power source for animation – the heart and blood functioning.
*Distal-less* – the basic pattern for limbs, wing, fins and so on - modes of locomotion.
*Pax-6* – a virtual template for the sensory organs.

This fundamental gene organization is the basic virtual template for all the species that that ever come into being and their variations. As Sean B. Carroll says:

> The surprising message from Evo Devo is that all of the genes for building large, complex animal bodies long predated the appearance of those bodies in the Cambrian Explosion. The genetic potential was in place for at least 50 million years, and probably a fair bit longer, before large, complex forms emerged. This means that while the genetic tool kit was not evolving, the rapid appearance of and changes in body forms tell us that animal development was evolving a great deal.[125]

The only viable explanation for this, in the light of all the other evidence we have surveyed, is that there is a virtual plan for a basic animal template at deep quantum implicate level of the process of reality. The materialist Darwinian one-dimensional view (in time) is shown in figure 10, with Urbilateria on the left, standing in the mists of time. The quantum Darwinian perspective is indicated in figure 12. The possible modes of body plan, locomotion, sense organs and so on are all potential within the quantum fields of potentiality. The activity of the energetic-cognitive unfolding pressure unfolds these potentialities in a co-ordinated and interdependent manner. However, the process takes place in an 'epiontic' amplificatory fashion, most of the design-anticipatory work takes place 'unconsciously' within quantum 'implicate' levels. At various points in time, the results of the quantum organizational-evolutionary processes manifest into the 'material' world, as with the Cambrian 'explosion'. This process, within which the modes of manifestation of creatures ripple down from quantum potentiality, each species remaining fixed but varying and becoming more complex through epiontic amplification, creates the illusion of a one-dimensional materialist Darwinian evolution.

A fundamental feature of the Quantum Darwinian Evolution perspective (QDEism) is that the species are established at the quantum 'template' or morphogenetic level and so do not evolve in the manner that the MAterialist Darwinian ('MAD' = random mutation + natural selection) asserts. According to the MAD worldview, for example, birds are asserted to be materially direct descendents of a dinosaur like creature, having evolved millimetre by millimetre over time. The most prevalent viewpoint is that promulgated by Richard Dawkins, Jerry Coyne and others, this viewpoint claims that the transformation is very gradual. In this case we should expect, but do not find, a multitude of fossil intermediate forms. In reality we find a few supposedly intermediate fossils which are claimed to indicate the gradual materialised descent. The fact that there are so few, however, actually supports the view that the great majority of the process of the evolution of species occurs at a non-materialised level, in the realms of quantum potentiality.

Many biology school text books cite the case of the peppered moth as a prime example (figure 13) of evolution in action. The peppered moth story is simple to explain and makes intuitive sense if it is not examined carefully, which tends to be the general case. When newly industrialised parts of Britain became polluted in the nineteenth century, smoke killed the lichens that were growing on trees and their bark became blackened. Pale coloured moths which had been well camouflaged before when they rested on tree trunks now became very conspicuous and were eaten by birds. Rare dark moths, which had been conspicuous before, were now well camouflaged in the black background. As birds switched from eating mainly dark moths to mainly pale moths, the most common moth colour changed from pale to dark. This phenomenon is presented as natural selection in action; it had, it is claimed, caused a change in the British moth population. The moths had evolved! This hypothesis was proposed by J.W. Tutt in 1896, and tested by Bernard Kettlewell in the 1950s. It then became a classic example of Darwinian evolution in action. However, the story has a major flaw as an example of evolution. It only involves a very small-scale fluctuation within a species, it in no way indicates a change in species. In fact, there is no evidence within the MAD literature of major changes evolutionary species. The general mode of argument is that of pointing to intra-species variation and then extrapolating to claim that the same mechanism will, given enough time, produce a change of species. Thus in the case of another MAD example of evolution, Darwin's Finches, we are told:

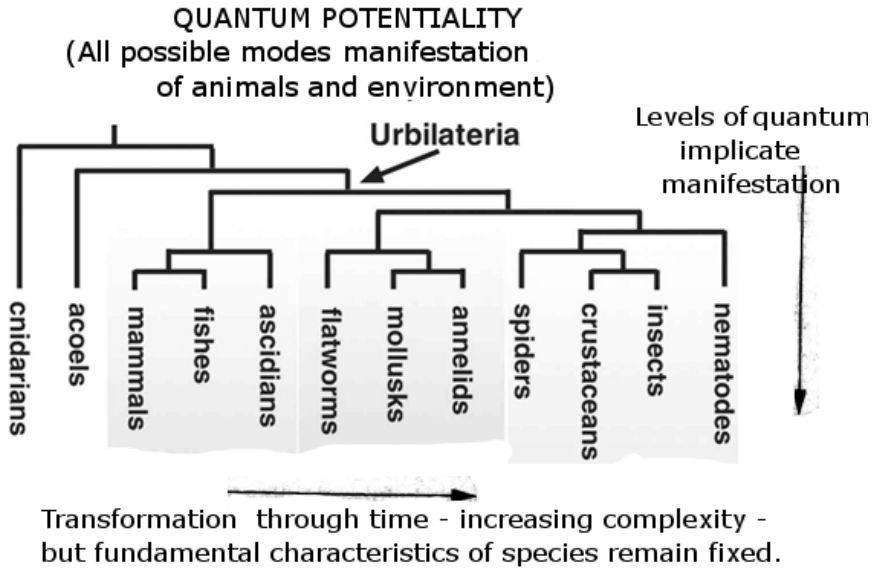


Figure 12

(should not be read as indicating an evolution from cnidarians to nematodes!)

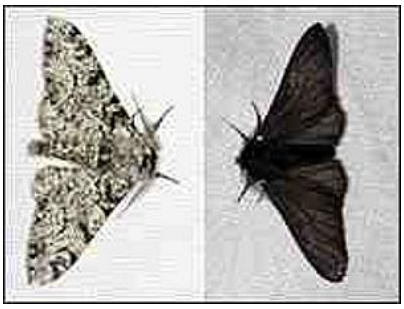

Figure 13[(126)]

The difficulty in identifying the finches is rooted in precisely what makes them so interesting and important - the evolutionary process. If we believe that two species share a common ancestor, then as one traces the species back in time, they should become closer and closer in form. At the branch point, the species should become ambiguous. That is precisely the point at which we find the Darwin's finches. They are in the process of separating, but they haven't completely done so at this point in time. The definition of the term "species" includes the presence of a fertility barrier between individuals of different species. In the case of Darwin's finches, those barriers are not completely formed yet, and there is a certain amount of documented hybridization between species. This also contributes to the ambiguity of the birds.[127]

The crucial issue here is the definition of 'species'. According to Dobzhansky, a major player in the establishment of Neo-Darwinism a 'species' is:

> ... that stage of evolutionary progress at which the once actually or potentially interbreeding array of forms becomes segregated into two or more separate arrays which are physiologically incapable of interbreeding.[128]

In other words, different species cannot interbreed; this applies in neither of the above cases. Although it is possible to make a claim that, in these cases, natural selection is a factor, in neither case does random mutation take place, neither is there the production of a new species. There is only a variation of features within a species caused by the variation of populations containing already existing genes.

We can now turn to some of the claims made by Asher and evaluate them in the light of QDEism. Asher begins the chapter 'Characters and Common Descent':

> If the Darwin-Wallace theory is true that over time one species of organism gives rise to others (an idea known as "common ancestry") via natural selection, then a full appreciation of species through time should reveal examples of animals that combine features from what we consider to be other, distinct organisms. A different way of phrasing this very concept is as follows: the features that we see defining certain animals (like the mother's milk of mammals, the baleen of blue whales, the shells of turtles, or the feathers and beaks of birds) appear on the Tree of Life independently of any specific animal that we would recognise today because of those features.[129]

The first point concerning this is that it is difficult to see how this *necessarily* follows from a rigorous application of the logic of RM+NS (random mutation + natural selection). For example, when animals are supposed to diverge from a common ancestor then it is clear why descendents could have features in common with the ancestor, although they could also lose them. However, there is no reason to suppose that descendents would produce other features not shared with the ancestor but are features of other animals not in the lineage.

The outstanding example of such a 'convergence' is that of the camera-eye which is common to both vertebrates and advanced cephalopods such as the squid and octopus. The explanation for this convergence within the QDEist perspective is that all potentialities exist within the quantum organizational realm and the fine-tuning of a species sensory apparatus, appropriate to its environment and mode of life, occurs at the quantum level of potentiality. The details are quantumly worked out, so to speak, before the species is manifested and at this level all possible types of sensory apparatus are potential for the proto-animal and those selected will be interdependently appropriate to other features of the animal. The QDEist account is naturally modular because it suggests that animals are quantumly designed and constructed from toolkit genes and toolkit body-forms, limbs, sensory organs and so on. The explanation offered by MAD, however, is not so naturally modular. The MAD account has to assume that RM+NS will, when confronted with similar environments, come up with similar solutions. But, there is no *internal* facet of the MAD theory which guarantees this behaviour. The MAD advocate simply looks at what does happen in nature and then asserts that, of course, this is what one would expect. But this is not true, there is nothing in the MAD theory which would lead one to expect it

or not expect it! The QDEist theory, on the other hand, predicts this behaviour. Asher, however, mistakenly thinks that MAD predicts this behaviour:

> …the common ancestry required by natural selection [we must assume here that Asher means RM+NS as he is arguing for Darwinism] predicts that such animals (e.g. feathered non-bird) possessed characters (e.g. teeth) that we associate with other groups. Such animals may be dubbed "intermediates" in the sense that they mix features that we see as exclusive to animals that seem today to be well defined.[130]

But, as the above analysis indicates, this is not true. The notion of this kind of predictive power of MAD is simply an ad-hoc and post-hoc claim without foundation. It is a claim, however, which seems plausible, when not examined too rigorously, and because of this is often not challenged.

Asher refers to the cladogram, or 'evolutionary tree', shown in figure 14, again with the implication that it is exactly what we would expect if MAD were true. However, it is also exactly what one expect if QDEism were true. A huge difference, however, is that according to MAD there is a direct line of fully materialised descent which spans:

Bony fish → lobe-finned-fish → tetrapods → amniotes → mammals → therians → primates …

This sequence of descent took place, according to MAD, in a very gradual material fashion driven by RM+MD. However, the kind of random mutations required to prepare a lobe-finned-fish (figure 15), for example, with a primitive air breathing system at the same time as developing legs from fins is beyond counter intuitive, it beggars belief. In the presence of a more coherent account, which is that there is an internal intelligence operating through the quantum level structuring both animal life and the environment for increasingly complex forms of life, the MAD account is desperately implausible. It is important to be aware, however, that the QDEist account does not question the veracity of the hierarchical structure of the interconnections on the 'tree of life', it questions the MAD interpretation of its significance. Furthermore, if a great deal of the processing for evolutionary advance takes place in the quantum implicate order, for instance, then Stephen Jay Gould's notion of 'punctuated evolution' makes sense.

The MAD account of exactly how certain transitions take place is full of holes. Often in the past of the MAD theory proponents simply decided to concoct what turned out to be materialist fairy tales about what *might have occurred*. An excellent example of this is the 'dying pond hypothesis' of the transition from fish to tetrapod:

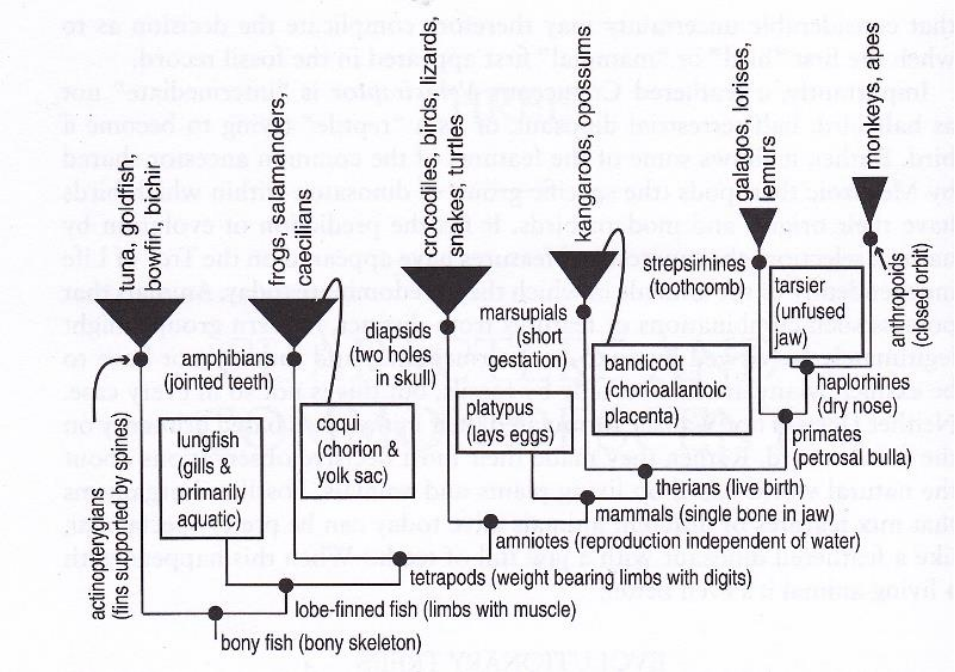


Figure 14[131]

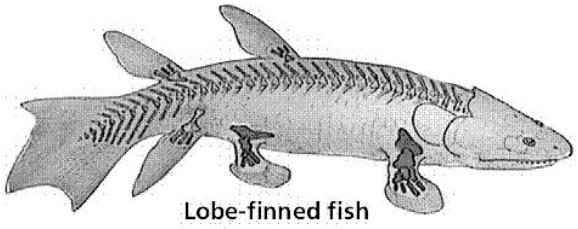


Figure 15[132]

Many evolutionary scenarios have been proposed to explain the origin of tetrapods. Most of them were developed to answer the question, 'Why did fish leave the water and come onto the land?' The early theories usually focused on the environmental setting and selection pressures behind the transition. Tetrapods were thought to have evolved during the Devonian, a period associated in many parts of the world with sediments stained red by iron oxide. Classic red beds, such as the Siluro-Devonian rocks of Europe (the Old Red Sandstone) and their North American equivalents (the Catskill and Escuminac formations), have often been interpreted as the product of hot, semi-desert environments with seasonal wetness. This led many to speculate that an increasingly arid climate was a major influence on the evolution of air-breathing vertebrates. A classic paper by Barrell set the scene for much future discussion. He argued that the first tetrapods arose 'under the compulsion of seasonal dryness'. Under such conditions, it

> was suggested, the air-bladder of certain fishes became progressively better adapted as an organ of respiration and the gills atrophied. The development of a new system of breathing allowed fishes to survive the drought conditions by moving between bodies of water. Those fishes with more limb-like appendages were better able to make the journey and this ultimately led to the evolution of limbs with digits. This became known as 'the drying pond hypothesis' and was popularized by the great vertebrate palaeontologist Alfred Sherwood Romer.[133]

However, various advances indicated that this story was nothing more than a fantasy: "The fatal blow to the 'drying pond' hypothesis has been the realization that the Devonian tetrapods were predominantly *aquatic* in habit,"[134] i.e. they had not yet emerged onto the land.

Asher gives a brief overview of the mosaic of features across animals that he calls 'living intermediates':

> Understanding the significance of evolutionary trees, we can move on to determine in more detail a few of the species that mix anatomical features seen in other living groups - species that you might therefore be tempted call living "intermediates". We mentioned a number of very different twosomes above: toad and crocodile, crocodile and kangaroo, kangaroo and galago, galago and monkey. While the members of each pair show major differences in terms of their anatomy, it is not difficult to find yet other living animals that mix anatomical features seen in each. These include the coqui frog, platypus, bandicoot and tarsier. The coqui frog lays eggs without a hard shell (like a toad), but does so on land with a big yolk (like a crocodile). The platypus lays eggs and has multiple bones in its shoulder-skeleton (like a crocodile), but provides milk for its young, shows a single bone in its jaw, and has three ear bones (like a kangaroo). The bandicoot nurses its young after a brief pregnancy in a pouch (like a kangaroo), but shows a placenta constructed from certain embryonic membranes…[135]

Asher then asserts that:

> …their existence is consistent with the mechanism of decent with modification as an evolutionary process.[136]

However, such an array of intermixing of features is also consistent with QDEism, an account that is also consistent with modern physics, which MAD is not. Asher continues his account of the various features of his chosen group of animals, and in all cases he finds the evidence "consistent with" the MAD account of evolution. In his concluding remarks, however, he feels sufficiently confident to assert that:

> …the reality is that the Darwinian process of natural selection is reasonable demonstrable as a major explanatory factor in all of the above cases.[137]

This, however, is not true, he has only shown what he thinks is "consistency", and even this has dubious areas of speculation and fantasy.

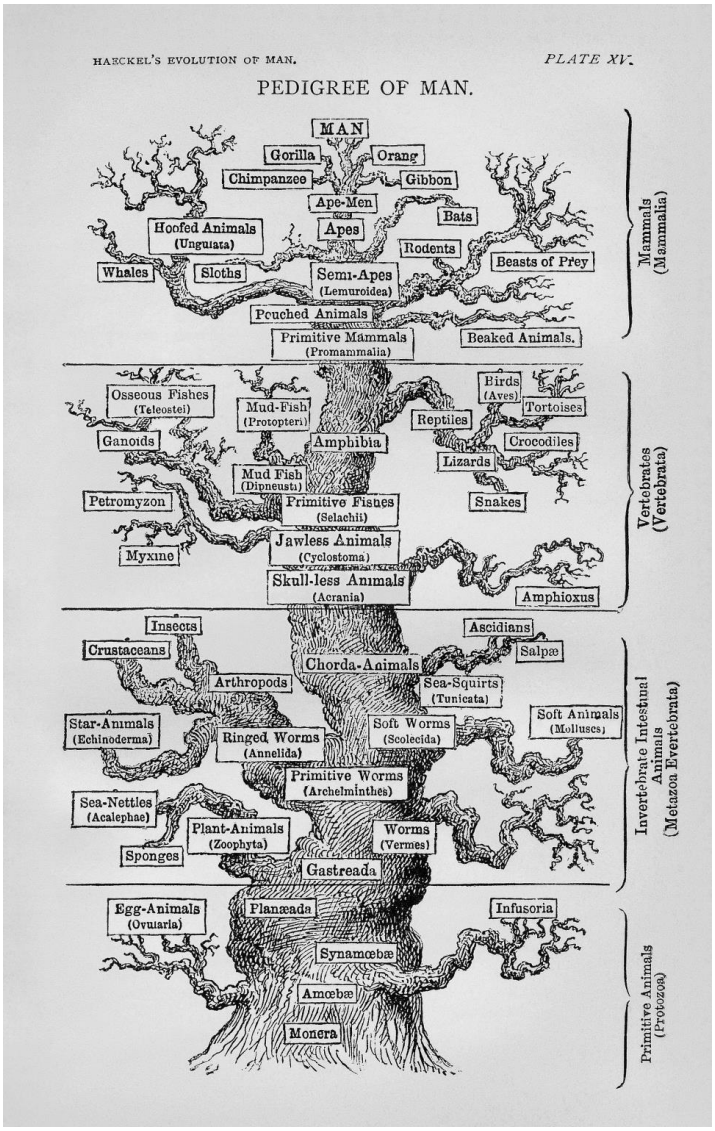


Figure 16[(138)]

Asher's next chapter concerns the fossil record, which he portrays with the diagram published in 1897 edition of Ernst Haeckel's *Evolution of Man* Volume II (figure 16). The materialist account of evolution, of course, is completely committed to the notion that all animals extant today are derived from a common fully-material ancestor which might have been a kind of primitive cell-like creature blobbing around on a primordial landscape of seething volcanic ponds periodically zapped by life-creating lighting. The problem for this viewpoint, however, is that the *evidence*, provided by the stunning fossil discoveries from Chengjiang in the Yunning Province of China as well as the Burgess Shale, clearly suggests that all the major phyla came into existence spontaneously in a very short time period:

> The fossils of the Maotianshan Shale and Burgess Shale Fauna of Field, British Columbia provide a lens to view the appearance on earth of all the major phyla in existence today, organisms that remain of enigmatic origin, as well as forms that did not

> persist. The Chengjiang Biota's diversity suggests a stable ecosystem occurring after the Cambrian Explosion when life's major phyla appeared in what seems like the blink of the eye compared to preceding four billion years of geological time on earth. Importantly, since Chengjiang includes all major animal groups found in the Burgess Shale, discoveries in this laggerstatt implies earlier diversication and/or diversification over a shorter time interval than can be inferred from the Burgess Shale.[139]

This appearance of complex fully formed animals, of different phyla, in a very short span of evolutionary time, about 5 million years, completely contradicts the Darwinian view of a fully materialised common ancestor. Furthermore, the fact that there are no fossils leading up to the fossils of the Maotianshan Shale or the Burgess Shale indicates that at least in this instance there are no 'transitional' fossils leading up to the sudden appearance of the animals in the fossil beds; none of this, however, is discussed by Asher.

In his review of Conway Morris' book *The Crucible of Creation: The Burgess Shale and the Rise of Animals*, the Harvard evolutionary biologist Andrew Berry writes that:

> Then, come the Lower Cambrian, at about 530 MYA, the explosion occurs: a quantum leap in the biological colonization of the planet. No longer are we looking at bizarre worm-like Ediacaran forms or that nondescript small shelly fauna; animals - in just the sense we think of them today - have arrived. Not only is a wide taxonomic range represented - priapulids, annelids, arthropods, even chordates - but there is considerable morphological diversity within some of these groups. And the world has suddenly gotten ecologically diverse, too; animals are no longer a bunch of inert filter feeders but have branched out into more ambitious trophic domains, including predation. Such is the complexity of this early Cambrian marine environment that I suspect that a future Martian paleontologist presented with early Cambrian fossils and with fossils from some contemporary marine community would be hard pushed to determine which of the two faunas is most "primitive"; the animal world has gone from simple, ancient to complex, modern in a single step.[140]

Berry, of course, is using the term 'quantum leap' metaphorically, the notion that he actually thought that quantum theory might have something to do with the Cambrian appearance of the remarkable diversity of animals is optimistic. Biologists seem to be by disposition materialists and very rarely link together all areas or science into a seamless whole. Often they proceed as if the discoveries of physics were irrelevant to their world, even though the quantum realm is the basis of any world! However, it remains the case that the only place wherein the morphological structures of the animal forms which exploded into material existence in such a short space of time, with no previous lineage, could have been prepared and organised is the 'epiontic' 'dream-stuff' of the quantum implicate field of intelligence-energy.

The biologists' apparent lack of interest in the implications of more fundamental dimensions of science, especially physics, leads to some remarkably mistaken dogmatic statements being made by them. For example Stephen Jay Gould, considered by many to be a giant in the field of evolutionary biology, in the introduction to his book *Wonderful Life*, wrote:

> Wind back the tape of life to the early days of the Burgess Shale; let it play again from an identical starting point, and the chance becomes vanishingly small that anything like human intelligence would grace the replay.[141]

However, when this book was written a great many significant physicists had become convinced that consciousness and intelligence is an intrinsic part of the process of reality. Biologists, however, are still mostly materialists, a fact that is very odd in an age in which quantum field theory has established the immaterial nature of the ultimate constituents of the process of reality. Because of this assumed materialism, consciousness is not considered to be of much significance beyond keeping a heap of meat in the survival race, or as mega-skeptic Michael Shermer put it: "a bunch of organisms running around trying to make a living and survive." [142] It takes a quantum leap of imagination to comprehend that the heap of meat is actually in the service of consciousness. Consciousness and intelligence is always the endpoint of the process of evolution, even if it does take a very long time.

Here we must return to the fact that certain fundamental aspects of nature have been established by physics, in particular that fact that all possibilities 'exist' as potentialities at the dawn of time, and also consciousness has a primary function in the way that these possibilities manifest. Goswami describes the implications of Hawking's quantum cosmology as follows:

> The physicist Stephen Hawking developed a quantum cosmology to avoid the singular beginning in time. There is no beginning; there is only possibility. The idea is that in the beginning, the cosmos must consist of quantum possibility. The universe must have begun as a superposition of many possible baby universes. But now we must ask, How does the superposition of possibilities become the actual universe in which we find ourselves? Furthermore, consider the paradox that comes with pondering a universe of possibilities that can collapse to an actual event, the actual universe. It takes quantum consciousness acting through a sentient observer to collapse quantum possibilities. It is hard - no, impossible - to imagine that conscious observers were present during the hot early days of the cosmic big bang. What then? How could the universe be here because of us, when we were not even there to greet it at the big bang? However, the universe could have been created in possibility in such a way that we would come into the picture in possibility and thereby bring the universe of possibility into manifestation. This mind-twisting idea is actually supported by several experiments, as we will see, but first we need to make one more stop in materialist territory.[143]

Here we see the quantum picture that allows that prior to the Cambrian era the Cambrian animals were developing "in possibility" within quantum implicate levels of the process of reality. This quantum development would then have been 'materialized' through something like what Roger Penrose and Stuart Hameroff have called an 'orchestrated objective-reduction' (Orch-OR). This is an internal act of consciousness that selects evolution in a particular direction; in essence this viewpoint is an earlier version of Mensky's EEC proposal. According to Hameroff:

> The place of consciousness in evolution is unknown, but the actual course of evolution itself may offer a clue. Fossil records indicate that animal species as we know them today including conscious humans all arose from a burst of evolutionary activity some 540 million years ago (the "Cambrian explosion"). It is suggested here that:

1. Occurrence of consciousness was likely to have accelerated the course of evolution.

2. Small worms, urchins and comparable creatures reached critical biological complexity for emergence of primitive consciousness at the early Cambrian period 540 million years ago.
3. Cooperative dynamics of microtubules, cilia, centrioles and axonemes were the critical biological factors for consciousness.
4. Cytoskeletal complexity available in early Cambrian animals closely matches criteria for the Penrose-Hameroff Orch OR model of consciousness.
5. Orch OR caused the Cambrian explosion.

Such quantum perspectives that include consciousness as an innate motivating force within evolution (figure 17) are, it seems, entirely ignored by biologists, who prefer to remain in an anachronistic classical-materialist perspective.[144]

In his book *A Brief History of Time* Hawking himself said of his no boundary proposal that:

> …there would be no singularities at which the laws of science broke down and no edge of space-time at which one would have to appeal to God or some new law to set the boundary conditions for space-time . . . The universe would be completely self-contained and not affected by anything outside itself. It would neither be created nor destroyed. It would just BE . . . What place, then, for a creator?[145]

It is true that no external 'creator' is required in this scenario. However, Hawking's proposal does require all possibilities to be latent within the ground of reality, including all possible forms of life, and also the existence of an internal cognitive 'force' or consciousness. In such a universe the unfoldment of higher forms of consciousness is entirely likely, not, as Gould speculates, "vanishingly small."

It is ironic to contrast Hawking's rejection of God, which is based on an intelligence which must be internal to the process of reality, including evolution, with Asher's acceptance of some kind of sporting God that is founded on a rejection of an internal intelligence within the process of evolution! In this context, it is worth referring to some remarks made by arch-skeptic Michael Shermer during his summing up at a debate on intelligent design verses MAD Darwinian evolution. Shermer said that if someone was a believer why don't they just accept that God employed the Darwinian evolutionary mechanism. The problem with this view, however, is that it is incoherent, something that neither Shermer nor Asher seem to comprehend. Presumably, God must be conceived of as immaterial and spiritual, and the notion of such an entity creating a fully paid up material reality is indeed incomprehensible precisely because it is incoherent. As rational beings, it really is incumbent upon us to have a rational religion or none. The point is that, as science now stands, we do not need to resort to irrational accounts of the religious dimension of the universe; Asher, then, in arguing for an irrational God in a fully material universe piles irrationality upon irrationality!

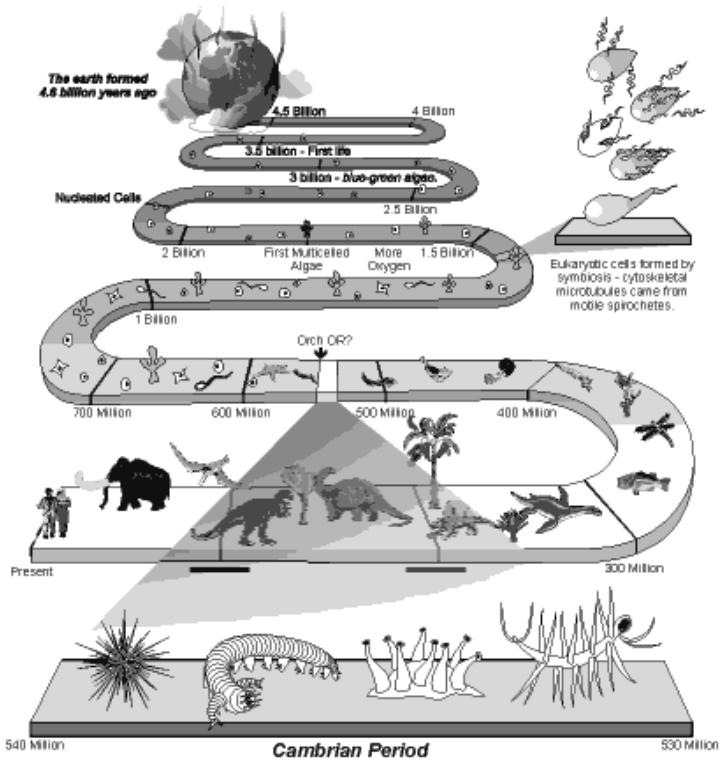


Figure 17(146)

Asher endorses Gould's notion of 'non-overlapping magisterial' ('NOMA'), which is nothing except personal opinion over-extended to unsupported dogmatic principle. On this view, science and religion have no connection. In this arena one would have to say that, although Richard Dawkins is seldom correct in philosophical and metaphysical matters, his rejection of NOMA is correct:

> Martin Rees, the distinguished Cambridge astronomer … begins his book *Our Cosmic Habitat* by posing two candidate ultimate questions and giving a NOMA-friendly answer. 'The pre-eminent mystery is why anything exists at all. What breathes life into the equations, and actualized them in a real cosmos? Such questions lie beyond science, however: they are the province of philosophers and theologians.' I would prefer to say that if indeed they lie beyond science, they most certainly lie beyond the province of theologians as well (I doubt that philosophers would thank Martin Rees for lumping theologians in with them). … What expertise can theologians bring to deep cosmological questions that scientists cannot? In another book, I recounted the words of an Oxford astronomer who, when I asked him one of those same deep questions, said: Ah, now we move beyond the realm of science. This is where I have to hand over to our good friend the chaplain.' I was not quick-witted enough to utter the response that I later wrote 'But why the chaplain? Why not the gardener or the chef?' Why are scientists so cravenly

> respectful towards the ambitions of theologians, over questions that theologians are certainly no more qualified to answer than scientists themselves.[147]

Strangely, however, a very good pithy summary of the current 'theological' situation within science concerning ultimate issues comes from a philosopher theologian, Keith Ward, who has argued in his essay 'God as the Ultimate Informational Principle' for a view of God as:

> …the supreme informational principle of the universe, without which the combination of the lawfulness of the world and its inherent value would be inexplicable. Such informational code for construction of an actual universe logically precedes material configurations by containing the set of all mathematically possible states, plus a selective principle of evaluation that gives preference to the actual world we inhabit.[148]

This, however, is not the notion of God that most theists and theologians have in mind. It is certainly not the God that Asher has in mind. But, then, Asher conceives of his God as a glorified Ice Hockey Team. How appropriate for a MAD materialist! If you read Ward's description carefully it is actually a minimalist QDEism – a set of quantum possibility states with an internal unfolding mechanism. Perhaps Dawkins underrates theologians!

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[1] Asher (2012), xiii
[2] Asher (2012), 4
[3] Stapp, Henry (1995) – Why Classical Mechanics Cannot Naturally Accommodate Consciousness But Quantum Mechanics Can.
[4] Asher (2012), xv
[5] Asher (2012), 24
[6] Asher (2012), xviii – Coyne, J. 2009 "Seeing and believing: the never ending attempt to reconcile science and religion, and why it is doomed to fail." *The New Republic* Feb 4
[7] Asher (2012), xviii
[8] Asher (2012), xxi
[9] Asher (2012), xxii
[10] Turner, D. (2012), Notre Dame Philosophical Reviews - http://ndpr.nd.edu/news/32417-evolution-and-belief-confessions-of-a-religious-paleontologist/
[11] Ibid.
[12] Stapp, H. P. (2010). 'Minds and Values in the Quantum Universe' in *Information and the Nature of Reality*, Davies, Paul & Gregersen, Niels Henrik (eds), Cambridge University Press, p117.
[13] Asher (2012), 125
[14] Asher (2012), 5
[15] Asher (2012), 6
[16] Asher (2012), 12
[17] Asher (2012), xxiii
[18] Asher (2012), 15
[19] http://blogs.discovermagazine.com/cosmicvariance/2010/11/01/is-dark-matter-supernatural/#.UNydVtSrVlc
[20] Randall, L. (2006) 158
[21] http://www.uncommondescent.com/intelligent-design/detecting-the-supernatural-why-science-doesnt-presuppose-methodological-naturalism-after-all/
[22] Baggott, J. (2012) 2-3

[23] Richard Lewontin, "The Demon-Haunted World," *The New York Review of Books*, January 9, 1997, 28.
[24] Captain Fitzroy was interested in advancing science and was especially drawn to geology. He had a surprisingly good library of over 400 books onboard the Beagle that he made available to Darwin. It was during the beginning of the voyage that Darwin read the first volumes of Charles Lyell's "Principles of Geology" and became convinced by his proof that uniformitarianism provided the correct understanding of the earth's geological history.
[25] Asher (2012), 29
[26] Asher (2012), 23
[27] Asher (2012), 17
[28] Asher (2012), 228
[29] Asher (2012), 32
[30] Meyer S. C. – A Scientific History – And Philosophical Defence – of the Theory of Intelligent Design, 28
[31] http://www.ucmp.berkeley.edu/history/paley.html
[32] Meyer S. C. – A Scientific History – And Philosophical Defence – of the Theory of Intelligent Design 2
[33] http://www.tothesource.org/10_30_2007/10_30_2007.htm
[34] http://www.uncommondescent.com/intelligent-design/antony-flew-reviews-dawkins-the-god-delusion/
[35] Asher (2012), 32
[36] Ibid
[37] Asher (2012), 33
[38] Fodor, J. & Piattelli-Palmarini, M. (2011), 23
[39] Dawkins (2006), 45
[40] Dawkins (2006), xv
[41] Dawkins (2006), 49
[42] Fodor, J. & Piattelli-Palmarini, M. (2011)
[43] Dawkins (2006), 43
[44] Asher (2012), 13
[45] Sober (2008), 148
[46] Asher (2012), 13
[47] Sober (2008), 148
[48] Asher (2012), 226
[49] http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2745620/
[50] Asher (2012), 226
[51] With perhaps exceptions like William James and F. W. H. Myers both of whom had inklings in this direction
[52] Asher (2012), 25-26
[53] Asher (2012), 230
[54] http://www.icr.org/article/5932/ - the "thoughts of the Creator of the Universe" quote is from Agassiz, L. 1962. *Essay on Classification*. Cambridge: Belknap Press of Harvard University Press, 205.
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