**Article**

# Dawkins' Darwinism Part I: Evolution - The Greatest Illusion on Earth and the New Quantum Platonic Paradigm

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## Abstract

Many of the claims of Materialist Ultra-Darwinist (MUD) worldview are desperately implausible, having about the same credibility as fairy stories. For example, if we accept Dawkins claim that the development of new adaptations is very gradual, the ancestor with the pouch mutation would still at this initial point be giving birth via egg birth. However we are supposed to believe, according to the DUD-MUD account, that there is some subtle slight alteration in the direction of pouch birth. Now in order for this slight new mutational 'something', indicating the possibility of the future development of pouch birth, to actually get 'favoured' it must be advantageous in some way *at that point in time*. But how could this possibly be true? What kind of environment could make the *potentiality of pouch birth* signaled by a non-noticeable mutation, significantly more advantageous than an egg one? The egg birth process was presumably working perfectly well otherwise these pouch-mutant mammals would have died out before they became fully pouch endowed. What kind of mutated mind could possibly believe such a desperately implausible scenario? The only way this scenario could possibly make sense is if there is some kind of quantum evolutionary 'look-ahead' mechanism as suggested by Mensky.

The only possible explanation which accords with current scientific knowledge is that there is a deep level of quantum interconnection between an environment and the 'design' of the species found in that environment. And such an interconnection has been shown to exist; it is called 'quantum entanglement'. This can happen precisely because the 'themes' for all the possibilities of life, including organisms and environments, are potential within the Platonic quantum fields of potentiality, and when they are expressed and manifested they do so in a manner which is, in the main, coherent and consistent, the inhabitants fitting, because of the patterning of the internal potentialities, the manifested environments. When the evidence is examined with precision it becomes clear that the MUD worldview is incoherent and a new quantum Platonic paradigm must supplant it.

**Keywords:** Darwinism, Dawkins, Michael Mensky, Amit Goswami, Intelligent Design, evolution, Evo-Devo, random mutation, natural selection, illusion, quantum Platonism, quantum interconnection, environment, design.

The more examples of the writings of materialist 'Ultra-Darwinism' (the 'new Darwinian synthesis' is also called Neo-Darwinism), which emphasizes the role of 'random mutation' (RM) and 'natural selection' (NS) in its theory of evolution, I read the more astonished I am by the childish simple-mindedness of its practitioners. They are able to pen the most ridiculous nonsense and yet at the same time remain convinced that they are engaged in expounding serious 'science'. One of the core practitioners of this pseudo-science is, of

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course Richard Dawkins so we can dub this form of extreme materialist account of the evolutionary process Dawkinsian Ultra-Darwinism, for which we may employ the appropriate acronym 'DUD'.

A fine example an absurd DUD account is provided by Dawkins' account of how, in the dim mists of time, fish were supposedly forced by environmental circumstances to drag themselves with their fins, no doubt gasping for air with their gills if such were possible, from one pond, which was drying out, to another with deeper waters. Here is the relevant passage from Dawkins' book *The Greatest Show on Earth*:

> My undergraduate imagination at Oxford was fired by the lectures of the prodigiously knowledgeable Harold Pusey who, despite his dry and prolonged delivery, had a gift for seeing beyond dry bones to the flesh-and-blood animals that had to make a living in some departed world. His evocation of what drove some lobe-finned fish to develop lungs and legs, which was derived from Romer himself, made memorable sense to my student ears, and it still makes sense to me even though it is less fashionable among modern palaeontologists than it was in Romer's time. Romer, and Pusey, envisaged annual droughts during which lakes and ponds and streams dried up, only to flood again the following year. Fishes that made their living in water could benefit from a temporary ability to survive on land, while they dragged themselves from a shallow lake or pond that was threatened with imminent desiccation to a deeper one in which they could survive until the next wet season. On this view, our ancestors didn't so much emerge on to the dry land as use the dry land as a temporary bridge to escape back into the water. Many modern animals do the same. Rather unfortunately, Romer introduced his theory with a preamble whose purpose was to show that the Devonian era was a time of drought. Consequently, when more recent evidence undermined this assumption, it seemed to undermine the whole Romer theory. He'd have done better to omit the preamble, which was, in any case, overkill. As I argued in The *Ancestor's Tale*, the theory still works, even if the Devonian was less drought-ridden than Romer originally thought.[1]

The Devonian period, named after Devon, England, where rocks from this period were first studied, is a geologic period of the Paleozoic Era, which literally translates as the "time of ancient life" and spans the time period between 544 and 245 million years ago. The Devonian period spans from the end of the Silurian Period, about 416 million years ago, to about 360 million years ago. As Dawkins points out, at the end of the Devonian period there begins "one of the most famous gaps in the fossil record" which is given the name 'Romer's Gap' (after the American palaeontologist Alfred Sherwood Romer) which stretches from the end of the Devonian period to the beginning of the Carboniferous period about 340 million years ago. After this gap there appears "unequivocal amphibians crawling through the swamps" whereas prior to Romer's Gap there is only evidence of lobe-finned fish (figure 1). At the start of the twentieth century fossils of Carboniferous tetrapod (four legged) amphibians (figure 2) were found in strata corresponding to a time period after Romer's Gap.

The story concocted by Romer was supposed to give an 'explanation' of how the transition from fully paid up aquatic fish to land-roaming amphibians came about. As we shall see, like many DUD 'explanations' of this type, Romer's offering relies upon the reader or listener imputing a kind of subtle intentionality where there should be none, although this would be stridently resisted by committed DUD's for whom the story involves nothing beyond mindless and random mutations which produce *flaws* in the mutated offspring. As Dawkins states in the preface to his book *River Out of Eden*:

> … when the ricochets of atomic billiards chance to put together an object that has a certain, seemingly innocent property, something momentous happens in the universe. That property is an ability to self-replicate; that is the object is able to use the surrounding materials to make exact copies of itself, including replicas of such minor flaws in copying as may occasionally arise.[2]

In the DUD worldview, of course, it is asserted that such 'flaws' in the copying of genetic information randomly and adventitiously turn out to be remarkably advantageous in fitting into an environment.

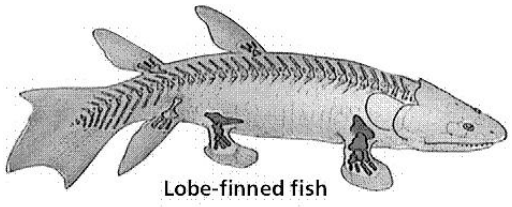


Figure 1(3)

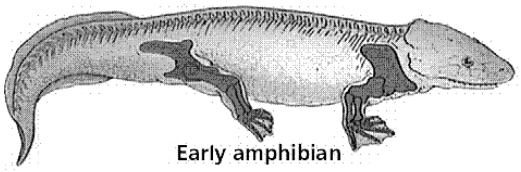


Figure 2(4)

In order to follow the following discussion it is necessary to be quite clear on what the DUD view of the central evolutionary mechanism of natural selection actually is. DUD natural selection (NS) is a kind of filter theory wherein 'good' genes get passed on and 'bad' genes fall by the wayside:

> Genes do not improve in the using, they are just passed on, unchanged except for very rare random errors. It is not success that makes good genes. It is good genes that make success, and nothing an individual does during its lifetime has any effect whatever upon its genes. Those individuals born with good genes are the most likely to grow up to become successful ancestors; therefore good genes are more likely than bad to get passed on to the future. Each generation is a filter, a sieve: good genes tend to fall through the sieve into the next generation; bad genes tend to end up in bodies that die young or without reproducing. Bad genes may pass through the sieve for a generation or two, perhaps because they have the luck to share a body with good genes. But you need more than luck to navigate successfully through a thousand sieves in succession, one sieve under the other. After a thousand successive generations, the genes that have made it through are likely to be the good ones.[5]

When "very rare random errors" occur most must lead to 'bad' genes. In fact, no one has ever seen a *random* mutation leading to 'good' genes, random mutations we do know about, such as those caused by radioactivity, inevitably lead to dreadful results. However according to the DUD mythology 'very very very rare random good errors' sometimes occur which produce adaptations of organisms which are more suited to their environments. It is these 'good' genes that are passed on to future generations, having been filtered by the environment. According

to the DUD worldview as these genes increasingly separate into difference species, they eventually give rise to the "long goodbye":

> From a gene's point of view, speciation, the origin of new species, is "the long goodbye." After a brief period of partial separation, the two rivers go their separate ways forever, or until one or the other dries extinct into the sand. Secure within the banks of either river, the water is mixed and remixed by sexual recombination. But water never leaps its banks to contaminate the other river. After a species has divided, the two sets of genes are no longer companions. They no longer meet in the same bodies and they are no longer required to get on well together. There is no longer any intercourse between them-and intercourse here means, literally, sexual intercourse between their temporary vehicles, their bodies.[6]

Lineages that are separating eventually, according to the DUD account, become entirely different species that cannot interbreed. This notion of what a 'species' consists of was put in place by the Ernst Mayr, held to be one of the twentieth century's leading evolutionary biologists, despite the fact that he made dogmatic claims, based on fantasy and no evidence, which turned out to be entirely wrong, just as Dawkins has done in the past (and continues to do). Dawkins assertion concerning the "long goodbye," which asserts that the genes of different species become increasingly dissimilar, is derived from one of Mayr's dogmatic mistaken fantasies, a fantasy that the Evo-Devo (Evolutionary Development) revolution has shown to be entirely incorrect. The Evo-Devo perspective has discovered a remarkable identity of gene types underlying all organisms, Dawkins' notion of "long goodbye," then, is out of date and mistaken.

The American philosopher and cognitive scientist Jerry Fodor gives the following summary of the NS (natural selection) 'adaptationist' perspective:

> Darwin's theory of evolution has two parts. One is its familiar historical account of our phylogeny; the other is the theory of natural selection, which purports to characterise the mechanism not just of the formation of species, but of all evolutionary changes in the innate properties of organisms. According to selection theory, a creature's 'phenotype' – the inventory of its heritable traits … is an adaptation to the demands of its ecological situation. Adaptation is a name for the process by which environmental variables select among the creatures in a population the ones whose heritable properties are most fit for survival and reproduction. So environmental selection for fitness is (perhaps plus or minus a bit) the process par excellence that prunes the evolutionary tree.[7]

In his book *What Darwin Got Wrong* Fodor (with Massimo Piattelli-Palmarini ) refers to these two components as "the genealogy of the species (GS), which is the recognition of the historical development of species; and 'natural selection' (NS) which is the mechanism that DUD asserts to be fundamental. He gives the diagram shown in figure 3 with the caption:

> 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.[8]

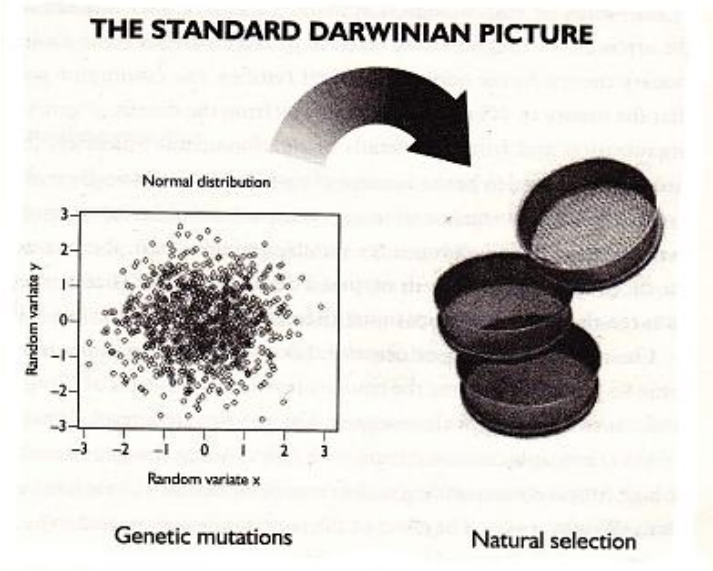


Figure 3[9]

This view is entirely in accord with that of Dawkins, who, as we have seen, has also used the 'sieving' metaphor.

A further important ingredient in the RM+NS DUD worldview is the claim that the process takes place gradually, one mutation at a time endowing a tiny advantage over long time periods and, furthermore, these tiny gradual transitions occur at the material level of reality. This means that as fish took to the land and then began their slow, excruciating evolutionary transformation, through various forms on the way to other species, each tiny mutation produced an actual animal. A fish's fins, then, must have extended and transformed into legs, millimeter by millimeter, each transformation giving rise to a new animal, an animal with a difference from its predecessor that is hardly noticeable. Here is what Dawkins writes about this in *The Greatest Show on Earth*:

> … every animal is linked to every other animal, say rabbit to leopard, by a chain of intermediates, each so similar to the next that every link could in principle made with its neighbours in the chain and produce fertile offspring. … On the evolutionary view, there really is a series of intermediate animals connecting a rabbit to a leopard, every one of whom lived and breathed, every one of whom would have been placed in exactly the same species as its immediate neighbours on either side in the long, sliding continuum. Indeed, every one of the series was the child of its neighbour on one side and the parent of its neighbour on the other. Yet the whole series constitutes a continuous bridge from rabbit to leopard … There are similar bridges from rabbit to wombat, from leopard to lobster, from every animal or plant to every other. … Take a rabbit, any female rabbit (arbitrarily stick to females, for convenience: it makes no difference to the argument). Place her mother next to her. Now place the grandmother next to the mother and so on back in time, back, back, back through the megayears, a seemingly endless line of female rabbits, each one sandwiched between her daughter and her mother. We walk along the line of rabbits, backwards in time, examining them carefully like an inspecting general. As we pace the line, we'll eventually notice that the ancient rabbits we are passing are just a little bit different from the modern rabbits we are used to. But the rate of change will be so slow that we shan't notice the trend from generation to generation, just as we can't see the motion of the hour hand

> on our watches – and just as we can't see a child growing, we can only see later that she has become a teenager, and later still an adult.[10]

We see, then, that the DUD account of evolution asserts that it is a fully materialized phenomenon, each tiny gene mutation giving rise to a tiny difference in a subsequent 'living, breathing' animal that "swam in the sea, walked or slithered on land, or flew in the air." This means, of course, that one would expect a plethora of evidence of many 'intermediates' or 'transitional' forms. The supposed transition from a lobe-finned fish to early amphibians is supposed to be an example of this, although there no evidence of other animals with fin-leg protrusions intermediate between the two.

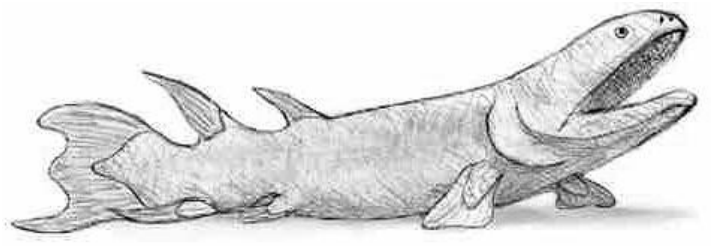

Figure 4[(11)]

At the time Romer was pondering his fishy story, transitional forms from fish to tetrapod were absent from the fossil record, but there were supposedly clues elsewhere. One feature of Late Devonian geology is the prevalence of red sediments in Europe and North America and in 1916 Joseph Barrell suggested that these oxidized sediments were evidence of a harsh landscape subject to severe droughts. He also argued that this severe climate was a major driving force in the evolution of air-breathing vertebrates, including tetrapods. This led to further elaborations on the idea that Devonian droughts were the driving force for the evolution of tetrapods that culminated in 1950s with the "Drying Pond" scenario proposed by Romer. In this scenario, tetrapods evolved from lobe-finned fishes driven onto the land by drought. As one pool or stream dried out, the fishes ventured onto the parched earth in search of other bodies of water. Over time, natural selection was supposed to 'favour' those fishes who had randomly acquired more limb-like fins, and of course the beginnings of a lung or lungs. In such a fashion tetrapods are supposed to have literally evolved from fish out of water (figure 4).

If we leave aside the issue of the fact that the drought scenario is no longer accepted, there is one huge problem with this explanation, a problem that, in different guises, can be regularly found in DUD explanations and accounts, but is never addressed by DUD practitioners. Even if we accept, for sake of argument, the claim that a fish randomly acquired fins which also had a bone structure anticipatory of tetrapod limbs, they would also *at the same time* have to had *randomly* developed breathing apparatus also capable of dealing with breathing both in and out of water. Somewhat like the lungfish, although the lungfish curls up in mud to use its lung, it does not scamper about on the land using its lung. In this case, we would need two random mutations, occurring at the same time, both of which radically altered the morphology of the fish. This in itself seems implausible, and we should ask ourselves whether it is actually likely that one tiny random mutation could modify gills, or add the functionality to supplement gills, so that a fish suddenly can function in water and also take the odd gulp of air whilst the fish is dragging itself around on land with its fins.

How does a fish that is quite content using its fully efficient gills for breathing in water start the operation of acquiring, through the operation of RM+NS, breathing apparatus to suit it for land? According to the DUD account, a random mutation occurs and subsequently confers an advantage within a particular environment. In this way, the lucky creature endowed with this lucky flaw gets favoured. But what possible advantage could a random mutation which confers upon a fully paid up aquatic fish the possibility of breathing on land (if we can accept such an absurdity) bestow upon a fish which is never going to go near the land at the time that it acquired the mutational transformation. Its new capacity would confer no advantage so would not get selected by NS, unless, that is evolution 'knew' that fish would need to take to the land at some point, but any such look ahead mechanism is denied in the DUD worldview.

However, this is the kind of ridiculous 'explanations' we have to agree to if we accept the kind of picture suggested by Romer. And of course, the same can be said of Dawkins who modifies Romer's absurd notion to try and rescue it:

> Unfortunately, Romer quoted the prevailing belief of his day that the Devonian was a time of drought, a belief that has more recently been called into question. But I don't think Romer needed his Devonian desiccated. Even at times of no drought, there will always be some ponds shallow enough to be in danger of becoming too shallow for some particular kind of fish. If ponds three feet deep would have been at risk under severe drought conditions, mild drought conditions will render ponds one foot deep at risk. It is sufficient for the Romer hypothesis that there some ponds which dry up, and therefore some fish could save their lives by migrating. Even if the world of the late Devonian was positively waterlogged, one could say this simply increases the number of ponds available to dry up, thereby increasing opportunities for saving the life of walking fish and the Romer theory… Nevertheless it is my duty to record that the theory is now unfashionable. … To be sure, there are plenty of other good reasons for a fish to emerge, temporarily or permanently, onto land. Streams and ponds can become unusable for reasons other than drying up. They can become choked with weeds, in which case, again, a fish that can migrate over land to deeper water might benefit. If, as has been suggested *contra* Romer, we are talking Devonian swamps rather than Devonian droughts, swamps provide plenty of opportunities for a fish to benefit by walking, or slithering or flip-flopping or otherwise travelling through the marshy vegetation, in search of deep water or, indeed, food. This still retains the essential Romer idea that our ancestors left the water, not at first to colonise land, but to return to water.[12]

This reworking has retained Romer's vision that the fish were not making a dash for land, so to speak, but rather, "walking, or slithering or flip-flopping or otherwise" from pond to pond. Not only this, it accomplishes this by entirely inverting Romer's speculation. Rather than speculating that the fish were desperately slithering about on what would have been a very hot land, as their ponds were evaporating, looking for deeper ponds, Dawkins, in order to fix the evidence that that undermines *that speculation*, adopts the *contrary speculation* that "we are talking Devonian swamps rather than Devonian drought."

Welcome to the wonderful fantasy world of evolutionary theory, or should we not rather use the term 'evolutionary speculation'. Fantasy and speculation, not science, it is. How else would it be possible for exactly contrary explanations be made to fit the same facts of the fossil record? Look at some of terminology used by Dawkins: a fish that can migrate over land to deeper water *might* benefit", "*If*, as has been *suggested* contra Romer, we are talking…" We shall find that this kind of speculative language is employed liberally in what

is claimed to be a watertight 'science'. Dawkins' attempted reworking of Romer, like much DUD theory, is nothing more than speculative fantasy in the cause of shoring up the leaks in a ridiculous worldview. At the outset of *The Blind Watchmaker* Dawkins proclaims:

> …the Darwinian worldview … is the only known theory that *could*, in principle, solve the mystery of our existence.[13]

As we shall see, such a claim is utterly deluded.

Whether fleeing dried up ponds or seeking a more spacious residence in Devonian swamps, there has to be a first batch of fish that make the evolutionary leap, and that, through the magic of natural selection, have 'acquired' both fins which operate, however clumsily, on land and also suitable breathing apparatus at least to get them to the nearest deeper pond. But, as has been previously pointed out, there is absolutely no possibility of NS 'selecting' a randomly mutated produced lung whilst a fish is in water, and they are hardly likely to take an anticipatory gill-full of oxygen and hold their gill-breath. The whole notion is ridiculous, absurd and beyond belief. And the fact that putatively intelligent people ever took, and still take, such notions seriously is also beyond belief.

The way in which the DUD worldview promotes its silliness, however, is simply to gloss over its incoherencies and absurdities. Thus Dawkins tells us that:

> On this view, our ancestors didn't so much emerge on to the dry land as use the dry land as a temporary bridge to escape back into the water. Many modern animals do the same.[14]

This is the DUD tactic of suggesting that the transition is not that remarkable. The pond with deeper water was probably not too far away. Modern animals manage it so there is no reason so their ancestors not to have also done so. This argument is just silly. The fact that some modern animals have the capacity to achieve this feat has no bearing whatsoever on accounting for how fish that have never ventured on to land suddenly develop the ability to do so. In fact from the point of view of the DUD account the issue is *how* these modern animals came to have the ability. So to claim that the fact that they do have the ability as evidence that arriving at the ability is simple, is absurdly circular and misleading. But this kind of invalid circular reasoning is often found in DUD modes of unreasoning. No one in the DUD camp seems to notice that for the DUD account to work the unfortunate first fish to encounter the drying up scenario must have been randomly equipped by RM+NS for the encounter with land and air, although there is no possible scenario that can account for how a fish acquires the equipment for breathing air whilst its environment is water. The DUD worldview is replete with such nonsense.

At this point, the notion that lungfish might have something to add to the debate might be raised. However, although Dawkins tells us that "we land animals are aberrant lungfish", in fact:

> …we are not descended from lungfish or from coelacanths. We share an ancestor with lungfish, which looked more like a lungfish than it looked like us.[15]

Coelacanths are members of an order of fish that includes the oldest known living lineage of lobe-finned fish and tetrapods. The fact that we did not descend from lungfish would seem to suggest that the fish that, according to the DUD account, we did descend from must have scrambled onto land lungless, which would have been a heroic feat in order to grow feet!

Lungfish (*Dipnoi*–figure 5) are a group of lobe-finned fish (*Sarcopterygii* or sometimes *Crossopterygii*). Lungfish have a "lung" which is a modified swim bladder, which in most fish is used for buoyancy in swimming, but in the lungfish also absorbs oxygen and removes wastes. Modern lungfish in Africa and South America are able to survive when their pools dry up by burrowing into the mud and sealing themselves within a mucous-lined burrow. During this time, they breathe air through their swim bladder instead of through their gills, and dramatically reduce their metabolic rate. In this condition Lungfish will drown if they are kept underwater and not allowed to breathe air! This fact should, one might have thought, alerted a moderately intelligent person to the implausibility of the development of the lung whilst the supposed ancestor of the lungfish was underwater primarily relying on its gills. As we shall see, however, such basic logical capacities seem strangely absent from the DUD worldview.

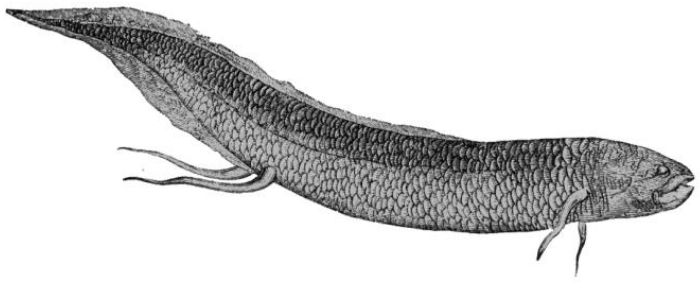

Figure 5[(16)]

The existence of lungfish is made much of by some DUDs. In the introduction to *The Ancestor's Tale* Dawkins primes his readers by claiming that:

> …the emergence of our remote fish ancestors from water to land was a momentous step an evolutionary rite of passage. It was undertaken by lobe-finned fish a bit like lungfish.[17]

The implication, of course, is that the lobe-fined fish somehow developed a lung, or proto-lung, whilst swimming around in the sea and, then in ponds, using its gills to oxygenate itself. However, as indicated above such a notion is entirely implausible simply because there is absolutely no way that NS would 'select' a proto-lung whilst a fish is entirely in water using its gills.

Most lungfish, like the South American lungfish, have gills that are poorly developed. They breathe air mostly with their swim bladders. If one of these lungfish couldn't reach the water's surface, it would drown. The Australian lungfish, however, breathes mostly with its gills; it gulps air at the water's surface only when the water doesn't have much oxygen in it. This indicates that not only would the evolving South American lungfish need the lung to be developing although not being used whilst entirely within water, at the same time the gills would have to be un-developing, even though there is absolutely no reason for them to do so according to the DUD worldview. The only DUD explanation that a DUD perspective can offer is that at some point when oxygen in the water was depleted NS produced a proto-lung. At the same time it also gave the proto-lungfish instinctual knowledge that this new appendage could be used to gulp air. Presumably the DUD perspective conceives of this process leading to the un-development of the gills, although there is no reason for this to occur, The Australian lungfish is quite happy using its gills as long as there is enough oxygen

in the water. Why would NS wither away the gills so that the lungfish is in danger of drowning? The DUD worldview does not offer precise accounts of many of its claims but only speculative 'just-so' stories involving lots of speculative "imagination:

> Imagine a set of mutations of increasing magnitude. At one extreme a mutation of zero magnitude is by definition exactly as good as the parent's copy of the gene which … must have been as least as good to survive childhood and reproduce. Now imagine a random mutation of small magnitude: the leg, say, gets one millimeter longer or one millimeter shorter. Assuming that the parental gene is not perfect, a mutation that is infinitesimally different from the parental version has a 50 per cent chance of being better and 50 per cent chance of being worse …But a very large mutation will probably be worse, *even if it is in the right direction*, because it will overshoot. To push to the extreme, imagine an otherwise normal man with thighs two metres long.[18]

Pure, unadulterated speculative imagination with absolutely no evidential backing!

RationalWiki is a forum for DUD enthusiasts to indulge their lack of significant research by posting short diatribes against intelligent design and creationism (rarely distinguished). The level of analysis is generally dismal and mostly one finds regurgitation of the mistaken views of Dawkins and friends. A RationalWiki entry on the subject of lungfish begins:

> The lungfish are an example of the kind of life forms that creationists are very quiet about. They rant and rave about a lack of intermediate forms between fish and land animals, sometimes with ridiculous statements like "I've never seen a half-fish half-cow". Lungfish are able to breathe with their lung and can live out of water for fairly long periods. They also use their lung to give a continuous oxygen supply while they sit out the dry period under exposed mudbanks.[19]

The level of competence in analysis and reasoning is very limited on this forum. Our DUD enthusiast claims that:

> The Australian lungfish (N. forsteri) lives in brackish rivers and lakes and still have functional gills which supplement their lungs. This shows creationists are wrong when they argue that a fish could not survive without gills while its lungs were evolving. Fish did not lose their gills till their lungs were fully evolved. Some lungfish are more adapted to water and others to land.[20]

The existence of the Australian lungfish, however, proves no such thing. It just means that there is an Australian lungfish that have "functional gills which supplement their lungs." The conclusion that this proves that fish developed lungs whilst still keeping their gills, and whilst living fully in water, is entirely spurious, it proves no such thing. This conclusion is a speculation adopted because of a prior commitment to the DUD worldview. It should not take a great effort of intellectual insight to figure out that if a random mutation requires an advantageous environment in order for it to survive, then a proto-lung in a fish in water is not in an advantageous environment. The lung, even if we grant the ridiculous notion of a tiny random mutation producing a functioning lung within a fish happily living in water and using its gills, would never be "naturally selected" in a water environment. However, our DUD RationalWiki blogger thinks he has proved his or her point: "They're three fish. With lungs. Accept it." Of course, there is no reason not to "accept it," but it proves nothing concerning the truth of the absurd materialist DUD account of the process of evolution.

In another RationalWiki entry, entitled *Fish that survive on land*, the claim is made that Lungfish "breathe through lungs like our lungs."[21] However, this is not true. If one looks into the opinions expressed by DUD followers one often finds that they do not bother to do any research to delve into the truth of issues, they simply accept the simplistic nonsense fed to them! Lungfish are vertebrates and all vertebrates have a similar underlying plan with brains and livers, hearts, intestines and skeletons and so on, but this does not mean that lungfish have human-type organs. Although lungfish are unusual among fish in having a kind of lung, it does not operate in the same way as a mammal's lung. A lung in a mammal consists of billions of tiny cavities containing air, known as alveoli. In a lungfish, the lung has large air sacs and no minute alveoli. Figure 6 shows:

> A scanning electron micrograph of the lung of a young lungfish. The air sacs are large, and there are no alveoli. The scale bar is equivalent to 0.2 of a millimetre, so the air scales are up to a millimetre wide.[22]

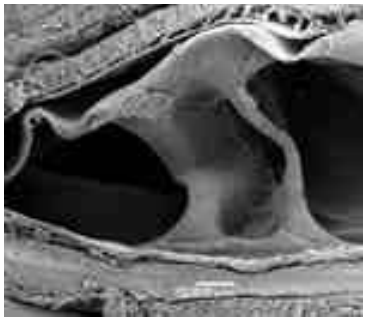

Figure 6[(23)]

The reason that such Darwinian fairy tales are accepted unquestioningly by most DUD enthusiasts is that they are already in the grip of an irrational belief in the materialist DUD worldview. The obvious flaws in the arguments and presentations simply do not register.

There are some DUDs, however, who do not have completely blinkered reasoning faculties. The following is a response to an incoherent post claiming that the Evo-Devo (Evolutionary-Development) revolution and the existence of lungfish disproves intelligent design:[24]

> The mere thought that Intelligent Design could even be put forward in this day and age is mind boggling to most scientists. But with all due respect, merely citing that the transition from water to land was accompanied by the appearance of the aldosterone receptor does not explain how this may have occurred based on natural selection. Without a mechanism for this process, the evolutionists are telling Kipling "Just So Stories" that are no more credible than those of the Intelligent Design proponents, which is why the Intelligent Designers maintain credibility with the lay public.[25]

This comment, by someone who is *opposed* to the Intelligent Design hypothesis, isolates the issue precisely. Without a fully elucidated precise account of the mechanisms involved, the claims made by DUDs are specious. DUDs, of course, think they have a fully worked out mechanism, RM+NS. But they do not, it is a deluded fantasy, a Kipling "Just So Story." To reiterate, even if one accepts that a random mutation might produce the beginnings of a lung in a gill-breathing fish, in a water environment there is no advantage to having a lung so how could it possibly be "selected" by NS. DUDs, however, do not worry about plausibility or

rationality, despite their pugilistic claims to be the only rational people around, they love their 'Just So Stories':

> The fishes of the early and middle Devonian found themselves forced to choose between the invading salt water marshes and the isolated fresh-water pools which periodically contracted into stagnant swamps or hard mud flats… The more advanced of the fishes, however, in order to survive in the stagnant waters of the continents, took to swallowing air and thus invented lungs and prepared the way for the evolution of the terrestrial vertebrates.[26]

Fish that are able to "invent" lungs!

Far from being an advantage for the DUD case, however, the existence of the lungfish actually undermines it for the same reason that we have already discussed. Life arose in the sea and the earliest method for obtaining oxygen was by means of gills. So the DUD problem remains as to how a lungfish, which according to the DUD worldview must have randomly evolved its lung through natural selection, in which the environment is supposed to select advantageous mutations through filtration of favorable 'flaws', managed to evolve its lung without an environment within which the lung was an advantage.

Dawkins writes on this that:

> Short of rocketing into space, it is hard to imagine a bolder or more life-changing step than leaving the water for dry land. The two life-zones are different in so many ways that moving from one to the other demands a radical shift in almost all parts of the body. Gills that are good at extracting oxygen from water are all but useless in air, and lungs are useless in water. Methods of propulsion that are speedy, graceful and efficient in water are dangerously clumsy on land, and vice versa. No wonder 'fish out of water' and 'like a drowning man' have both become proverbial phrases.[27]

Indeed, no wonder, then, that the notion that RM+NS could do the job is blatantly absurd.

After his speculative inversion of Romer's speculation Dawkins continues his exposition with an overview of the fossil record of the fish's supposed emergence onto land. First he introduces us to the *Eusthenopteron* (see figure 7 which illustrates the supposed evolutionary sequence) which was discovered in a collection of fossils in 1881. This creature, Dawkins tells us, seems:

> …to have been a surface-hunting fish and probably didn't ever come on land, notwithstanding some early imaginative reconstructions. Nevertheless it did have several anatomical similarities to the amphibians of 50 million years later, including its skull bones, its teeth and, above all, its fins. Although they were probably used for swimming and not walking, the bones followed the typical pattern of a tetrapod (the name given to all land vertebrates). In the forelimb, a single humerus was joined to two bones, the radius and ulna, joined to lots of little bones, which we tetrapods would call carpals, metacarpals and fingers. And the hind limb shows a similar tetrapod-like pattern.[28]

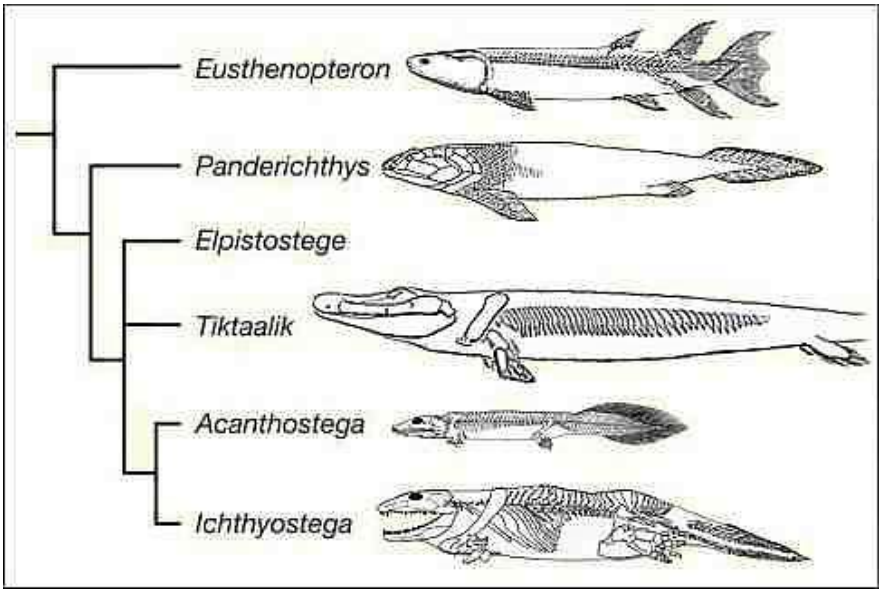


Figure 7[29]

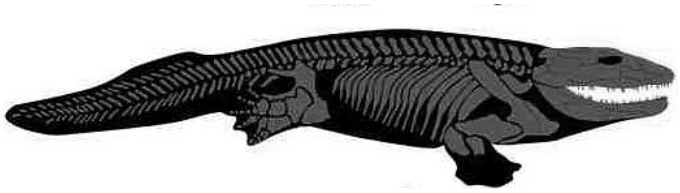

Figure 8[30]

He then outlines the discoveries of the fossils of the various 'transitional forms' indicated in figure 7. *Ichthyostega* (figure 8) was discovered in 1932 in Greenland. This was followed by *Acanthostega.* These two were largely water dwellers and "had lungs and limbs which strongly suggest that [they] could cope on land as well as water."[31] *Panderichthys*, Dawkins tells us, is an "amphibian like fish" and the final "missing link" was discovered by a team of scientists from the University of Pennsylvania who:

> …deliberately thought about where might be the best place to look, and carefully chose a rocky area of exactly the right late Devonian age in the Canadian Arctic. There they went - and struck zoological gold. Tiktaalik![32]

Figure 9 shows an artist's impression of Tiktaalik. Dawkins says concerning the discovery of Tiktaalik:

> If you were to meet a real live Tiktaalik, snout to snout, you might start back as if threatened by a crocodile, for that is what its face resembled. A crocodile's head on a salamander's trunk, attached to a fish's rear end and tail. Unlike any fish, Tiktaalik had a neck. It could turn its head. In almost every particular, Tiktaalik is the perfect missing link - perfect, because it almost exactly splits the difference between fish and amphibian, and perfect because it is missing no longer. We have the fossil. You can see it, touch it, try to appreciate the age of it…[33]

So now we are supposed to believe that this is the entire sequence that proves the DUD account, a sequence which, according to the DUD worldview, proves the DUD style gradual,

incremental evolution through random gene mutations, each mutation producing advantageous 'flaws', that are filtered by NS in the direction of moving on to the land. Dawkins says of this that "the move from water to land launched a major redesign of every aspect of life, from breathing to reproduction…" But, as we have seen, the redesign of breathing required in order for fish originally equipped with only gills to acquire land-breathing equipment could not have occurred in the manner that the DUD worldview claims that it did.

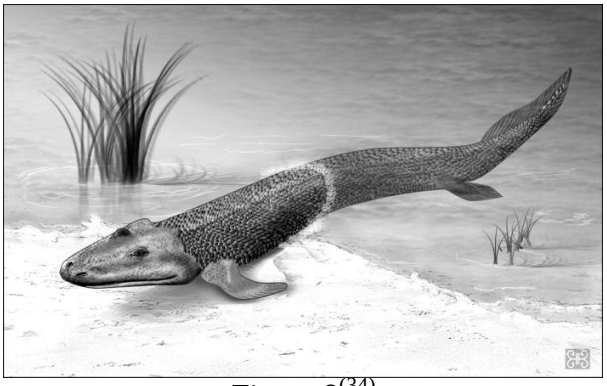

Figure 9[34]

Consider the first creature in the chain, *Eusthenopteron*, which did not come near the land (and if Dawkins were to be wrong about this we can consider the fish previous in the sequence which had not yet ventured landwards). This fish was presumably happy enough with the operation of its gills for extracting oxygen. Now let's humour the DUD delusion and suppose that some kind of random mutational flaw occurred which produced in its offspring some kind of predisposition for breathing air with a lung; this new innovation would need to be filtered by the environment so it can be amplified through descendants. But the fish in question is happily living in water, does not go near land; so how could the land-breathing mutation possibly be 'selected' by the supposed natural selection of the water environment, where there is no free air. The entire account is nothing more than an absurd fantasy.

However, it certainly looks as if there is a definite sequence which suggests this type of fantasy, which is why the fantasy has had such a devoted following of DUDs ('DUD' can stand for 'Dawkinsian Ultra-Darwinism' or ''Dawkinsian Ultra-Darwinist', the context should indicate which is appropriate). The crucial issue, however, is how we interpret this sequence. The DUD worldview is also a MUD worldview, a *materialist* Ultra-Darwinian perspective wherein everything is thought to take place within a fully paid up material world. In such a MUD perspective genes are thought of as ultimate material bits of self-enclosed independently existing units of stuff, all of which have a kind of informational token glued on to them. As these DNA 'units' are passed on through the generations they do not change, nor does their glued on bits of information, unless that is, a "very rare random error" occurs. In *River Out of Eden* Dawkins presents his DUD-MUD vision this way:

> It is tempting to think that when ancestors did successful things, the genes they passed on to their children were, as a result, upgraded relative to the genes they had received from their parents. Something about their success had rubbed off on their

> genes. … Wrong, utterly wrong! Genes do not improve in the using, they are just passed on, unchanged except for very rare random errors.[35]

In other words according to the DUD-MUD worldview genes only change in the direction of becoming more advantageously flawed.

But this perspective, apart from being unworkable as we have seen, also does not fit in with the evidence, unless, that is, one is already genetically predisposed and hard-wired into the DUD-MUD worldview. Consider again the first creature in the chain, *Eusthenopteron*, which did not come near the land. According to Dawkins "it did have several anatomical similarities to the amphibians of 50 million years later, including its skull bones, its teeth and, above all, its fins." In other words it seems to have an anatomical structure which anticipates future developments which will take place 50 million years in the future. Dawkins and the DUD-MUD brigade would no doubt ridicule such a notion, but the evidence that there is anticipatory structure underlying the process of evolution is now gathering force.

An example of such an anticipatory morphological structure is given by Simon Conway Morris, Professor of Evolutionary Palaeobiology at the University of Cambridge, in his excellent work *Life's Solution: Inevitable Humans in a Lonely Universe*:

> To give one example: the central nervous system of amphioxus is really rather simple. It consists of an elongate nerve chord stretching back along the body, above the precursor of the vertebral column (our backbone, consisting of a row of vertebrae) and a so called brain. The brain can only be described as a disappointment. It is little more than an anterior swelling … and has no obvious sign in terms of its morphology of even the characteristic threefold division seen in the vertebrate brain of hind-, mid-, and fore-sections. Yet the molecular evidence, which is also backed up by some exquisitely fine studies of microanatomy, suggests that, cryptically, the brain of amphioxus has regions equivalent to the tripartite division seen in the vertebrates. The clear implication of this is that folded within the simple brain of amphioxus is what can almost be described as a template for the equivalent organ of the vertebrates: in some sense amphioxus carries the inherent potential for intelligence.[36]

This 'molecular evidence' indicates the tripartite division within the brain which emerges within evolution much later is somehow written into the molecular structures of the simplest organisms as a kind of template for future development. And this molecular anticipatory structuring must have a quantum origin, there is nowhere else it can come from, molecular arrangements are determined by quantum potentialities. Conway Morris provides convincing evidence that the spectacular convergences upon similar 'solutions' within evolution also suggest internal patterning templates. And such patterning templates, which have a quantum origin, can be also identified with Rupert Sheldrake's notion of a 'morphogenetic field', which is a quantum probabilistic field of potentiality which underlies the development of any organism.

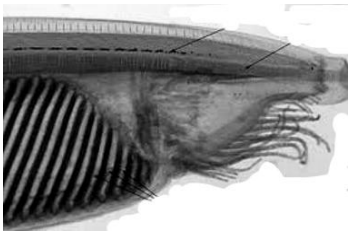

Figure 10 – The amphioxus animal[37]

Having finished his exposition of the DUD-MUD absurdity of the supposed fully materialized, millimetre by millimetre, RM+NS transformation of fish into land animals, Dawkins adds intellectual insult to intellectual injury by moving on to another DUD-MUD absurdity, the supposed trek back to the sea by a group of hippo-like land animals. He writes of this in his *Greatest Show* book:

> …with what seems almost wanton perversity, a good number of thorough-going land animals later turned around, abandoned their hard-earned terrestrial retooling, and trooped back into the water again. Seals and sea lions have only gone part-way back. They show us what the intermediates might have been like, on the way to extreme cases such as whales and dugongs. Whales (including the small whales we call dolphins), and dugongs with their close cousins the manatees, ceased to be land creatures altogether and reverted to the full marine habits of their remote ancestors. They don't even come ashore to breed. They do, however, still breathe air, having never developed anything equivalent to the gills of their earlier marine progenitors.[38]

Of course, according to the DUD-MUD worldview there should be no reason why RM+NS could not have eventually equipped whales and dugongs with gills. And given the fact that it must be rather irritating for whales to have keep coming to the surface to get a gasp of air one can only wonder at the lack of concern for the full welfare of them on the part of RM-NS. But, then again there probably hasn't been enough time, so the whale is stuck with having to come to the surface all the time for a gulp of air!

Dawkins continues:

> Whales were long an enigma, but recently our knowledge of whale evolution has become rather rich. Molecular genetic evidence … shows that the closest living cousins of whales are hippos, then pigs, then ruminants. Even more surprisingly, the molecular evidence shows that hippos are more closely related to whales than they are to the cloven-hoofed animals (such as pigs and ruminants) which look much more like them. This is another example of the mismatch that can sometimes arise between closeness of cousinship and degree of physical resemblance. We noted it above in connection with fish that are closer cousins to us than they are to other fish. In that case, the anomaly arose because our lineage left the water for the land, and consequently surged away in evolution, leaving our close fish cousins, the lungfish and coelacanths, resembling our more distant fish cousins because they all stayed in the water. Now we meet the same phenomenon again, but in reverse. Hippos stayed, at least partly, on land, and so still resemble their more distant land-dwelling cousins, the ruminants, while their closer cousins, the whales, took off into the sea and changed so drastically that their affinities with hippos escaped all biologists except molecular geneticists. As when their remote fishy ancestors originally went in the other direction, it was a bit like taking off into space, or at least like launching a

> balloon, as the ancestors of whales floated free of the constraining burden of gravity and severed their moorings to dry land.[39]

There are two important and connected issues here. The first concerns the nature of the relationship between hippos and whales, is it necessarily a fully paid up material relationship, with a direct line of material descent, with vast numbers of intermediaries as a nose gradually becomes a blowhole, millimetre by millimetre. The second concerns the 'drastic' nature of the transformation required; could an intelligent person really believe that the extraordinary coordinated biological re-engineering could possibly be the result of RM+NS.

With reference to the first issue we must ask: what are the watertight implications of the molecular evidence that "hippos are more closely related to whales than they are to the cloven-hoofed animals," what kind of 'relationship' is suggested by the 'molecular evidence.' Does it indicate that the 'relationship' must be one of a direct fully materialised descent involving the supposed hippo-like creature's external breathing apparatus gradually moving back, millimetre by excruciating millimetre, over 50 million years or thereabouts, until it migrates to the position of a whale's blowhole. The answer is that, whilst this molecular evidence is consistent with the unlikely notion, it in no way proves it, just as the fossil evidence does not prove it either. Shortly we shall see that there is a much more coherent, and must less implausible, account which fits the evidence, including the evidence of quantum theory, much more coherently and plausible, if, that is, one is not blinded by a dogmatic metaphysical preference for a materialist explanation. As quantum physicist Amit Goswami points out:

> Darwinists make a big case for another intermediate, this time a series of them that allegedly arose between land mammals and cetaceans-swimming mammals. In the late 1980s and early 1990s, the biologist Phillip Gingerich and collaborators uncovered this series. The animal at the midpoint of the series was named *Ambulocetus natans*, "the swimming whale that walks." The shape of the front and hind limbs of the fossil remnant make it quite plausible that the animal could both walk and swim. The Darwinists assume that this new trait could come about continuously from gradual modification of the land mammal with walking limbs only. They forget that swimming requires many other internal modifications (including some involving the brain) all acting coherently as a whole, besides just the shape of the limbs![40]

Goswami's book *Creative Evolution* indicates in great detail that the only coherent account of evolution which accords with the discoveries of modern science, including quantum theory, requires that much of the organization underlying the evolutionary process must take place creatively at the quantum level of potentiality and primordial consciousness, which he terms the "supramental":

> In the theory of creative evolution, we accept the new trait as the quantum leap to express a new biological function - a new archetype - that of swimming. The emergence of the "walking whales" is an instance of fundamental creativity, the leap into the supramental realm. The change from these creatures to the earliest cetaceans, the archeocetes, occurred through situational creativity working within established archetypes, a process of refinement.[41]

According to the new insights of Evolutionary Developmental biology (Evo-Devo) and quantum, theory, the DUD-MUD worldview must be replaced with a new perspective which accepts the operation of quantum archetypes, which operate through a quantum 'implicate'

hierarchical organisation from subtle quantum levels to the material world, in the process of evolution.

Dawkins, however, remains dogmatically insistent upon his discredited DUD-MUD belief system. In his later section in *Greatest Show* discussing 'molecular comparisons' he writes that:

> Just as the vertebrate skeleton is invariant across all vertebrates while the individual bones differ, and just as the crustacean exoskeleton is invariant across all crustaceans while the individual 'tubes' vary, so the DNA code is invariant across all living creatures, while the individual genes themselves vary. This is a truly astounding fact, which shows more clearly than anything else that all living creatures are descended from a single ancestor. Not just the genetic code itself, but the whole gene/protein system for running life is the same in all animals, plants, fungi, bacteria, archaea and viruses. What varies is what is written in the code, not the code itself. And when we look comparatively at what is written in the code - the actual genetic sequences in all these different creatures - we find the same kind of hierarchical tree of resemblance. We find the same family tree - albeit much more thoroughly and convincingly laid out - as we did with the vertebrate skeleton, the crustacean skeleton, and indeed the whole pattern of anatomical resemblances through all the living kingdoms.[42]

Here, again, Dawkins leaps to the conclusion that the fact of this hierarchical structure that underlies the molecular and genetic structures which organise life means that this hierarchical structure must have been fully expressed on a completely material level. And he furthermore concludes that there must have been just a "single ancestor." Presumably he thinks of this as a kind of blob-like cell somehow eking out a precarious existence in a primeval under sea geezer, or some such.

But this is not a watertight conclusion by any means, it is a conclusion reached on the basis of a prior commitment to the DUD-MUD worldview. Proponents of this worldview, Dawkins, Coyne, Dennett and many other DUD-MUDs, claim that there are so many interlocking pieces of evidence: fossils, molecular structures, vestigial appendages, Cladistics amongst them, that the entire picture put together is irresistible. But this is not the case. Each separate area of evidence is evaluated on the basis of the DUD-MUD worldview in the first place, and, furthermore, the gaping scientific and philosophical problems and absurdities are routinely ignored.

One of the core tenets of the DUD-MUD worldview was the belief, heartily embraced by Dawkins in his early days, that the genes involved in the evolution of different species would themselves be different, different species would not have common gene structure. Thus the evolutionary biologist Ernst Mayr 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. [43]

An excellent example of a pronouncement made on the basis of little evidence but a huge emotional, intellectual and career investment in the DUD-MUD worldview, an investment which can still be found in much 'scientific' writing in the DUD-MUD camp. However, this

dogmatic assumption has now been shown by the Evolutionary Development (Evo-Devo) revolution in biology to be completely false; as Sean B. Carroll writes in his book *Endless Forms Most Beautiful*:

> 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.[44]

This new evidence, evidence which does not support the Darwinian worldview but counts against it, suggests a preformed body-plan, existing at the dawn of time, which is activated in a multitude of ways.

The American cognitive scientist and philosopher Jerry Fodor, Professor of Philosophy at Rutgers University, in an essay *Why Pigs Don't Fly*, has questioned the neo-Darwinian assumption of random 'adaptationism:'

> Everybody thinks evo-devo must be at least part of the truth, since nobody thinks that phenotypes are shaped directly by environmental variables. Even the hardest core Darwinists agree that environmental effects on a creature's phenotype are mediated by their effects on the creature's genes: its 'genome'. Indeed, in the typical case, the environment selects a phenotype by selecting a genome that the phenotype expresses. Once in place, this sort of reasoning spreads to other endogenous factors. Phenotypic structure carries information about genetic structure. And genotypic structure carries information about the biochemistry of genes. And the biochemical structure of genes carries information about their physical structure. And so on down to quantum mechanics for all I know.[45]

And, as we shall see, it is at the quantum level that body-plans and potentialities for various types of creatures and environments must 'exist' as potentialities.

The second issue mentioned with regard to whale evolution is that of the plausibility and credibility of the notion that there was a long lineage of creatures, each of them differing to a tiny degree to the one before, wherein the two nostrils of the original land animal migrated back to become a blowhole whilst at the same time other drastic, dramatic and heroic biological transformations took place to enable whales to dive to bone-crushing depths of the sea. Sperm whales are believed to be able to reach 3 kilometres (1.9 mi) and remain submerged for 90 minutes. The sperm whale has adapted to cope with drastic pressure changes when diving. A flexible ribcage allows lung collapse, reducing nitrogen intake, and metabolism can decrease to conserve oxygen. Myoglobin, which stores oxygen in muscle tissue, is much more abundant than in terrestrial animals. The blood has a high red blood cell density, which contain oxygen-carrying haemoglobin. The oxygenated blood can be directed towards only the brain and other essential organs when oxygen levels deplete.[46] All of this re-engineering would have had to have taken place in a *co-ordinated* manner, supposedly driven by RM+NS. This would mean that small mutations of genes would have to alter, in a tiny, tiny manner of course, the entire system of nose/blowhole, ribcage, blood chemistry and so on, each altering the entire system in just the right way to allow the animal to dive a millimetre, or metre or….(?) deeper! Such a notion is massively implausible.

One of the main reasons for diving to the depths that sperm whales dive is to feed on squid, so why the hippo like creature decided to try and start diving is a mystery, did they know that the squid were down there? After all the primary reason offered for the supposed return to the sea is the abundance of food. When DUD-MUD just-so tales and fairy stories are subjected to rigorous analysis they simply fall apart.

Dawkins, however, in order to try and counter the obvious implausibility, has adopted the tactic of defending by attacking, appealing to his notion that 'personal incredulity' is inadmissible as a criticism of the DUD-MUD worldview:

> The general lesson we should learn is never use human judgment in assessing such matters. Never say, and never take seriously anybody who says: "I cannot believe that so-and-so could have evolved by gradual selection." have dubbed this kind of fallacy "the Argument from Personal Incredulity." Time and time again, it has proved the prelude to an intellectual banana-skin experience.[47]

This is a classic Dawkinsian invalid, absurd and ridiculous statement, and for those capable of analysis and clear reasoning there are many such absurdities in the Dawkins' oeuvre. Doesn't science depend upon "human judgment," might not someone examine the evidence in detail and decide on the basis of rigorous reasoning that: "I cannot believe that so-and-so could have evolved by gradual selection." The context for this statement is an assertion by an opponent that the interrelationship between orchids and the wasps that pollinate them could not have evolved incrementally. The orchid mimics features of the female wasps that attract males, this includes the sheen of wings, colouring of hairs, "having an opening in the proper place" and also the emission of a pheromone. Dawkins launches into a vitriolic irrelevant diatribe about how humans, animals and wasps are easy to fool and therefore the mimicry would not need to be "perfect" in order to work. In all this he entirely misses the point which is that the interdependency of orchid and wasp could not have evolved from a situation of no-dependency. Without the pollinating wasp the orchid would not have survived, so there could never have been a time when a non-wasp-attracting orchid had the good fortune to be provided by RM+NS with wasp paraphernalia including the emission of wasp pheromone. Dawkins misses the point entirely:

> The argument I am attacking is the one that says: gradual evolution of so and so couldn't have happened, because so-and-so "obviously" has to be perfect and complete if it is to work at all.[48]

However, it is obvious that the interdependency between orchid and wasp must be in place at the outset, even if imperfectly, and therefore cannot evolve out of no-dependency. Furthermore such interdependencies, wherein members of seemingly completely unrelated species are in fact bound within a network of survival dependencies are replete in nature. This was made stunningly clear in a recent BBC documentary series *Secrets of the Living Planet* presented by Chris Packham:

> Ten million species live on Planet Earth, Each one is incredible, yet none can live by itself. In this series, naturalist Chris Packham reveals the natural world in a way that you've never seen it before. For him, what is really beautiful about nature is not the amazing animals and plants that we share the planet with but the hidden relationships between them. These relationships may sound bizarre but without them, no life would be possible. Chris reveals: Why a crab in the swamps of Bangladesh needs a tiger, why the mighty Brazil nut tree needs a rare orchid and a small rodent, why a small gecko in Kenya needs a giraffe, why the North American lynx needs a tiny moth caterpillar.[49]

Analysis indicates that none of these interrelationships could have evolved gradually and incrementally from a state of no-interrelationship, no-dependency. The natural world must have always been characterized by complex interdependency, and such an interdependency and fine-tuned interrelationship does not chime well with the notion of a continuous mechanism of accumulations of "flaws" in non-interdependent, self-enclosed bits of matter. DUD-MUDs, however, are blinded to certain clear facts because of a chronic state of 'personal credulity' which leads them to accept desperately implausible DUD-MUD claims.

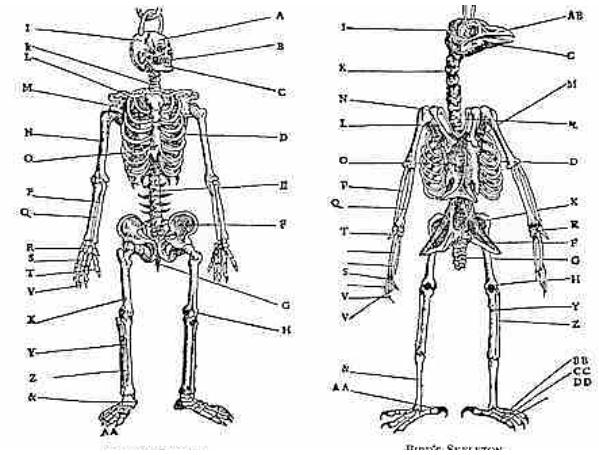

Figure 11[50]

In his *Greatest Show* chapter 'The Tree of Cousinship' Dawkins waxes lyrically on the subject of the underlying homology, or essential sameness of pattern underlying the skeletons of all creatures. The details, of course can be very different but at the base of it all there is a fundamental prototype skeleton-blueprint or body-plan. Figure 11 shows the famous example of Pierre Belon noting the agreement between the skeleton of a pigeon and a human in 1555. Dawkins also gives an example of two more closely related animals, the giraffe and okapi and he writes that:

> …the pattern of resemblances among the skeletons of modern animals is exactly the pattern we should expect if they are all descended from a common ancestor, some of them more recently than others. The ancestral skeleton has been gradually modified down the ages. Some pairs of animals, for example giraffes and okapis, share a recent ancestor. It is not strictly correct to describe a giraffe as a vertically stretched okapi for both are modern animals. But it would be a good guess … that the shared ancestor looked more like the okapi than the giraffe.[51]

Dawkins also gives the examples of a Pterodactyl and 'flying lizard' (figure 12). According to Dawkins this guess is supported by the fossil evidence. This means that he is claiming that there is a sequence fossils, starting with the 'common ancestor', indicating a sequence of giraffe ancestors with a neck getting progressively longer; this claim, however, seems to be false.

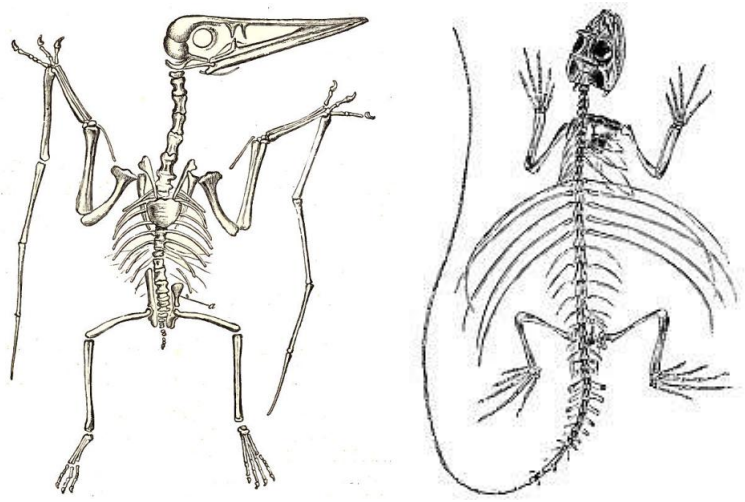

Figure 12[52]

In 2006 researcher Wolf-Ekkehard Lönnig, an expert on mutation genetics having been a researcher for over thirty years, published a long carefully researched paper entitled '*The Evolution of the Long-Necked Giraffe – What Do We Really Know*'. The opening summary section of this remarkable document begins:

> 1. Ulrich Kutschera made the following statement regarding the origin of the giraffe, … "...the evolution of the long-necked giraffe can be reconstructed from fossils." According to today's best giraffe researchers, *all fossil links that could show us the gradual evolution of the long-necked giraffe from the short-necked giraffe are missing*, apart from the insufficiently answered question of causes. Some paleontologists postulate a "neck elongation macromutation" to explain the origin of the long-necked giraffe.
>
> 2. Richard Dawkins likewise considers - in a striking exception to his usual theoretical framework - the origin of the long-necked giraffe through a macromutation. This exception would, of course, be entirely superfluous if the gradual evolution of the long-necked giraffe could really be reconstructed from fossils, especially since he much prefers the gradualist view. Dawkins draws the okapi, in relation to the giraffe, nearly twice as large as it really is. In this way, the problem of its evolution (the gap between the two forms) appears only about half as large. One may well ask if this technique is really useful in the search for truth.[53]

The italics in the above quote are due to Lönnig. This quote indicates that Dawkins, who rants about the necessity for scientific rigor, is at the same time not averse to falsifying the evidence, stretching a neck in order to promote the fallacies of the DUD-MUD just so story.

This may seem shocking but it is par for the course in DUD-MUD polemics. I actually came across Lönnig's work after I had scanned and pasted in figure 13a from *The Greatest Show* I was taken aback when I saw his claim and thought I should immediately check it out. I therefore found a photo of the giraffe and okapi skeletons which was independent of Dawkins' influence which is shown in figure 13b and it does seem to be the case that Dawkins has an elongated view of the okapi's neck. The comparison is shown in figures 14a and 14b. Lönnig's paper was published in 2006 and the source for his example of Dawkins' giraffe-okapi was Dawkins' book *Climbing Mount Improbable* which was published in 1996 and the diagram that Dawkins uses in this book is shown in figure 15. This means that

Dawkins has continued the use of this deception for well over fifteen years. Notice how Dawkins' okapi (figure 15) seems to be actually stretching its neck in order to elongate it!

Lönnig also points out that the correct relative sizes is shown in the silhouettes on the left of the man in figure 16. These are taken from the book *Animals of the World* (1988), Bertelsmann Lexikothek. Lönnig writes that:

> On the left side I have placed Dawkins' illustration for comparison, but with the okapi placed on the same level as the giraffe (cf. Dawkins illustration above). In between, I have repeated the drawing of the okapi with its real relative size shown (silhouette). From Dawkins' portrayal one gets the impression that the step from okapi to long-necked giraffe is slight, and the text reinforces this impression.[54]

As Lönnig points out, if proponents of intelligent design (ID) were to engage in this kind of practice DUD-MUDs would be up in arms, no one in their ranks seems to be bothered by Dawkins, and others, resorting to these underhand methods.

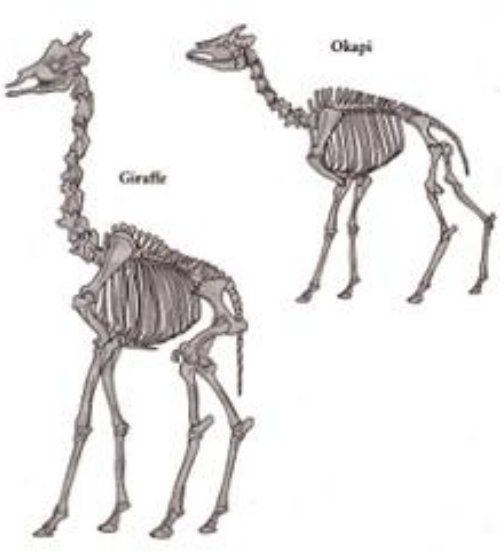


Figure 13a(55)

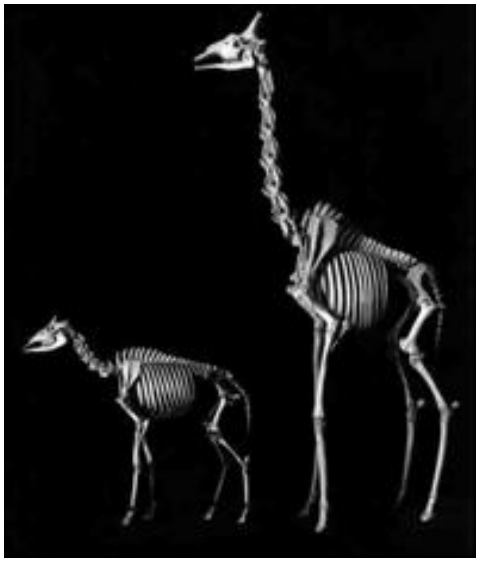

Figure 13b(56)

Figure 14a – Dawkins' okapi

Figure 14b – Correct proportions

Figure 15[57]

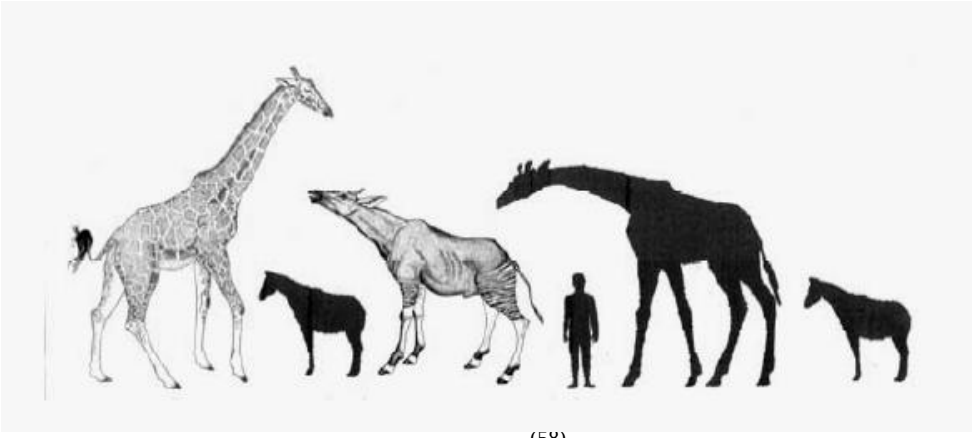

Figure 16[58]

After a detailed and exhaustive examination of the claims, counter-claims and the evidence Lönnig concludes that:

> If, however, the general lineages for almost all modern groups of vertebrates are as uncertain as in the case of giraffes, then we are dealing with only suggestive evolutionary interpretations in most other groups as well, yet without solid scientific proof.[59]

In my article *The Giraffe Reveals the Evolutionary Tall Tale* I look into Lönnig's work in detail.

In his discussion of the 'tree of cousinhood' Dawkins indicates that any two creatures whatsoever, such as the giraffe and okapi, can trace their ancestry back to a 'common ancestor'. At the start of his *Greatest Show* book Dawkins calls this the "hairpin thought experiment." Take any two species, the rabbit and the leopard for example. Now start with the rabbit, a female one, and start tracing its lineage backwards in time:

> …back in time, back, back, back through the megayears, a seemingly endless line of female rabbits, each one sandwiched between her daughter and her mother. We walk along the line of rabbits, backwards in time, examining them carefully like an inspecting general. As we pace the line, we'll eventually notice that the ancient

> rabbits we are passing are just a little bit different from the modern rabbits we are used to. But the rate of change will be so slow that we shan't notice the trend from generation to generation, just as we can't see the motion of the hour hand on our watches – and just as we can't see a child growing, we can only see later that she has become a teenager, and later still an adult. An additional reason why we don't notice the change in rabbits from one generation to another is that, in any one century the variation within the current population will normally be greater than the variation between mothers and daughters. … Nevertheless, steadily and imperceptibly, as we retreat through time, we shall reach ancestors that look less and less like a rabbit and more and more like a shrew (and not very like either). One of these creatures I'll call the hairpin bend … This animal is the most recent common ancestor (in the female line, but that is not important) that rabbits share with leopards. We don't know exactly what it looked like, but it follows from the evolutionary view that it definitely had to exist.[60]

However, if we take into account the latest quantum discoveries made by science, then Dawkins' claim that this common ancestor of a rabbit and leopard "definitely had to exist" as a fully paid up material organic creature can be shown to be wrong. This assertion may raise a few eyebrows; how else could it possibly exist? The answer to this central question is that many of the 'common ancestors' which Dawkins thinks must definitely have actually roamed the planet as fully materialized flesh and blood creatures certainly did not. They were, and still are, 'implicate' quantum templates of potentiality.

In his discussion of the 'tree of cousinship' Dawkins asks whether there are any alternative explanations for the patterns of the evolutionary 'tree of resemblances' and refers, in heavily disparaging terms, to the pre-Darwinian view that these hierarchical patterns and interrelations reflect "themes in the mind of the designer":

> He had various ideas for how to make animals. His thoughts ran along a mammal theme, and, independently, they ran along an insect theme. Within the mammal theme, the designer's ideas were neatly and hierarchically bisected into sub-themes (say, the cloven-hoofed theme) and sub-sub-themes (say, the pig theme). There is a strong element of special pleading and wishful thinking about this, and nowadays creationists seldom resort to it.[61]

Dawkins continues by lampooning this proposal in his usual piranha style, using unsubtle parody and crude misunderstanding. In *Greatest Show* he refers to this view as "The Dead Hand of Plato." Plato, of course, considered that the phenomena of the manifested world were merely shadows of the perfect archetypes which resided in an immaterial realm of ideas. Dawkins writes of this:

> Biology, according to Mayr, is plagued by its own version of essentialism. … the rabbits that we see are wan shadows of the perfect 'idea' of rabbit. The ideal essential Platonic rabbit, hanging somewhere in conceptual space … Flesh and blood rabbits may vary, but their variations are always as flawed deviations from the ideal essence of rabbit.[62]

However, we shall see that, when we replace the notion of a Platonic realm of conceptual archetypes with that of the quantum realm of potentiality, the idea that there are animal archetypes that are manifested at the material level is close to the truth. The shocking fact, given that Dawkins constantly rants about the need to conform to the findings of science, is that this notion, when formulated in less archaic form, is far more consistent with modern physics that the crude materialism embraced by Dawkins.

A further startling fact is that this kind of Platonic 'theme' perspective, wherein an infinite fecund immaterial source of the manifested world manifests a vast variety of plant and animal forms based on 'templates' which are contained as potential within it, was proposed by Darwin's intellectual opponent, the nineteenth century geologist, glaciologist, and zoologist Jean Louis Rodolphe Agassiz (fig. 6) who correctly criticized Darwin's (fig. 7) ideas:

> Perhaps one of the most interesting criticisms of evolution by natural selection in Darwin's era came from the Swiss American geologist, glaciologist, and zoologist Louis Agassiz, Agassiz didn't deny that evolution occurs in nature but his idea of evolution was that it entailed the preordained unfolding of a plan.[63]

This means, of course, that Agassiz's view was actually closer to the truth, as now revealed by the Evo-Devo discoveries, than Darwin's. In a remarkable piece of prescience Agassiz wrote:

> It is not that I hold Darwin himself responsible for these troublesome consequences. … It is his henchmen who took hold of his theories…[64]

An insight still very true today!

Agassiz wrote that:

> However much likeness there is among the animals or plants of the same species, there always is in all individuals, even externally, some … differences, more or less pronounced, of an individual's features through which it's individuality shows up clearly. However, as large as these differences may be … the differences don't exceed this that I called, on another occasion, the boundaries of the flexibility, of the pliability of the species. Finally, never in the succession of these individuals has one been born entirely similar to its parents, nor later have they become one of another species ,… The school of Darwin goes beyond facts when it states that these individual differences constitute the transitions from one species to another.[65]

In other words, although Darwin, and Dawkins following him, claimed and claim that selective breeding is crucial evidence for evolution by RM+NS, an example of selective breeding creating an entirely new species has never been demonstrated. All that has been demonstrated is the latitude of malleability and variability within the 'template' of a species. It was because of this fact that Agassiz considered that the species were in some sense 'created' as 'fixed' elements of life. Agassiz was a staunch creationist who saw a Divine Plan everywhere in nature, and he could not reconcile himself to a theory that did not invoke design. He defined a species as "a thought of God." Thus he wrote in his *Essay on Classification*:

> The combination in time and space of all these thoughtful conceptions exhibits not only thought, it shows also premeditation, power, wisdom, greatness, prescience, omniscience, providence. In one word, 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 …[66].

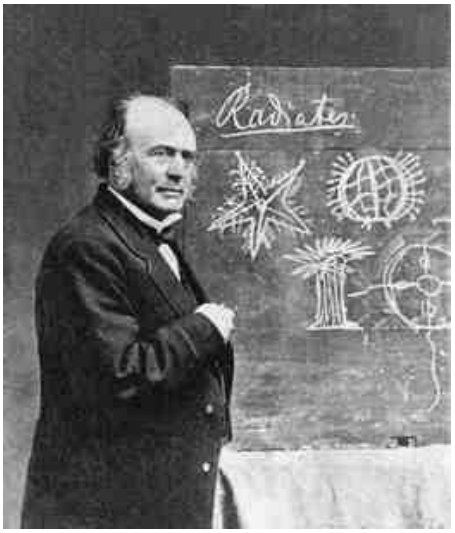


Figure 17(67)

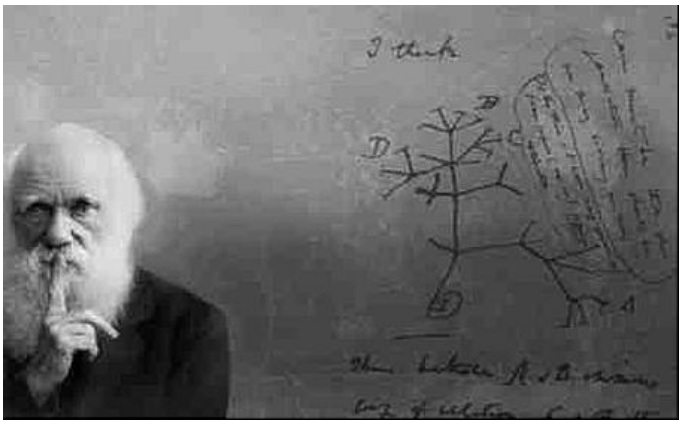


Figure 18(68)

In Agassiz's time of course the notion of a creator God was for many a natural explanation. Today, however, it is not necessary to invoke a 'creator', although some may still wish to. However, if we wish to stick to the implications of physics then the source of all phenomena would seem to be 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.[69]

These "eternal" quantum fields provide the quantum potentialities for all manifestation. 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! [70]

In other words Albert is pointing out that it is not the case that the universe emerged from 'nothing' because quantum fields are a kind of 'physical' stuff, although quantum field 'physical' stuff is actually immaterial and consists of quantum potentiality. Physicist Wojciech Zurek refers to quantum field 'stuff' as 'dream stuff'.

Krauss, wants to use physics to undermine the possibility of any religious or mystical perspective. Albert, however, 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.[71]

'Eternal' quantum fields are quite clearly not 'nothings' but are fields of potentiality for universes containing sentient beings to come into a derived 'existence.' Furthermore, there is no reason to rigidly distinguish between theological and philosophical notions and quantum vacuums or fields of potentiality, the two can coexist and interpenetrate harmoniously. That is to say quantum field theory can have theological significance.

In his recent book *From Quantum to Cosmos: The Universe Within* Neil Turok, director of the Perimeter Institute for Theoretical Physics, writes concerning Krauss and Dawkins:

> As an example from my own field of cosmology, let me cite Lawrence Krauss's recent book, *A Universe from Nothing*. In it, he claims that recent observations showing that the universe has simple, flat geometry imply that it could have been created out of nothing. His argument is, in my view, based upon a technical gaffe, but that is not my point here. Through a misrepresentation of the physics, he leaps to the conclusion that a creator was not needed. The book includes an afterword by Richard Dawkins, hailing Krauss's argument as the final nail in the coffin for religion. Dawkins closes with, "If *On The Origin of Species* was biology's deadliest blow to supernaturalism [which is what Dawkins calls religion], we may come to see *A Universe from Nothing* as the equivalent from cosmology. The title means exactly what it says. And what it

> says is devastating." The rhetoric is impressive, but the arguments are shallow. The philosopher David Albert - one of today's deepest thinkers on quantum theory – framed his response at the right level, in his recent review of Krauss's book in the New York Times, lamenting that "all that gets offered to us now, by guys like these, in books like this, is the pale, small, silly, nerdy accusation that religion is, I don't know, *dumb*. In comparing Krauss's and Dawkins's arguments with the care and respectfulness of those presented by Hume in his Dialogues Concerning Natural Religion, all the way back in the eighteenth century, one can't help feeling the debate has gone backwards.[72]

Albert is correct, books like Krauss's and those of Dawkins are "silly" in their crude embracement of an unscientific materialism in their quest to debunk spiritual perspectives. Many of their claims are clearly out of step with the modern discoveries of quantum theory.

Turok also writes:

> Great mysteries remain. Why did the universe emerge from the big bang with a set of physical laws that gave rise to heavy elements and allowed complex chemistry? Why did these laws allow for planets to form around stars, with water, organic molecules, an atmosphere, and the other requirements for life? Why did the DNA-protein machinery, developed and selected for in the evolution of primitive single-cell organisms, turn out to be able to code for complex creatures like ourselves? How and why did consciousness emerge? At every stage in the history of the universe, there was the potential for vastly more than what had been required to reach that stage. Today, this is more true than ever. Our understanding of the universe has grown faster than anyone could have imagined a century ago, way beyond anything that could be explained in terms of past evolutionary advantage. … Might we be the means for the universe to gain a consciousness of itself?[73]

Physicist Sean Carroll also tells us 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.[74]

Here Carroll 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 in order to manifest and contemplate their own internal qualities. Quantum fields, then, must contain the potentialities for the appearance of the material world as well as the potential for the arising of conscious awareness. The notion that mute and completely unaware 'matter' could end up contemplating itself is internally contradictory.

The emerging perspective, then, requires that we understand that consciousness is primary and matter derivative, a view which Planck eventually came to:

> All matter originates and exists only by virtue of a force... We must assume behind this force the existence of a conscious and intelligent Mind. This Mind is the matrix of all matter.[75]

As did Schrödinger:

> Mind has erected the objective outside world … out of its own stuff.[76]

Goswami describes the new quantum paradigm which embraces consciousness:

> …in the beginning consciousness includes all possibilities. Ponder what that means. Among other things, "all possibilities" must include literally *all* possibilities, past, present, and future. In other words, when every possibility is included, there is no scope for the passage of time. To bring time into the equation of the manifest universe, consciousness must limit what is possible. The imposition of progressive limitation on what is possible is seen as an involution of consciousness. In this way, when evolution is viewed from the context of the primacy of consciousness, involution must precede it. From a primacy-of-consciousness point of view it is also possible to ask, what is the purpose of evolution? Why evolution at all? The answer is easy: Evolution is needed for experiencing the possibilities of consciousness in manifestation. When consciousness is inseparable from its possibilities, there is only one thing, and no experience is possible. As the mathematician G. Spencer Brown (1977) pointed out, "we cannot escape the fact that the world we know is constructed in order (and in such way as to be able) to see itself, but in order to do so it must cut itself up into at least one state that sees, and at least one other state that is seen.[77]

In other words the first step in the manifestation of the universe as a self-exploring, self-organising system is the division into a subject-field and an object-field. The subject-field is the pole of manifestation which later divides into to multitude of species of sentient beings, and the object-field is the pole which will become the environments which are inhabited by the various type of sentient beings.

According to Russian quantum physicist Michael Mensky, consciousness is an interior aspect or quality of the quantum field which reflexively operates upon quantum potentialities in order to manifest subject-object embodied experiential awarenesses of a multitude of types. For individuated consciousness itself to become manifest from the fundamental quantum field as explicit experiential aspects of reality it must bring an experienced world into being. Such a world is manifested through the actualisation of the potentialities within the universal quantum wavefunction of potentiality and the subsequent selection of primary experiential pathways. According to Mensky a crucial question which requires explication is why the alternatives which naturally arise are classical. Mensky gives the following account:

> 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 could 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.[78]

Entangled quantum phenomena can instantaneously affect each other over vast cosmic distances, a quantum feature called 'non-locality'. In fact distance does not seem to be an issue for this kind of entangled mutual interrelationship. It follows, therefore, that in a non-classical, quantum-entangled scenario there would be no environments wherein environmental functioning was determined purely by local events. Such environments would not be locally coherent and predictable and consequently they could not support coherent life.

Quantum theory indicates that an entangled interconnected field of potentiality unravels its own possibilities through an internal mechanism of unfoldment involving consciousness. The manifested classical lineaments of a life-supporting manifested reality is fashioned by consciousness itself for its own manifestation within embodied sentient beings. In quantum field theory there is a non-substantial quantum field of potentiality and, within the process that Mensky envisages, a primitive level of quantum consciousness operates upon this entangled and interdependent field, and through this mechanism the field is localised through the quantum evolution of the 'classical' world of individualised sentience and materiality. 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.[79]

The quantum physicist Wojciech Zurek echoes this emphasis on the primacy of an internal quantum 'epiontic' perceiving function:

> Measurement – perception – is the place where physics gets personal, where our role and our capabilities as observers and agents of change in the universe (and our limitations as entities subject to the laws of physics) are tested - or, rather, where we get put in our place. … The virtue of the focus on quantum measurement is that it puts issues connected with information and existence at the very center. This is where they should be.'[80]

However, many physicists are still having a tough time coming to terms with the notion that at its heart the universe is immaterial. Such views are, of course, 'Anthropic' to various degrees, the universe must give rise to sentient beings in order to "contemplate itself." Physicist Paul Davies, following John Wheeler, speaks of 'teleology without teleology'[81] we may perhaps, admittedly tongue in cheek, speak of a 'God without God!'

The Platonic 'theme' theory, wherein all organic forms which come into manifestation derive from a deep level of potentialities within a mind-like field of energy-consciousness, is consistent with the Theory of Everything outlined by Stephen Hawking and Leonard Mlodinow (henceforth 'H&M') in their book *The Grand Design: New Answers to the Ultimate Questions of Life* (henceforth '*GD*') and several other important modern quantum perspectives. According to H&M:

> Quantum physics tells us that no matter how thorough our observation of the present, the (unobserved) past, like the future, is indefinite and exists only as a spectrum of possibilities. The universe, according to quantum physics, has no single past, or history. The fact that the past takes no definite form means that observations you make on a system in the present affect its past.[82]

Furthermore:

> …the universe doesn't have just a single history, but every possible history, each with its own probability; and our observations of its current state affect its past and determine the different histories of the universe, just as the observations of the particles in the double-slit experiment affect the particles' past.[83]

What H&M are saying here is that all potentialities exist as potentialities at the dawn of time and, dramatically, observations made by all sentient beings in the present moment affect those potentialities backwards in time.

And so we come to the astonishing proposal required by modern quantum theory. From the timeless point of creation a spontaneous universal quantum creative act projects all possible futures into a universal possibility or potentiality space. At the point of creation everything that possibly can happen becomes potential, so at the point of creation all possible future histories of the universe come into being as potentialities, although not yet experienced realities:

> In this view, the universe appeared spontaneously, starting off in every possible way. Most of these correspond to other universes …. Some people make a great mystery of this idea, sometimes called the multiverse concept, but these are just different expressions of the Feynman sum over histories.[84]

Sentient beings, through acts of observation involving consciousness collectively create the history of the universe:

> We create history by our observations, rather than history creating us.[85]

In other words the observers, or what the famous twentieth century physicist John Wheeler called 'observer-participants,' are able to weed out possible universes, and thereby select those which remain in the possibility mix, even backwards in time. Wheeler expressed this:

> 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.[86]

H&M support this dramatic metaphysical perspective in what is perhaps the central chapter in *The Grand Design* entitled 'Choosing Our Universe':

> The idea that the universe does not have a unique observer-independent history might seem to conflict with certain facts that we know. There might be one history in which the moon is made of Roquefort cheese. But we have observed that the moon is not made of cheese, which is bad news for mice. Hence histories in which the moon is not made of cheese do not contribute to the current state of our universe, though they might contribute to others. This might sound like science fiction but it isn't.[87]

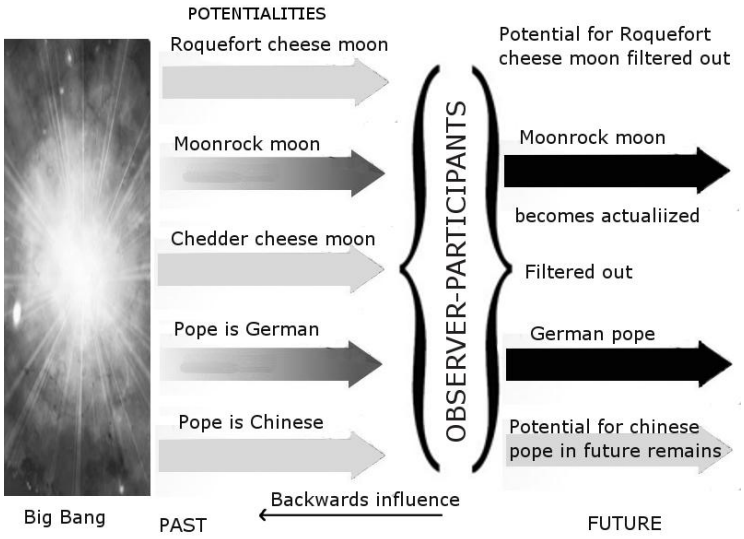


Figure 19

Figure 19 provides graphic presentation of this quantum Platonic metaphysical view of the evolution of the universe. The process operates over long time scales 'unconsciously' (although guided by primordial consciousness) before there are sentient beings, or observer-participants, extant within the universe to take part in the process of universal selection and solidification. Once there is a community of sentient organisms inhabiting the universe then their perceptions, which have influence at the quantum level, affect the probabilities which have been projected at the moment of the Big Bang. If we accept the cosmic quantum-metaphysical story presented by H&M, Wheeler and other significant physicists then at the point of creation all possible 'alternative histories' are projected into a kind of cosmic possibility space, but none of these possibilities are 'actualized' as yet. For actualization to take place requires the presence of sentient beings to perceive and experience.

In this model we can visualize all the 'observer-participants' moving, being born and dying but also leaving descendants to maintain the process, through the vast cosmic pool of potentialities and as they do so their perceptions alter the probabilities of potentialities both backwards and forwards in time. For instance, at the moment of creation there is a possibility (according to H&M) that the moon might end up being made of Roquefort cheese and also a possibility that it may end up comprised of Moon-rock, as it is in our current universe. When sentient beings get on the job of filtering through the probabilities through their perceptive activities, they somehow 'choose' to have a Moon-rock Moon rather than a Roquefort cheese Moon. Thus the possibility of a Roquefort cheese Moon is filtered out of the cosmic mix of potentialities whilst the possibility of a Moon-rock Moon is solidified into actuality.

Goswami refers to the 'backwards in time' quantum effect wherein consciousness can determine which quantum potentialities become actual at a past point in time. On a collective and cosmic scale this backwards in time effect may operate back into the dim recesses of time and thereby provides a mechanism which brings a universe into actuality from a past quantum superposition of potentialities ( a 'superposition' is the quantum state of multiple quantum possibilities which obtains prior to observation). Goswami writes concerning this:

> The lesson of the delayed choice experiment is profound. It solves the measurement problem of quantum cosmology - how the universe of possibility can be actualized even though no sentient being was present to observe the big bang. The universe remains as a superposition of baby universes that evolves in possibility until, in one of the possible universes, the possibility of sentience arises; Then quantum consciousness/God collapses the possibilities and the evolved first sentient being observes itself as separate from its environment, whereupon simultaneously the universe manifests retroactively, going backward in time from the moment of collapse all the way to the big bang. So it is true that we are here because of the universe and its purposive design, but it is also true that the universe is here because of us, our power of downward causation in our Godness. There is circularity here, a breakdown of logic-quantum collapse manifests not only the observed, but also the observer.[88]

It is important to note here that Goswami's notion of God is not that of an independent designer/creator but, rather, the field of potentialities and the collective consciousness acting upon them. This view is entirely consistent with the H&M perspective.

This quantum Platonic vision is also contained within the work of several other significant physicists, both current and recent. One example is the work of David Bohm which is being

carried forward by Paavo Pylkkänen and Basil Hiley. Bohm calls the cosmic possibility soup the 'implicate order' and the actualized experienced world the 'explicate order':

> Bohm calls the implicate order the primary reality, this reality exists 'folded up' in nature and gradually unfolds as the universe evolves, enabling organization to emerge, in this way, the implicate becomes explicate over time.[89]

In his important book *Wholeness and the Implicate Order* Bohm gives an overview of his perspective as follows:

> Our overall approach has thus brought together questions of the nature of the cosmos, of matter in general, of life, and of consciousness. All of these have been considered to be projections of a common ground. This we may call the ground of all that is, at least in so far as this may be sensed and known by us, in our present phase of unfoldment of consciousness. Although we may have no detailed perception or knowledge of this ground it is still in a certain sense enfolded in our consciousness…[90]

All such quantum Platonic viewpoints, including H&M's, require consciousness to be a primary internal feature of the process of the evolution of the universe and the sentient beings within it. According to Basil Hiley:

> The world is basically organic. The mechanistic part is just an aspect of the deeper organic part. That's not denying mechanism, it's putting mechanism in its place. … Physics is biology at the small scale. Maybe one can be outrageous and say that an electron has a proto-consciousness.[91]

And the notion that physics is small scale biology derives directly from Bohm:

> 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. 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. [92]

It is meaning, awareness, and consciousness that organizes the evolution of sentient beings into the hierarchical vast variety of organic forms with various degrees of consciousness. As F. David Peat, another researcher developing the ideas of Bohm, points out with reference to Bohm's notion of 'active information', which resides at the quantum level:

> …information is that which gives form to energy. (It is the "subtle" energy spoken of in Eastern science.) Information would have an objective nature. It would play an active role in giving "form" to energy and be responsible for quantum processes. As a

> "field" of active information it provided a collective, global form for a superconductor or superfluid. Information would be copresent as an aspect of physical law, but also through what appear to be more subjective elements such as meaning and significance. It particular, Information may be responsible for global processes in the brain and have a role to play in the nature of consciousness.

And it is within the quantum fields of 'active information' that the quantum 'templates' of potentiality, which drive the evolutionary process, reside. Such quantum templates can be identified with Rupert Sheldrake's suggestion that organic development is organized by quantum 'morphogenetic fields':

> …morphogenetic fields are not precisely defined but are *probability structures* that depend on the statistical distribution of previous similar forms. The probability distributions of electronic orbitals described by solutions of the Schrödinger equation are examples of such probability structures, and are similar in kind to the probability structures of the morphogenetic fields of morphogenetic units at higher levels.[93]

The morphogenetic field which molds any particular morphogenetic unit provides a 'virtual form' which directs, through some natural mechanism (the inverse quantum Zeno effect) the way in which the physical 'stuff' is organized. Organic morphogenesis takes place through a hierarchy of levels of developmental pathways, each pathway is called a 'chreode'. These levels correspond to Bohm's nested 'implicate orders', each succeeding order-level being more materialized out of quantum potentiality.

The development of an organism takes place through the operation of a succession of nested morphogenetic fields. Morphogenetic fields are established over time through a process of "morphogenetic resonance" which depends on "patterns and structures of vibration."[94] Once the morphogenetic structure is established there is a continued action of morphogenetic resonance which stabilizes the unit and, furthermore, the stability of the morphogenetic field itself depends on the repeated manifestation of the morphogenetic unit it gives rise to, so there is an interdependent relationship between the morphogenetic field and its morphogenetic unit. This means that "phenomena become more probable the more often they occur."[95] This is an important aspect of the evolutionary process, the more often a quantum potentiality is materialized the more likely its future materialization becomes. It is this repeated actualization and materialization of quantum potentialities which underlies the appearance of evolution. In the early stages only very simple organisms can be actualized, but they pave the way for more complex creatures to subsequently emerge from quantum potentiality.

This new quantum Platonic evolutionary perspective concords precisely with H&M's metaphysical perspective. In their penultimate chapter H&M tell us that their view is a form of the Strong Anthropic Principle (SAP). Before their discussion of the SAP they briefly discuss the WAP (Weak Anthropic Principle). This, they say, is not controversial; the very fact that sentient beings exist in this universe clearly means that *this* universe must be fine-tuned for sentient life. If this were not the case then obviously sentient life would not inhabit this particular universe. But, according to the H&M quantum Platonic model requires the Strong version which:

> …suggests that the fact that we exist imposes constraints not just on our *environment* but on the possible *form and contents of the laws of nature* themselves. The idea arose because it is not only the peculiar characteristics of our solar system

> that seem oddly conducive to the development of human life but also the entire characteristics of the entire universe, and that is much more difficult to explain.[96]

And another conclusion which must be drawn from this quantum Platonic account of the evolution of the universe, which is driven by the collective consciousness, either explicit or implicit, of the sentient beings who eventually end up inhabiting the universe as apparently fully paid-up 'material' organisms, is that all possible forms of organic creature must be potential at the moment of the big bang.

This conclusion is reached by the biologist Adrian Woolfson in his book *Life Without Genes*:

> 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 …[97]

Ignoring the apparently endemic misguided notion that a vast realm of experience can magically arise from complete absence, Woolfson's, strangely haunting, suggestion is that there must have been some kind of field of potentiality at the inception of the universe. Although there was not a fully manifested and experienced reality there was, according to his picture, which clearly echoes aspects of the H&M quantum metaphysics, what he calls a 'mathematical possibility'. This field is the quantum 'wavefunction' of the universe, a universal quantum field of potentiality that contains:

> …all possible histories … through which the universe could have evolved to its present state…[98]

In the beginning, of course, the quantum 'wavefunction' of the universe would contain all the future evolutionary possibilities:

> The information sea is thus a quantum mechanical sea, composed from infinite repertoires of entangled quantum descriptions.[99]

Within this all-encompassing field of potentiality all possibilities for evolutionary manifestation are encoded. From out of the vast entangled web of infinite possibilities for manifestation only certain privileged members will actually make it into reality, so to speak:

> An information space of this sort would furnish a complete description of all potentially living and unrealizable creatures…[100]

It therefore follows that there is a sort of design woven into the potentialities for evolution; it is a vast complex design of all possible manifestations written into the quantum field of potentiality of the universe standing on the very edge of time. *In such a quantum Platonic universe the DUD-MUD account of evolution cannot be true, it is pure illusion.*

Such is the power of the illusion that Dawkins and other DUD-MUDs are still mesmerized and held in its material thrall, so much so they stretch the necks of drawings of okapi, or engage in various materialist obfuscations in order to avoid, cover over and dismiss the huge absurdities, such as hippo-like creatures walking back into the sea and materially transforming into whales, rather than see the illusion for what it is, an illusion generated by interactions of immaterial quantum fields of potentiality, a fact which has been established by recent events at the Large Hadron Collider (LHC). The science writer Jim Baggott in his recent book *Higgs: The Invention and Discovery of the 'God Particle'* writes:

> In the Standard Model the concept of mass, as an intrinsic property or measure of an amount of substance, has gone. Mass is instead constructed from the *energy* of the interactions that occur between elementary quantum fields and their particles. The Higgs boson is part of the mechanism that explains how all the mass of all the particles in the universe is constructed. All the matter in the world might consist of quarks and leptons, but it owes its very substance to the energy gained through interactions with the Higgs field and the exchange of gluons. Without these interactions, matter would be as ephemeral and insubstantial as light itself, and nothing would be.[101]

This makes the entire apparently 'material' world an illusion so it certainly renders the DUD-MUD worldview an illusion. As Baggott further points out:

> 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.[102]

Quantum fields are entirely insubstantial:

> Now, from a philosophical point of view, this is rather big stuff. Our whole manner of speech … rather naturally makes us think that there is some stuff or *substance* on which properties can, in a sense, be glued. It encourages us to imagine taking a particle and removing its properties one by one until we are left with a featureless 'thing' devoid of properties, made from the essential material that had the properties in the first place. Philosophers have been debating the correctness of such arguments for a long time. Now, it seems, experimental science has come along and shown that, at least at the quantum level, the objects we study have no substance to them independent of their properties.[103]

The weight of modern quantum evidence, then, entirely supports a quantum Platonism wherein all organic forms are latent, awaiting unfoldment from quantum potentiality, within the quantum fields existing eternally as fields of insubstantial potentiality.

DUD-MUDs, however, breezily assume that none of this affects their theories, thinking that they can mistakenly and materialistically theorize away to their hearts content, pretending that a non-quantum fully paid up 'material' world can still be assumed to exist. However, this is not the case. As Stapp points out:

> We live in an *idealike* world, not a matterlike world.' The material aspects are exhausted in certain mathematical properties, and these mathematical features can be understood just as well (and in fact better) as characteristics of an evolving idealike structure. There is, in fact, in the quantum universe no natural place for matter. This conclusion, curiously, is the exact reverse of the circumstances that in the classical physical universe there was no natural place for mind.[104]

A point of view required by quantum theory which, again, supports a quantum Platonic worldview.

But, even if it were the case that it was appropriate to treat 'matter' as ultimate type 'stuff', we have already seen that DUD-MUD accounts have serious absurdities lying at their heart. It is these absurdities which can be avoided by taking the profound implications of modern quantum discoveries, as well as the dramatic evidence of Evo-Devo paradigm, into account. As biologist and Evo-Devo enthusiast Sean B. Carroll has indicated concerning the situation prior to the beginning of the evolution of life:

> …we know for certain that the full genetic tool kit for body-building was in place, but its potential was largely untapped for a considerable length of time. … the potential of the tool kit was realized largely through the evolution of switches and gene networks and the shifting of Hox zones, in the Cambrian and more recent periods.[105]

The Evo-Devo revolution, which completely rocked the world of evolutionary biology and undermined hallowed dogmas of the DUD-MUD worldview, even though many evolutionary biologists are desperately trying to contain it within the Darwinian worldview, confirms the quantum Platonic perspective in a profound way, for it indicated that the "potential" fundamental "full genetic tool kit for body-building" of all potential organisms was in place long before organic evolution actually began. This extraordinary discovery fits precisely with the quantum evidence that the potentialities for all life were latent in the quantum fields of reality.

This is not to say that there is a fully determinate human, lion, giraffe or kangaroo templates, all waiting to be expressed or manifested as is, so to speak, but, rather, all possible basic body-plans along with various possibilities for modifications of that fundamental body-plan in terms of limbs, organs and sense organs and so on are potential within levels of quantum possibility. These are expressed through quantum implicate orders through a mechanism of "quantum morphic resonance" within quantum implicate morphogenetic fields. Bohm indicated this hierarchical system of implicate orders, from subtle to fully materialized, with his notion of a "super-implicate order':

> … which is a … higher field (the implicate order would be a wavefunction) [which] would be a function of the wavefunction, a higher order, a super-wavefunction. The super-implicate order makes the implicate order non-linear and organises it into relatively stable forms with complex structures.[106]

These quantum implicate orders can also be identified as Shedrakian "morphogenetic fields":

> The development of multicellular organisms takes place through a series of stages controlled by a succession of morphogenetic fields. At first the embryonic tissues develop under the control of primary embryonic fields. Then … different regions come under the influence of secondary fields, in animals those of limbs, eyes, ears etc. … Generally speaking, the morphogenesis brought about by the primary fields is not spectacular, because it establishes the characteristic differences between cells in different regions that enable them to act as the morphogenetic germs of the organ fields. Then in the tissues developing under their influence, germs of subsidiary fields, fields which control the morphogenesis of structures within the organ as a whole…[107]

Thus the development of the embryo is controlled by a nested hierarchy of morphogenetic fields, which are, according to Sheldrake, 'quantum probability fields'[108] akin to Bohm's implicate orders. This process which underlies the development of an embryo also apples at a deeper level to the evolutionary development of a species within quantum implicate levels of reality.

Goswami has pointed out that the fact that much of the evolutionary processing of potentialities takes place at quantum implicate immaterial levels explains the lack of intermediaries which the DUD-MUD worldview takes great pains to conceal. As the 'testing out' of possibilities is quantum in nature it follows that a new species can suddenly appear during certain creative periods of the history of life, such as the Cambrian 'explosion':

> We also need to remember that the radically new, manifest form is not in fact arrived at by itself; The corresponding vital blueprint is also available to the unconscious processor that is quantum consciousness/God. That blueprint offers a rough guideline of what needs to be sought through unconscious processing. … When does consciousness choose? Well, before any choice can be made, consciousness needs microlevel possibilities to be amplified into macrolevel possibilities. Therefore, collapse does not take place at the micro genetic level. An amplification of the micro genotype to the macro phenotype first takes place in possibility. I think that this amplification involves … chaos dynamics … When there is a match between the possibilities for macrophysical form and the morphogeneric blueprint of form, a match that Rupert Sheldrake (1981) calls morphic resonance, collapse of the possibility waves precipitates, a quantum leap takes place all at once, and consciousness has succeeded in making a physical representation (the physical trait or organ, the form) of the morphogenetic blueprint and, along with it, a new species or even higher taxon. *There are no fossil records for the intermediate stages, because there are no manifest intermediate stages!* It is as simple as that.[109]

The term 'collapse' here refers to the point at which the multitude of possibilities which are potential at the quantum level are 'collapsed' by the quantum resonant 'choice' of the most efficient and appropriate one. This kind of quantum 'look-ahead' mechanism is employed by the mechanism of photosynthesis where in all possible 'paths' for energy transfer are 'tested' within a quantum superposition and the most efficient one is 'chosen':

> Electronic spectroscopy measurements made on a femtosecond (millionths of a billionth of a second) time-scale showed these oscillations meeting and interfering constructively, forming wavelike motions of energy (superposition states) that can explore all potential energy pathways simultaneously and reversibly, meaning they can retreat from wrong pathways with no penalty. This finding contradicts the classical description of the photosynthetic energy transfer process as one in which excitation energy hops from light-capturing pigment molecules to reaction center molecules step-by-step down the molecular energy ladder.[110]

This shows that one of the fundamental mechanisms uses a quantum mechanism in order to test, or 'look ahead', to find the most efficient pathway. There is an interesting remark by one of the team of researchers which indicates the remarkable lack of philosophical insight, or even perhaps common sense, in certain areas of discourse, especially evolution, on the part of otherwise intelligent people:

> "Nature has had about 2.7 billion years to perfect photosynthesis, so there are huge lessons that remain for us to learn," Engel said. "The results we're reporting in this

> latest paper, however, at least give us a new way to think about the design of future artificial photosynthesis systems."

There is absolutely no evidence that nature has been "perfecting" photosynthesis. Furthermore, it is highly unlikely that life would have got going if this mechanism had not been functioning effectively when it emerged as part of the process of the development of life.

It is far more likely that quantum photosynthesis is a mechanism which is part of the inner 'intelligence' of the process of life and the quantum look-ahead mechanism is fundamental. This is the view of Michael Mensky who has proposed his Extended Everett Concept (EEC), which is an extension of Everett's 'many worlds' wherein consciousness can choose which is the most advantageous pathway amongst quantum alternatives:

> 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.[111]

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 excitatory intelligence which is organizing the quantum potentialities into structures which are capable of channelling the ground energy-awareness into the individual individuated consciousnesses of embodied sentient beings 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, they need to be actualised through repetition into more 'explicate', 'solidified' or materialised versions. It should be immediately apparent that this insight is entirely consistent and amplificatory with all the other versions the quantum Platonic perspective (which is a general term for the notion that archetypes reside as potentialities within the quantum realm) covered so far.

The quantum physicist H. Dieter Zeh has lyrically characterised the emergence, or emanation, of the realms of apparent materiality and experience from the quantum realm by quoting the Greek philosopher Anaxagoras:

> The things that are in a single world are not parted from one another, not cut away with an axe, neither the warm from the cold nor the cold from the warm. When Mind began to set things in motion, separation took place from each thing that was being moved, and all that Mind moved was separated.[112]

The world of separation which is generated by the interactions of quantum fields and the movement of mind within quantum fields does not produce an ultimate separation but, rather, produces an appearance of a process of experienced reality by unfolding the potentialities which are latent within the realm of the ultimate unity of the ultimate field of potentiality. As the H&M quantum Platonism indicates, the movement, or observational activities, of a kind of universal collective consciousness unfolds the process of 'reality' from the potentialities, or 'themes', which are hidden within the "eternal" quantum fields. It is within these immaterial fields of potentiality that the potentialities for all manifestation, including organic creatures, are held. And, as H&M say: "This might sound like science fiction but it isn't."[113]

We can understand how this applies to the elucidation of the proper understanding of the apparent phenomenon of evolution by contrasting it with Dawkins' discussion of 'the tree of cousinship'. According to Dawkins:

> Every species is a cousin of every other. Any two species are descended from an ancestral species, which split in two. For example, the common ancestor of people and budgerigars lived about 310 million years ago. The ancestral species split in two, and the two strands went their separate ways for the rest of time. I chose human and budgie to make it vivid, but that same ancestral species is shared by all mammals on one side of that early divide, and all reptiles (zoologically speaking birds are reptiles…) on the other side. In the unlikely event that a fossil of this ancestral species was ever found it would need a name. Let's call it *Protamnio darwinii*. We do not know any details about it, and the details don't matter at all for the argument, but we won't go far wrong if we imagine it as a sprawling lizard-like creature, scurrying about catching insects.[114]

He then proceeds to tell the speculative DUD-MUD story, or myth is probably a more appropriate word, of how the common ancestor of mammals and reptiles (figure 17 shows an artist's impression of this, figure 18 is an artist's impression of the putative fact of direct line of descent of birds from dinosaurs which is alluded to by Dawkins) divided into two sub-populations, although at this point you would not be able to tell them apart and they would be able to interbreed. Later as the two populations diverge from each other the ability to interbreed is supposed to be lost because the genes, according to the DUD-MUD worldview, have diverged too much. This is what Dawkins has called the gene's "long goodbye".

The DUD-MUD evolutionary just-so story offered by Dawkins is that some kind of geographical barrier divides the two populations, and then subsequently the differences in the environment and natural selection, or genetic drift alone, cause the two populations to drift further and further apart. This process is termed 'speciation'. How various terrestrial animals have become separated onto different land masses has been a controversial topic since the turn of the century, earthquakes opening impassable gorges, change in river courses and over-water transport were some suggestions. Many thought that over-water transport - which requires rafting across large expanses of sea on floating debris - would be a highly improbable means of dispersal for animals larger than insects. However, dramatically, the event has been seen:

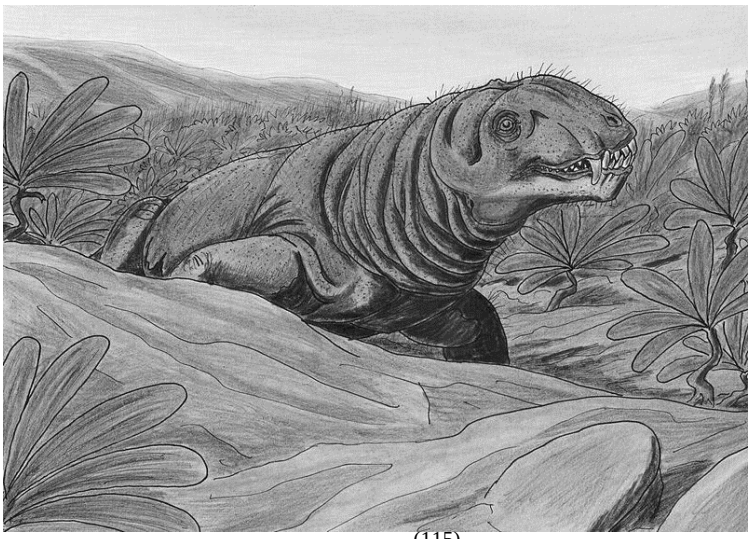

Figure 20[115]

Figure 21[(116)]

> Raft-riding green iguanas that reached the Caribbean island of Anguilla in the wake of a hurricane have provided ecologists with rare proof of one of the most debated theories of animal colonization of islands. As Ellen J. Censky from the Carnegie Museum of Natural History in Pittsburgh, Pennsylvania and colleagues report in the 8 October edition of Nature, at least 15 green iguanas (Iguana iguana) arrived on the eastern beaches of Anguilla on a large mat of logs and uprooted trees, shortly after autumn hurricanes in 1995.[117]

So it would certainly appear that this kind of division of populations can occur. Whether the division could, however, separate the two populations into one lot on one side of the sea without the putative mutant gene, whilst the hapless seafaring group just happened to all have the mutant genes is, however, a moot point. We are ourselves floating in a sea of speculation here. Dawkins tells us that "the point about such freak dispersal events that they must be common enough to account for speciation, but not too common."[118]

Dawkins then proceeds to claim that such a geographic division between evolving branches of the common ancestor of sauropsid reptiles and mammals must have occurred:

> The evidence from modern animals gives us every reason to think that something like the story I have just told is what happened in the past, for every one of the divergences between the ancestry of any animal and any other.[119]

The evidence from modern animals is, of course, primarily that of selective breeding *within a species*. He then goes on to claim that even with identical environments animals will drift apart from each other, "whether by random drift alone, or with the aid of differential natural selection"[120] And because of this, according to Dawkins, our mammal-reptile ancestor lineage "drifts" and splits into a mammal lineage and a sauropsid lineage. Dawkins also tells his readers that the "details of his little story are pure fiction." There is reason to think, however, that fictional aspect may permeate the entire scenario. For in his scenario Dawkins seems to go as far has to suggest that undirected "random drift" alone, without "the aid of differential natural selection" could achieve this remarkable feat.

This event is supposed to have taken place about 310 mya (million years ago) so mammals were around at the time of the dinosaurs (230 mya to about 65 mya), although until the demise of the dinosaurs they were restricted to being "small shrew like animals." About 180

mya the lineage of the monotremes, the egg-laying mammals which consist of the duck-billed platypus and echidna, split off. Then, according to the DUD-MUD fairy tale, about 140 million years ago[121] the remaining mammals diverged into two distinct groups, the placental mammals (a group that includes humans and most modern mammals) and the marsupial mammals (a group that now includes koalas, kangaroos, wombats, and pouched mice). These two groups are then supposed to have evolved over millions of years in two increasingly different directions. The major divergence, of course, is in their reproductive methods. Placental mammals develop inside their mother's womb for an extended period of time and their young are born quite alert and are often able to move about within just a few hours of birth. Marsupial mammals, on the other hand, give birth to less developed young that must crawl up the mother's abdomen to the safety of her pouch. Once inside the pouch, they continue their development until ready to move about on their own.

The fact that there are three very different methods of mammal reproduction which have supposed to have evolved gradually, the earliest being the amniotic egg, clearly poses a significant issue of just how such a supposedly *gradual* transition could possibly have taken place. It is the *modus operandi* of DUD-MUD enthusiasts, however, to assume and assert that such a gradual transition *must* have happened because DUD-MUD type evolution *must* have happened.

Before about one hundred and fifty million years ago, South America, Africa, India, Antarctica and Australia were all part of the landmass called Gondwana (the southern major landmass at the time, the northern was Laurasia, both of these supposedly split apart from the previous landmass called 'Pangaea' which they made up) which subsequently broke apart to form the various continents. According to the received MUD wisdom as conveyed by Dawkins:

> It is generally agreed that marsupials came to Australinea [Dawkins' term for Australia, Tasmania and New Guinea] from South America, via Antarctica. … It is not unlikely that all of Australia's marsupials stem from a single introduction of an opossum-like founder animal from South America, via Antarctica. We don't know exactly when, but it can't have been much later than 55 million years ago, which is approximately when Australia … pulled far enough away from Antarctica to be inaccessible to island-hopping mammals. It could have been much earlier…

Marsupials, then, did not originate in Australia, but America. According to one source:

> About 120 million years ago, the mammalian line ceased laying eggs and began bearing live young. These forms of mammals were the first marsupials, who bore their young at a very early stage in their development and transferred them to a pouch where modified sweat glands secreted milk. It is generally accepted that the first marsupials arose in North America and spread to South America, then to Antarctica and Australia some time before the breakup of Pangaea near the end of the Cretaceous period, some 70 million years ago. Others argue that a southern continental origin is more probable.[122]

If we accept the sequence of evolution of mammalian reproduction was egg, then marsupial and finally placental birth (although the same argument applies to any sequence), then we may ask how we can possibly conceive of such an evolution taking place *gradually*. Can we really conceive of such a radical transformation happening gradually "by random drift alone, or with the aid of differential natural selection"[123]. What are the intermediate stages? There are no fossil records to help us out regarding significant stages.

At some point we have to imagine an egg-laying mammal suddenly being endowed with a mutant 'pouch-predisposing' gene, or set of genes, by random mutation. Apparently this mutant pouch gene (or set) was extraordinary potent and eventually and cumulatively with other random mutations completely transformed the manner in which this group of mammals gave birth to their young. According to the Wikipedia entry for marsupials:

> Marsupials' reproductive systems differ markedly from those of placental mammals…. Females have two lateral vaginas, which lead to separate uteri but both open externally through the same orifice. A third canal, the median vagina, is used for birth. … The males generally have a two-pronged penis, which corresponds to the females' two vaginas. … Pregnant females develop something similar to a yolk sac in their wombs, which delivers nutrients to the embryo. Marsupials give birth at a very early stage of development (about 4–5 weeks); after birth, newborn marsupials crawl up the bodies of their mothers and attach themselves to a nipple, which is located on the underside of the mother either inside a pouch called the *marsupium* or open to the environment. To crawl to the nipple and attach to it, the marsupial must have well developed forelimbs and facial structures. This is accomplished by accelerating forelimb and facial development in marsupials compared to placental mammals. As a result, there is decelerated development of such structures as the hindlimb and brain. There they remain for a number of weeks, attached to the nipple. The offspring are eventually able to leave the *marsupium* for short periods, returning to it for warmth, protection and nourishment.[124]

But, just as in the case of the hippo to whale fantasy scenario, the complexity of the coordinated transformations required, all the while allowing the intermediate forms to reproduce, defy imagination. What kind of reproductive process would be exhibited by the mid-point intermediate form? How many mutated genes would be needed to transform an egg-laying mammal into a marsupial? One gene? A few? A lot of them? How could such a radical transformation in one of the central processes of life, the means of its very replication, take place via a sequence of small mutations? It is beyond 'beyond belief'. In this context, and in the light of all the blatant incoherencies in the DUD-MUD worldview, "personal incredulity", a response that Dawkins claims should not be applied to the MUD worldview, is a mark of sanity.

Evolution is meant to be a gradual, in fact very gradual, affair. But can one really imagine a gradual transformation from egg to marsupial reproduction, or marsupial to placental. What are the intermediate steps? DUD-MUDs regularly deride those who ask about the usefulness of half an eye, but half a pouch! Or what about a hundredth of a pouch; it would hardly be worth being born; only to find one's allotted residence not ready for occupation!

Furthermore, according to the theory of natural selection it is not just the gene mutation which is responsible for the development of an adaptation, the filtering effect of the environment is crucial. But both marsupial and placental modes of birth arose on the American continent, within a similar environment. Marsupial reproduction really took hold in Australia, but is the environment in Australia radically different to other continents, different enough to 'favour' getting out of the womb quickly and taking up residence in a pouch. Just what kind of environment would 'favour' such a radical adjustment of mode of reproduction? Is the environment in Australia that different?

Presumably, if we accept Dawkins claim that the development of new adaptations is very gradual, then the ancestor with the pouch mutation would still at this initial point be giving

birth via egg birth. However we are supposed to believe, according to the DUD-MUD account, that there is some subtle slight alteration in the direction of pouch birth. Now in order for this slight new mutational 'something', indicating the possibility of the future development of pouch birth, to actually get 'favoured' it must be advantageous in some way *at that point in time*. But how could this possibly be true? What kind of environment could make the *potentiality of pouch birth* signaled by a non-noticeable mutation, significantly more advantageous than an egg one? The egg birth process was presumably working perfectly well otherwise these pouch-mutant mammals would have died out before they became fully pouch endowed. What kind of mutated mind could possibly believe such a desperately implausible scenario? The only way this scenario could possibly make sense is if there is some kind of quantum evolutionary 'look-ahead' mechanism as suggested by Mensky.

In this context it is intriguing to examine some results of a Google search with the question "evolutionary environmental advantages of pouch reproduction." Someone in the Google list asks:

> Can someone please explain the benefits of raising babies in a pouch rather than carrying them full-term?

And the following answer is offered:

> Well, the way of reproduction of the marsupials … is not necessarily better, it is an alternative evolution to the placental animals and we have diverged in our mode of reproduction about 110 millions ago. Obviously the placenta is much better mode of connecting with the baby but there are certain advantages to giving birth to an underdeveloped baby and raising it further. This is an excerpt from a very useful article in marsupial evolution which I think will be helpful:
>
> Although the advantages of marsupial vs. placental birth may not be obvious, upon further examination several trade-offs become apparent. The placenta is extremely beneficial for many reasons, and allows the organism enough advantage to replace its marsupial counterpart if introduced into the same area. However, for everything there is a trade-off, and the gestation length may represent a direct exchange between what's advantageous for the child as opposed to the mother. In particular circumstances or levels of stress, the marsupial reproductive mode may be more beneficial in reducing the deaths specifically related to the child-mother union. Carrying a child internally for longer periods can have its consequences: principally the death of one frequently remains concomitant to that of the other. If one dies the other dies also if carried internally, but that is less frequently the case with pouched babies. If the mother is killed, a pouched baby can survive whereas birth subsequent to the mother's death never occurs regardless of the level of maturity of the fetus. Likewise, if the baby dies during gestation, a pouched baby will not sacrifice the life of the mother. Giving birth to offspring more fully developed can also have obvious disadvantages. Basically, the larger the child at birth; the more difficult the delivery is for the mother. Breech positions and such are not an issue for marsupials, but only become problematic for mammals with longer gestation periods. At times when survival has become difficult and the death rates of mothers and children are high, the marsupial mode of reproduction may prevent high mortality rates from affecting the death of the other. Under severe environmental stress when giving birth earlier becomes advantageous for the success of the population, then the marsupial reproductive mode may be selectable from the natural variation that exists within the timing and developmental rates of these events.[125]

Now this may seem plausible to some degree. But these considerations are not the kind of advantages that can be *blindly* selected by an environment which is supposedly filtering *immediately* a small increment in 'fitness' due to a small change in the structure and function of an organism. Even if the female egg-laying pouch mutants had small glimmers of pouches, two uteruses etc. etc. (which is nonsense) … Need I go on – it's nonsense.

In fact, if you think about it carefully, the above account is the kind of reasoning an intelligent designer would ponder in the process of his or her designing process; the notion that the 'blind' processes hypothesized by DUD-MUD pundits could achieve this 'fine-tuning' is, well, blind! Another attempt to explain the advantages claims that:

> This is an adaptation that enhances the survival prospects of the kangaroo in Australia's harsh climate. The kangaroo has something called *embryonic diapause*: the mother kangaroo spends most of her adult life pregnant, but in drought times, she has the ability to indefinitely "freeze" the development of the young embryo until food sources are replenished. Having two vaginas enables the embryo, when ready, to pass to the birth canal, or the median vagina while another embryo waits in suspended development.[126]

Again, this is not an adaptation which could possibly occur through the DUD-MUD gradual process of 'blind' natural selection. What possible sequence of tiny, tiny random changes could, even with the help of natural selection, possibly change egg reproduction to the radically, *very radically*, different mode of marsupial reproduction with two vaginas and so on. Furthermore, how could the 'selecting' environment possibly 'notice' a tiny, hardly noticeable, mutation in the direction of pouch-birth A quantum 'look-ahead' mechanism which triggers quantum potentialities, on the other hand, can coherently account for such an interconnection between organism and environment.

In many cases, placental and marsupial mammals physically resemble each other, except for the pouch. Dawkins provides the picture shown in figure 19 to illustrate this. Examples are the pouched marsupial mouse and the harvest mouse, the marsupial mole and the common mole, the marsupial wombat and the marmot, the Tasmanian wolf and the wolf. Dawkins says of this:

> I have already mentioned the magnificent marsupial mammal fauna of Australia … The relevant point … is the repeated convergences between these marsupials and a great variety of opposite numbers among the 'eutherian' (i.e. non-marsupial) mammals, which dominate the rest of the world. Though far from identical, even in superficial characteristics, each marsupial in the illustration … is sufficiently similar to its eutherian equivalent – that is the eutherian that most closely practices the same 'trade' – to impress us, but certainly not sufficient to suggest 'borrowing' by a creator.[127]

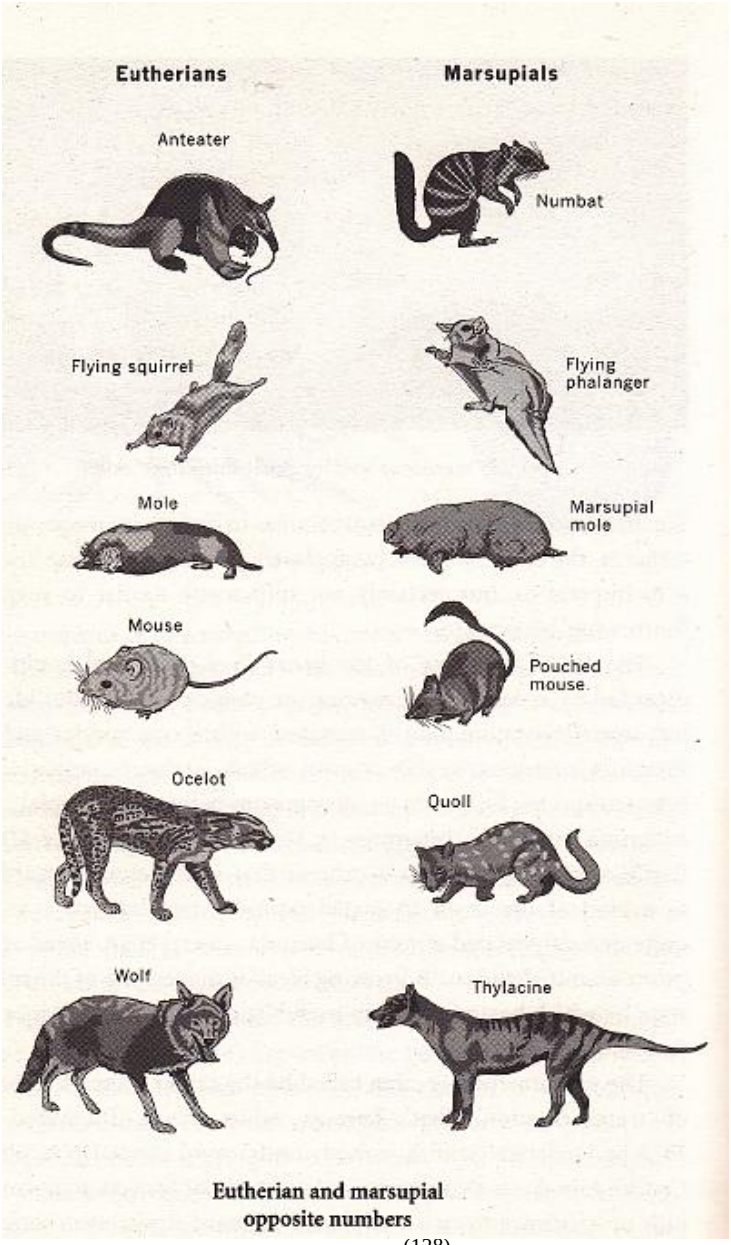


Figure 22[(128)]

Why Dawkins thinks he can be "certain" that such convergences do not indicate 'borrowing' by a creator he does not elucidate. However, contrary to Dawkins' blind prejudice that evolution is 'blind', the fact of convergences does indicate the appropriateness of the quantum Platonic perspective.

Because Dawkins is committed to the DUD-MUD worldview he must resist the evidence. His assertion that, whilst the remarkable convergences between species might "impress us", they are "certainty not sufficient to suggest 'borrowing' by a creator" is aimed at the notion that the repeated patterns with the diversity of life are indicative of "themes in the mind of the designer". In true Dawkins style he perversely parodies the suggestion by misrepresenting it:

> To emphasize how odd the idea of a creator sticking rigidly to 'themes' is, reflect that any sensible human designer is quite happy to borrow an idea from one of his inventions, if it would benefit another. Maybe there is a 'theme' of aircraft design,

> which is separate from the 'theme' of train design. But a component of a plane, say an improved design for the reading lights above the seats, might as well be borrowed for use in trains. Why should it not, if it serves the same purpose in both? … If feathers are a good idea within a bird 'theme', such that every single bird, without exception, has them whether it flies or not, why do literally no mammals have them? Why would the designer not borrow that ingenious invention, the feather, for at least one bat? The evolutionist's answer is clear. All birds have inherited feather from their distant ancestor, which had feathers. No mammal is descended from that ancestor. It's as simple as that. [129]

Dawkins remains committed to a dogmatic insistence on a direct line of fully materialized animals passing on genes from generation to generation. In contrast to this DUD-MUD view he parodies the 'design' view by implying the need for a fully conscious designer putting animals together with conscious intent. This, however, is a blatant and silly misrepresentation the quantum Platonic perspective, which is that there must be 'ideal forms', or 'templates', existing as potentialities at a subtle quantum transcendent level of the process of reality. These forms are activated within deep quantum, 'unconscious', levels by a process of 'morphic resonance' and part of this resonance includes the environment. But there is no claim that every possible configuration of forms will be activated in the quantum Platonic perspective, only a subset need be manifested. So Dawkins' criticism is entirely irrelevant.

At the outset of *The Greatest Show on Earth* Dawkins appeals to the flawed authority of the evolutionary biologist Ernst Mayr (who actually opposed Dawkins' radical gene-centered viewpoint), whose work contributed to the conceptual revolution that led to the modern evolutionary synthesis of genetics and Darwinian evolution, and to the development of the species concept. Mayr was another biologist given to making wildly incorrect sweeping assertions on the basis of flimsy evidence. Mayr, like Dawkins following him, proclaimed as a matter of incontrovertible certainty that genes in diverse species must also be completely different. Evo-Devo showed that he did not have a clue what he was talking about. The same can be said about Mayr's view that:

> Biology according to Mayr, is plagued by its own version of essentialism. Biological essentialism treats tapirs and rabbits, pangolins and dromedaries, as though they were triangles, rhombuses, parabolas or dodecahedrons. The rabbits that we see are wan shadows of the perfect 'idea' of rabbit, the ideal, essential, Platonic rabbit, hanging somewhere out in conceptual space along with all the perfect forms of geometry. Flesh-and-blood rabbits may vary, but their variations are always to be seen as flawed deviations from the ideal essence of rabbit.[130]

Quantum Platonism indicates that there was, and is, much truth in Plato's viewpoint, and the remarkable convergences clearly indicate the necessary 'existence', as potentiality, for quantum 'morphogenetic' templates underlying all organic life forms.

The Quantum Platonic perspective can be elucidated by considering the 'object-oriented' paradigm within computer modeling which constitutes the initial phase of computer systems development. The object of this approach is to be able to design a computer software system in a hierarchical modular fashion in which the system starts at the base as a highly abstract module and then descends through levels of 'object-classes' of increasing complexity; each level adds functionality to the level above. Thus in figure 20 we see that at the top of a bank account class tree there is the most 'abstract' class which is just a base level bank account. Within this class only the information which is common to all bank accounts can be placed,

information which is specific to various types of bank account are contained in the classes on lower levels of the tree.

From the Quantum Platonic perspective the first movement within the deepest quantum implicate order is that between a potential perceiving being and a potential perceived environment. As Mensky says the process begins at:

> …the most primitive, or the most deep, level of consciousness, differing perceiving from not perceiving.[131]

The 'epiontic' internal 'pressure' of the Life-Operator operates upon the infinite quantum potentialities and begins to organise a coherent world of perceivers and perceived environments within the implicate quantum levels of potentiality. In this context it is worth noting that the DUD-MUD view takes for granted the fact that organisms have a desire to survive but has no means for accounting for the origin and internal pressure to produce sentient organisms. From the Quantum Platonic perspective the pressure is internal to the quantum realm as the 'Life-Operator' which operates to unfold sentient organisms in order to produce a world of perception through which, as Neil Turok says, "the universe gains a consciousness of itself." At this primordial point there is only the mere quantum glimmer, so to speak, of a perceiving 'pole' and a perceived 'pole', there is no content. However quantum potentiality hold an infinite world of potentiality for producing all possible modes of perception and sensing, all possible modes of organic being.

Returning to the 'object-oriented' computer analogy, a further refinement of this hierarchical structure which is a vital part of the object-orientation paradigm is the idea of 'virtual members'. These are members of a class which form part of the overall structure but cannot be fully specified within the class because the exact form of the member depends upon the implementation of members at a lower level of the hierarchy. So the top level 'bank account' class might look as shown in figure 20. The personal details of the account holder can be 'implemented' within this level but the 'virtual' members will be fully specified at a lower level of the object hierarchy. Thus the 'virtual' members specify an 'abstract' structure which can be implemented in different ways at a later point depending upon the paths taken through the lower levels of the hierarchy.

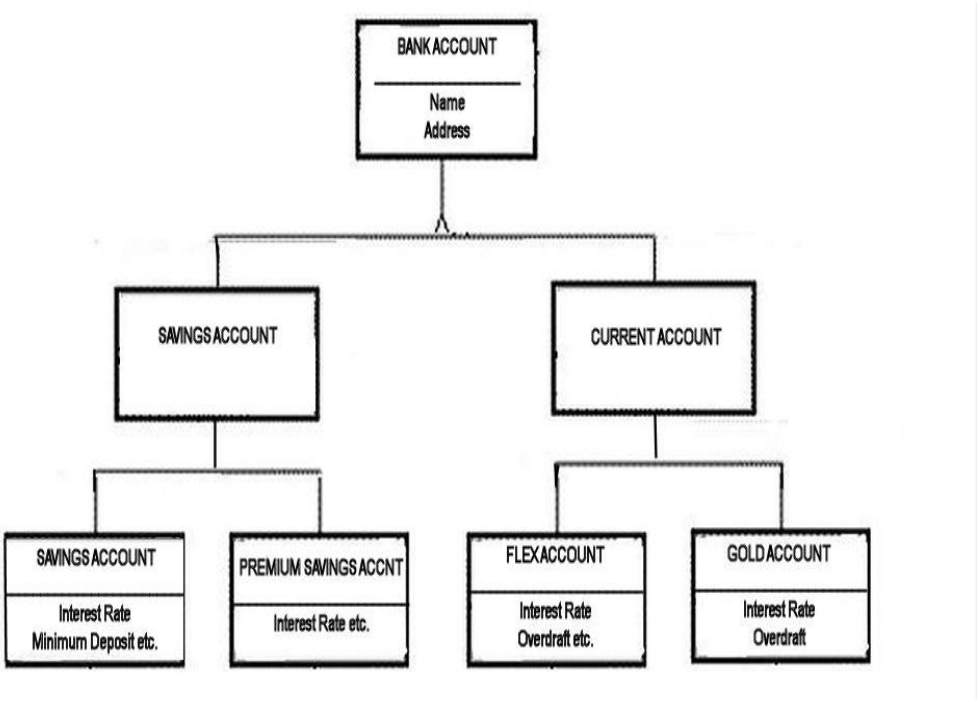


Figure 19

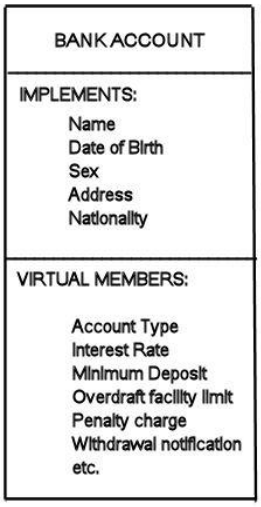


Figure 20

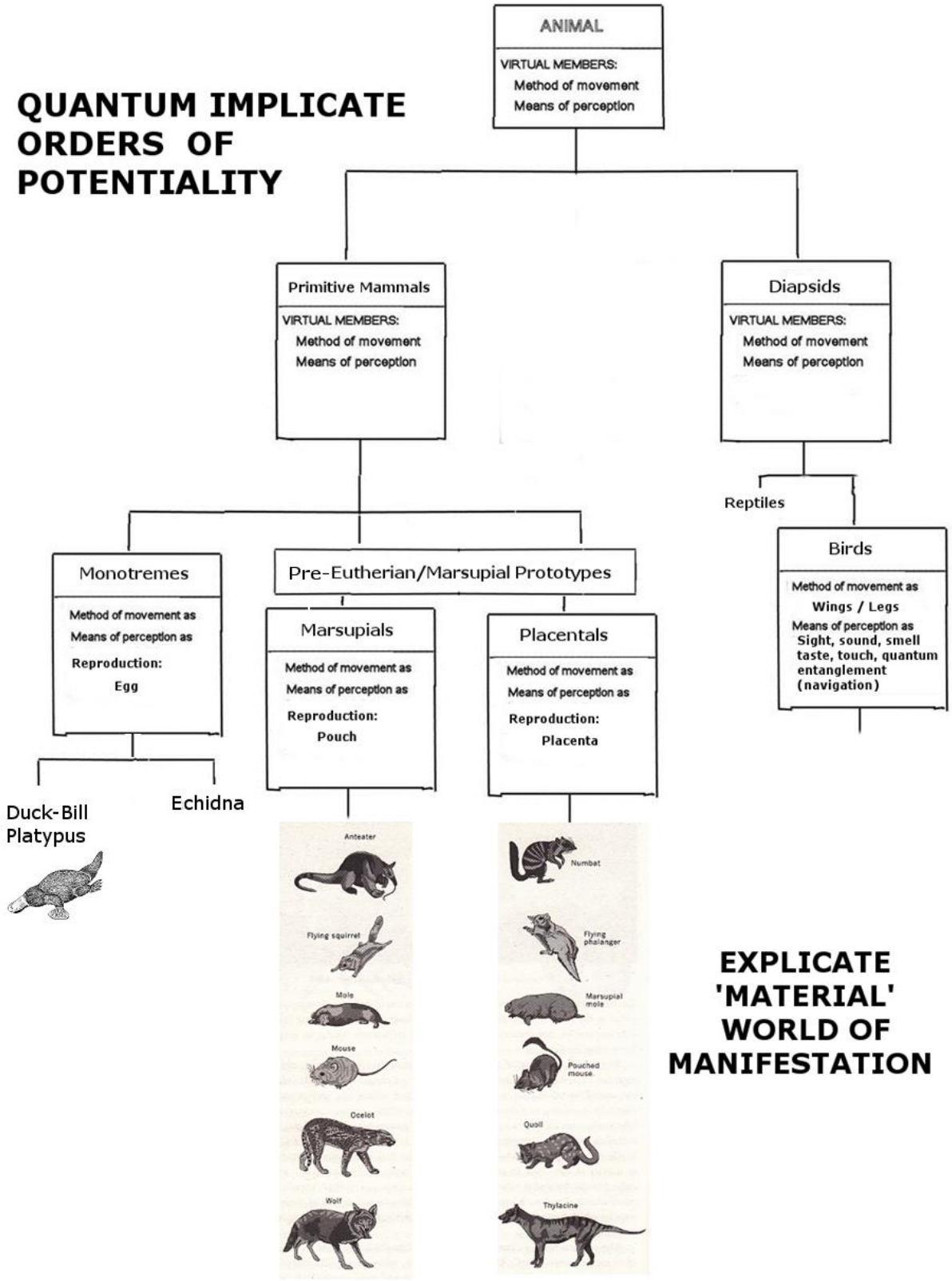
QUANTUM IMPLICATE ORDERS OF POTENTIALITY
ANIMAL
VIRTUAL MEMBERS:
Method of movement
Means of perception
Primitive Mammals
VIRTUAL MEMBERS:
Method of movement
Means of perception
Diapsids
VIRTUAL MEMBERS:
Method of movement
Means of perception
Reptiles
Birds
Method of movement as
Wings / Legs
Means of perception as
Sight, sound, smell taste, touch, quantum entanglement (navigation)
Monotremes
Method of movement as
Means of perception as
Reproduction:
Egg
Pre-Eutherian/Marsupial Prototypes
Marsupials
Method of movement as
Means of perception as
Reproduction:
Pouch
Placentals
Method of movement as
Means of perception as
Reproduction:
Placenta
Duck-Bill Platypus
Echidna
Anteater
Flying squirrel
Mole
Mouse
Ocelot
Wolf
Numbat
Flying phalanger
Marsupial mole
Pouched mouse
Quoll
Thylacine
EXPLICATE 'MATERIAL' WORLD OF MANIFESTATION

Figure 21

The findings of the Evo-Devo revolution now indicate that a similar hierarchical modular development is fundamental within the evolutionary development of species. Figure 21 gives a flavor of this perspective in a very crude and reduced form (obviously), indicating the principle rather than detail. The essential point is that, whereas the previous view of divergent 'random' mutation of material gene units asserted the lack of common structure between divergent species it now turns out that in fact there is a common structure, which is clearly apparent within the genetic structure underlying all species.

From the Quantum Platonic perspective the 'family resemblances' between marsupials and placentals, for instance, is due to the fact that the quantum morphogenetic templates of the various animals are prepared within the quantum implicate orders before they are expressed materially. As the various 'template' animals are organized through 'morphic resonance' through the increasingly more 'explicate' quantum levels, they take on ever more detailed 'appearance' within the quantum implicate realms. Thus at the point indicated by the box 'Pre-Eutherian/Marsupial Prototypes' we can imagine the animal has been quantum-virtually 'assembled' to the point where 'virtual' features of sensing and locomotion have been put in place (not indicated on the diagram – see figure 22) but a method of reproduction has not yet been implemented. There are two methods available within quantum potentiality – marsupial and placental – and so the same template animal is 'expressed' in two varieties, one with the marsupial reproductive method and the other with the placental. The convergences illustrated within the comparison between placental and marsupial animals is exactly what one would expect from the Quantum Platonic perspective. In fact the Quantum Platonic perspective accounts for all the remarkable biological convergences found in nature. Furthermore, through this quantum implicate layered mechanism, together with the quantum 'look-ahead' mechanism, each 'template' animal and plant eventually gets equipped with features 'fitted' to its target environment.

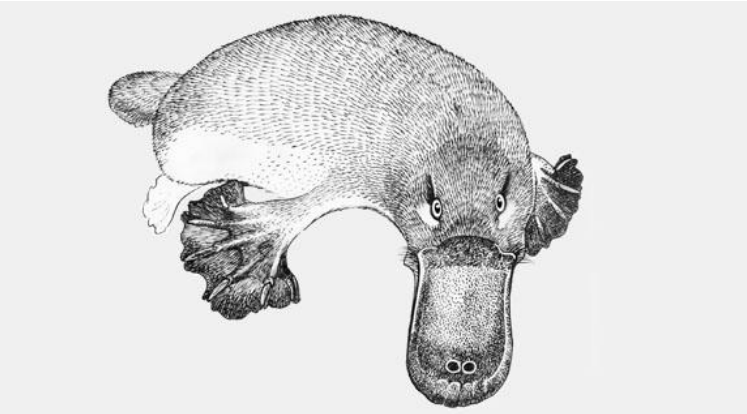

Figure 22
(RCG illustration/Paula C. Rondeau[132])

It would be remiss to leave out a brief discussion of one of the most bizarre creatures extant today, the duck bill platypus (figure 22), which is one of the two types of monotreme, the earliest split off mammalian lineage. This creature poses significant problems for the DUD-MUD perspective, despite attempts DUD-MUD to explain away the problems. However, as we shall see, this remarkable creature beautifully illustrates the power and appropriateness of the Quantum Platonic paradigm.

The platypus has a bizarre physiology, it appears to be a hybrid blend of a bird, beaver, reptile and otter, with additional features not found in any of these four. When the naturalist George Shaw, Keeper of the Department of Natural History at the British Museum, received a specimen from Captain John Hunter at the end of the eighteenth century he remarked that it was "impossible not to entertain some doubts as to the genuine nature of the animal, and to surmise that there might have been practiced some arts of deception in its structure."[133]

The two most remarkable features are the, on first appearance, duck-like bill, which is actually a highly sensitive electro-location sensor, detecting miniscule electrical impulses generated by its food source of small crustaceans and worms, and, secondly, the fact that it is the only mammal which lays eggs. The platypus has webbed feet, similar to those found on otters. Unlike an otter, however, the webbing is far more pronounced on the front feet of the platypus, which it uses like paddles for swimming. While in the water, the back feet are tucked into its body and hardly used at all. It has a beaver-like tail, but whereas a beaver's tail is covered in scales, is flattened, and propels the rodent through the water when swimming, the tail of the platypus is covered in fur and is used more in the way a rudder might guide a boat. The platypus has two sharp heel spurs behind its hind feet which can pierce skin. Male platypuses are able to inject a protein-based extremely potent toxin.

Platypuses hunt underwater, where they swim gracefully by paddling with their front webbed feet and steering with their hind feet and beaver-like tail. Folds of skin cover their eyes and ears to prevent water from entering, and the nostrils close with a watertight seal. In this posture, a platypus can remain submerged for a minute or two and employ its electro-sensitive bill to find food. In his book *The Ancestor's Tale* is full of admiration for the construction and functioning of the platypus' bill's electrosensitivity, comparing it to the "extra nose grafted onto a Nimrod reconnaissance aircraft" which is the American equivalent to AWACS system. The platypus' bill, he says, "a reconnaissance device, an AWACS organ":

> Platypuses have about 40,000 electrical sensors distributed in longitudinal stripes over both surfaces of the bill. … a large proportion of the brain is given over to processing the data from these 40,000 sensors. But the plot thickens. In addition to the 40,000 electrical sensors, there are about 60,000 mechanical sensors called push rods, scattered over the surface of the bill. Pettigrew and his co-workers have found nerve cells in the brain that receive inputs from mechanical sensors. And they have found other brain cells that respond to both electrical and mechanical sensors (so far they have found no brain cells that respond to electrical sensors only). Both kinds of cell occupy their correct position on the spatial map of the bill, and they are layered in a way that is reminiscent of the human visual brain, where layering assists binocular vision. Just as our layered brain combines information from the two eyes to construct a stereo percept, the Pettigrew group suggests that the platypus might be combining the information from electrical and mechanical sensors in some similarly useful way.[134]

A truly remarkable piece of bio-engineering which, Dawkins tells us, "has evolved far, even if other parts of the platypus have not."[135]

The significant issue, however, is that of whether this kind of bio-technology could have 'evolved' through the mechanism of RM+NS. Anyone who believes this must also believe that a random mutation can produce a fully functioning electrosensitive bill along with the appropriate brain 'wiring' interconnections to process the information gathered by the

complex system of the electrosensitive bill. Even if this 'original' bill was not as complex as that possessed by today's platypuses, the random-mutatedly produced bill would need to be complex enough to function as an electrosensitive device capable of indicating location.

Given the fact that we know that all possible types of sense organ must be potential within the primordial quantum ground, such a desperately implausible account seems beyond the absurd. Dawkins points out that other animals have 'evolved' similar electrosensitive organs, which is supposed to indicate DUD-MUD 'convergent evolution'. Such convergences, however, are much more coherently explained form the quantum Platonic perspective. As animals are 'assembled' within the implicate levels of quantum potentiality through the mechanism of 'morphic resonance' they can avail themselves (metaphorically) of organs appropriate to the target environment. The quantum 'look-ahead' mechanism allows this mechanism of 'fitting' to function. This also gives an indication of how the platypus has such a diverse and seemingly peculiar set of features which defy DUD-MUD explanation. Its features are absolutely well-suited to its environment and mode of life.

Recently the platypus' genome was sequenced and the results caused some surprise:

> The creature, considered one of the strangest mammals in the world, has become the latest to have its genetic code sequenced, revealing it to be a bizarre mix of mammal, bird and reptile, with very complex sexuality. While humans have two sex chromosomes, the X and Y, the platypus has 10, with five of each kind.[136]

This kind of "bizarre mix" is not easily accounted for from a DUD-MUD worldview. However, it is entirely to be expected within with the viewpoint of the Quantum Platonic paradigm.

The only possible explanation which accords with recent scientific knowledge for all of the above, as well as the remarkable interconnected bio-diverse interdependency found in nature in general, is that there is a deep level of quantum interconnection between an environment and the 'design' of the species found in that environment. And such an interconnection has been shown to exist; it is called 'quantum entanglement'. This can happen precisely because the 'themes' for all the possibilities of life, including organisms and environments, are potential within the Platonic quantum fields of potentiality, and when they are expressed and manifested they do so in a manner which is, in the main, coherent and consistent, the inhabitants fitting, because of the patterning of the internal potentialities, the manifested environments. This is a result of an internal quantum 'entangled' interconnection between manifested creatures and their containing environments.

Dawkins, of course, scoffs at such ideas and dogmatically proclaims their erroneous nature:

> Zoologists … are tempted to think of the divide between major groups as a momentous event. The reason zoologists may be so misled is that they have been brought up in the almost reverential belief that each of the great divisions of the animal kingdom is furnished with something deeply unique, often called by the German word Bauplan. Although this word just means "blueprint", it has become a recognized technical term … In its technical sense, bauplan is often translated as "fundamental body plan." The use of the word "fundamental" (or, equivalently, the self-conscious dropping into German to indicate profundity) is what causes the damage. It can lead zoologists to make serious errors.[137]

The quantum evidence and the Evo-Devo revolution, however, indicate that it is Dawkins, with his stubborn adherence to a discredited materialist metaphysics, who is in the DUD-MUD grip of "serious errors." Both these areas of enquiry suggest the deep importance of the quantum 'existence' of such body plans as quantum potentialities. And, because of this, it now looks entirely likely that each species has its own quantum 'template,' or set of templates underlying manifestation, which is manifested through the operation of an internal quantum 'pressure' which drives the process of quantum evolution into the manifested 'material' world. The DUD-MUD worldview is now revealed as nothing more than an illusion created by dogmatic adherence to a thoroughly unscientific materialist metaphysics.

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