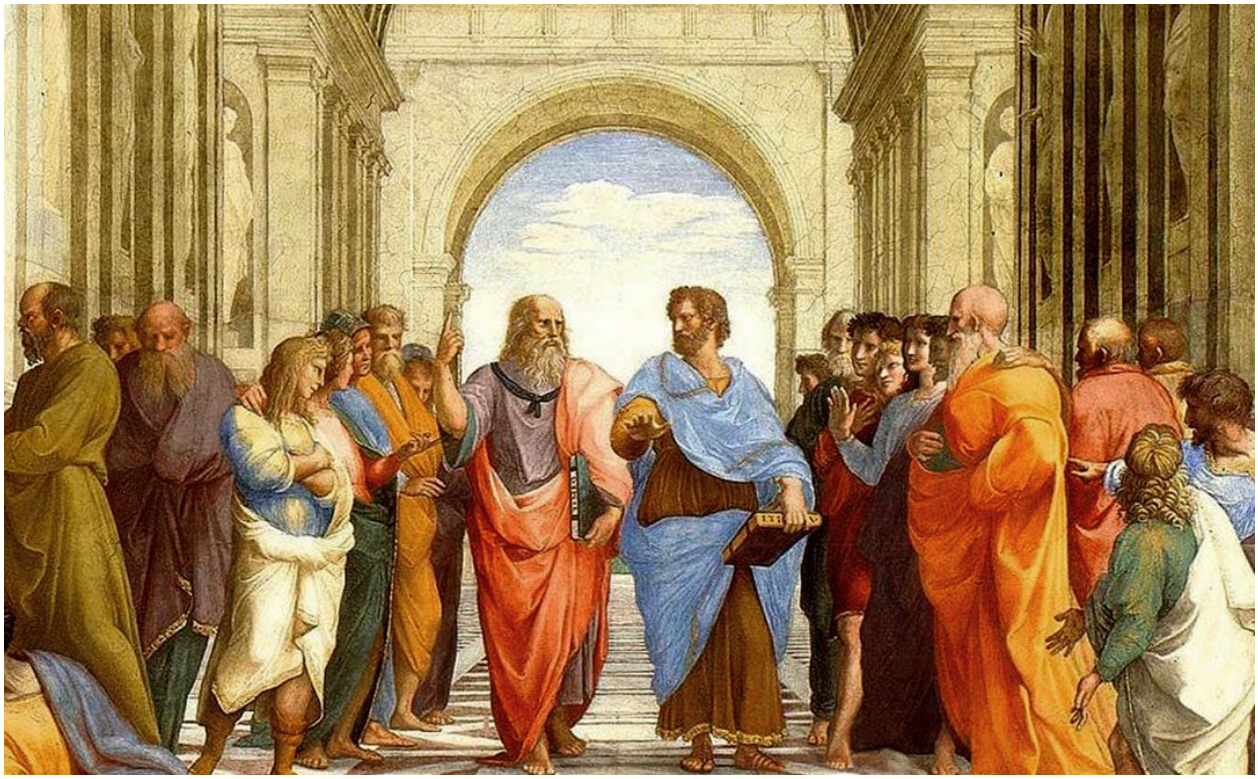
BRING BACK METAPHYSICS!

Scientist and writer Colin Tudge makes a plea for us to return to what he calls 'The Art of the Unknowable'



Colin Tudge is a science writer and broadcaster who is best known for his work on agriculture and the environment, with books such as *Feeding People is Easy* [1] and *The Variety of Life* [2]. His latest publication, *The Great Rethink,*[3] advocating a radically new approach to food production, was reviewed by Beshara Magazine last year (click here). In this article, he argues that at the root of our contemporary problems is a failure to address fundamental questions about the nature of the universe and how we have knowledge of it. These lie beyond the realm of science, in what is called 'metaphysics', and demand a recognition of the importance of intuition as well as reason.

Metaphysics asks what many have called 'the ultimate questions' such as 'where does the universe come from' and 'what is truth'. But although these questions are clearly so important and ever-present, and indeed are at the root and at the heart of all *bona fide* religions, metaphysics as an independent discipline has largely gone missing over the last centuries. And, says Sayyed Hossein Nasr, Professor of Islamic Studies at the George

Washington University, USA, its 'disappearance is most directly responsible for our modern predicament'.[4] For it means that we – and especially the world's political and intellectual leaders – no longer formally address these 'ultimate questions' even though they seem to be the most important of all.

So what is metaphysics? Literally, the Greek word means 'that which comes after, or is beyond (*meta*), the study of the physical world (*physics*) '. The much overlooked English philosopher R.G. Collingwood (1889–1943) explained it like this in *An Essay on Metaphysics* [5]: all our ideas are founded in presuppositions and those presuppositions in the end are rooted in other presuppositions and so on and so on, until in the end we find ourselves up against 'absolute presuppositions' – things that we must assume are the case but which we cannot ultimately show beyond all doubt really are. Thus a pathologist might show convincingly enough that a particular germ causes a particular disease – except that ultimately he or she cannot prove beyond all possible doubt that there really is such a thing as cause and effect. We all know the adage, 'correlation is not cause' but in practice, as David Hume pointed out, the fact that B fairly consistently follows A gives us our main or only reason for assuming that A is the cause of B. What else have we got to go on? [6] But this is not a 'fact'; it is a metaphysical assumption.

So what are these 'ultimate questions'? I suggest there are four:

1. What is the universe really like?
2. How do we know what's true?
3. What is goodness?
4. Why did the universe come into being at all? Who or what caused it to do so? In a nutshell: *How come*?

Science seeks answers to Question 1; various branches of philosophy seek to throw light on 2 and 3; and 4, these past few thousand years, has been addressed primarily by theologians. But metaphysics in each case has special contributions to make and overall it enables us to unify the otherwise disparate lines of thought. In this short article, due to lack of space, I am going to talk only about the first two.

What is the Universe Really Like?

Overall, humanity's attempts to get to grips with the universe and its manifestations, including life and mind, fall into two main schools: the hard-nosed, ultra-rational ('buttoned-down', 'hard-boiled', 'stripped-down', 'no-nonsense') school and what for short-hand purposes I will call the 'transcendental' school. The first insists that science alone can tell us all there is to know. In the end, say the hard-noses, everything can be explained by the laws of physics and biology. If only we knew enough physics we would, in effect, be omniscient. This idea – that science can tell us everything worth knowing – is commonly called 'scientism'. An arch exponent in recent decades is an Oxford professor of chemistry, Peter Atkins, who tells us in *Nature's Imagination* that:

> There is no reason to suppose that science cannot deal with every aspect of existence … The only grounds for supposing that reductionism will fail are pessimism on the part of scientists and fear in the minds of the religious.[7]

Although science of the kind that scientists recognise does sometimes aspire to deal with aspects of life and the universe that do not seem simply to be of a material kind – in psychology and some aspects of sociology, for instance – there can be no doubt that *bona fide* science deals most successfully with the material universe. It is concerned with things that you could stub your toe on, and more generally with phenomena that can be repeatedly and reliably observed – that can be quantified and hence subjected to the rigours of mathematical analysis, and to experiment under controlled conditions. Physics has long been treated as the gold standard,

while biologists are sometimes said to suffer from physics envy. Even psychologists of the more scientific bent like to root their ideas in neurophysiology, as if what we think and feel is just the noise of neurones firing.

Accordingly, the hard-nosed adherents of scientism tend also to be materialists: and since they reject all appeals to what cannot be quantified and mathematicised, including the idea of God, they are, perforce, atheists. Indeed, Atkins's fellow Oxford incumbent, Richard Dawkins, compares God with fairies at the bottom of the garden – a pleasing but childish fantasy at best; a comfort blanket.[8] The universe is wonderful enough without dragging God (or fairies) into it, says Dawkins – a thought echoed, somewhat less bluntly, by Britain's favourite physicist, Brian Cox, in his numerous TV programmes. At best, the hard-noses concede, such musing is harmless enough, and indeed pleasurable, and encourages social coherence, and all the rest. At its worst such fanciful flights all too often lead us into all kinds of dangerous waters, and to all kinds of excess.

In sharp contrast, the 'transcendental' school suggests that there is more going on in the universe than meets the eye – or, more to the point, that there is more going on than science is equipped to get to grips with, or can ever hope to get to grips with. Others have used the term 'transcendental' to mean somewhat different things, but this is what I mean by it here. People with transcendent leanings do not necessarily subscribe to any particular religion but they often do; and many take the particular idea of God (or the gods) very seriously, and live their lives around their belief.

In the present world the hard-noses are winning. Whatever may go on in the heads and hearts of people at large, or in the work of scientists like the ones featured in *Beshara Magazine*, the overall tenor of the world, led or imposed by the most powerful political, commercial, and indeed intellectual leaders, is more and more 'secular'. Well, I am educated in science too – though in biology rather than physics. I feel, and always felt, that science is wondrous – partly because it is showing us in epiphany after epiphany that life and the universe are even more wondrous than those of a pre-scientific age could have realised. This is roughly what Dawkins and Cox say too, and one of the most wondrous things is the human brain, which seems to have evolved on the plains of Africa and helped our ancestors to find food and avoid hyaenas and socialise – yet it can also probe, and to some extent explain, the most intricate workings of the whole universe. Surely – as Dawkins says – the idea of transcendence is at least superfluous? Aren't life and the universe wonderful enough without invoking God, or some equivalent fancy?

The Argument for Transcendence

At this point, some hard-noses like to drag in Occam's Razor. William of Occam, aka Ockham, (1287–1347) was a 14th-century English friar who famously advised, '*Non sunt multiplicanda entia praetor necessitate*' meaning 'Entities are not to be multiplied beyond necessity'. This has been widely interpreted to mean that explanations should in general be as simple as possible. But this does not mean that the simplest explanations you can think of are necessarily the best. As Einstein said, 'Everything should be made as simple as possible, but no simpler'.[9]

So the fact that we can provide a reasonable explanation of life and the universe without invoking transcendental forces does not mean that there are no such forces – that there is *nothing but* the known laws of physics. Occam merely tells us that we need good reason to reach beyond the laws of physics – which, as a man of God, he clearly did. The real issue is not whether the idea of transcendence is or is not surplus to requirements, or that it has often been deployed for nefarious purposes, but whether it is *true*. Is there any reason to suppose that science cannot tell us all there is to know? Is there any reason to invoke additional influences at work, beyond the laws of physics?

Well, actually, yes – there are good reasons for thinking both these things.

The hard-noses maintain in particular that there is no evidence to support ideas of a teleological kind – the idea that the evolution has direction: that it is orientated towards some goal. Still less can we suppose that the universe has *purpose*. As Dawkins mournfully – or perhaps gleefully – informs us:

> The universe we observe has precisely the qualities we should expect if, at bottom, [it has] no purpose, no design, no evil, no good, nothing but blind, pitiless indifference.[10]

But in general, those who claim there is 'no evidence' for anything more than physics do not know what evidence really is. At least in a court of law, evidence does not mean 'proof'. If it did, there would be no need for lawyers. Evidence is merely an observation that is seen to be compatible with a particular hypothesis (e.g. with the hypothesis that the child holding the catapult and looking guilty actually fired the stone that broke the greenhouse window). And is there nothing about the universe to suggest that it has direction and purpose, indicating some underlying design and intelligence? Indeed there is so much that most people, including most intellectuals at least until the time of Charles Darwin, took it for granted that this must be the case.[11] All those intellectuals may indeed have been mistaken, but no one could say that there was no evidence to support their ideas. There was and is at least as much evidence to support the ideas of purpose and underlying intelligence as there is to dismiss it.

So the fact that – up to a point! – we can explain the way the universe behaves without reference to any underlying intelligence is not in itself reason for insisting that there is not any. And on a point of detail: no one is quite sure whether Darwin himself would have agreed with Dawkins's bleak assessment of the universe. He expressed scepticism in some of his correspondence but he certainly does not come across as an atheist in most of his writing. As the biochemist / philosopher of science, John Hedley Brooke, has commented (though I paraphrase):

> Darwin was an atheist on Mondays, Wednesdays, and Fridays, and devout in the rest of the week.[12]

Problems with the 'Hard-nose' Approach

The hard-nosed school received a considerable boost around the time of World War I with the rise, in Vienna, of the logical positivists. The logical positivists argued that no idea is worth taking seriously unless it can be verified. And in reality, they said, the only ideas that can be verified – shown beyond all doubt to be true – are scientific ones, based on reliable observation and experiment and the most rigorous mathematical analysis. Maths, after all, is applied logic and cannot possibly be wrong. At least, mathematicians lay out their thinking for all to see ("show your working", as they say in exams) so if they do make mistakes (or cheat) they are bound to be found out sooner or later. Many intellectuals of all kinds were convinced by the apparent rigour of these arguments. Logical positivism was, it seemed, a breath of fresh air, a new broom applied to the Augaean stable of past muddle-headedness.

But the euphoria did not last long. Hard on the heels of the logical positivists came the Austrian–Hungarian American mathematical genius Kurt Gödel (1906–1978) who pointed out that all mathematical statements that are not mere tautologies – meaning that they are true by definition – are bound to contain elements that are not themselves verifiable. That is, maths itself is not as rock-solid as has generally been supposed, at least since the time of Pythagoras. Like all human attempts to understand, it has a subjective element.[13]

Then from the 1930s onwards came the Austrian–British philosopher (Sir) Karl Popper . He pointed out that no idea about the workings of the real world can be shown to be *unequivocally* true – meaning that no idea of an empirical nature can be verified to the point of being proven beyond possible doubt. For example, he said (it is not a great example but it will do) we can never prove that all swans are white, were we to suggest such a thing, because a swan might turn up that isn't. We cannot count all the swans in the world or be sure that we have done so, and we certainly do not know what the future may bring. But the all-swans-are-white hypothesis

can theoretically be *disproved* – as indeed it is by the black swans that live in Australia. Scientists should not set out to prove their ideas, said Popper, but to disprove them. Thus the corpus of *bona fide* science is composed not of ideas that have been proved but of ideas that have survived the best attempts to disprove them. Ideas that cannot be *disproved* by observation and experiment cannot properly be said to be *bona fide* science at all.[14]

All is not quite so simple, for as other philosophers have pointed out, it is not always easy to decide what counts as disproof and what does not. Nonetheless, what emerges from all the to-and-fro discussion is that science cannot simply be seen as the sum of verified ideas, which the logical positivists took it to be. Popper's idea may be open to criticism – as he himself insisted: *all* ideas must be subject to criticism – his core idea that science is the sum of ideas that have (so far) withstood the best attempts to knock them off their perch is surely closer to reality. The 'facts' and theories of science are not rock solid, 'set in stone', a ziggurat of truth for all time. All its ideas are partial and provisional. The corpus of science is indeed wondrous but it is not the perfect portrait of the universe that it is often imagined to be. It is like a vast impressionist painting worked on by a thousand hands, which morphs before our eyes.

Clearly, most human thinking, including most or all of theology, cannot be definitively disproved and so lie outside the scientific canon. But ideas do not cease to be worth pondering, or valid, just because they do not meet the Popper criterion of disprovability. Popper himself had a great deal to say about democracy, which is not a matter of science (although science can say interesting things about it).

But to my mind, the comment that really sums things up comes from the great 20th-century biologist (Sir) Peter Medawar (1915–1987). He borrowed a comment from Otto von Bismarck – that 'politics is the art of the possible' – and in like vein, said, 'science is the art of the soluble'.[15] Scientists tackle only those questions they think they can answer with the tools, ideas, time and resources that are available. No more, no less. It is and must be a pragmatic pursuit. The sum of all the questions that scientists think they can solve falls far short of omniscience, of the kind that the zealots of scientism seem to think we will achieve.

Finally, I like the ideas of the American philosopher Thomas Kuhn.[16] Scientists at any one time, he said, tend to share a particular worldview – what Kuhn called a 'paradigm': the metaphorical, all-encompassing impressionist painting that (almost) everyone works on at any one time. But as the scientists discover more and more details, and elaborate their interpretations, anomalies creep in. Then the original paradigm starts to fall apart. Eventually it is beyond rescue. There is nothing for it but to scrap the canvass and start again with a new one. That is what Kuhn famously called a 'paradigm shift'. It is easy to list at least 20 paradigm shifts over the past few thousand years that resonate through all aspects of modern life and thought. (I say 'few thousand years' rather than the usual 400 or so in order to acknowledge the ancients and the Mediaeval Muslim and Christian thinkers who provided the essential concepts that the moderns built upon).

Kuhn's view of science is a reminder that science in the end, like all our interpretations of the world, is a narrative; a story that we tell ourselves. What we call 'scientific truth' is a story which, at any one time, we happen to find convincing.

Universal Consciousness

Right now, in all regions of science, we seem to be in the midst or on the point of some extremely interesting, all-embracing paradigm shifts (for the shifting never stops). Prominent and perhaps chief among them is the idea of universal consciousness. This idea has been around in one form or another for thousands of years – in a sense it is at the root of all religions – but science in the past 120 years or so has enriched the thesis no end. Indeed, the idea of universal consciousness may provide the most fruitful meeting ground of all for science and religion. Surely these two great 'magisteria' need not be doomed forever to glare at each other from their respective promontories across the void, as is often suggested must be their fate.[17]

The idea says, in its simplest form, that consciousness – or intelligence or mind – does not originate within our own brains, or within the brains of other clever beasts like wolves and chimps and elephants (and squirrels and pigs and crows), but is a quality of the universe. It is out there, part of the fabric of the universe, just as is true of electromagnetism or gravity. We do not therefore *create* consciousness, or intelligence. We *partake* of the consciousness that is already out there, just as we partake of light, thanks to our eyes and visual cortex. However: whereas we are mere receivers of light (although we also interpret what we see) we are both receivers and transmitters of consciousness. We receive the signals, process them according to our own abilities and inclinations, and then pass them on. Thus, humanity and other clever creatures are constantly enhancing the mix.

This is a nice, poetic idea – but not merely poetic. Pioneer research in quantum phenomena in the early 20th century, beginning with Max Planck (1858–1947) then Niels Bohr then Erwin Schrödinger and Werner Heisenberg and many others, suggested – some would say demonstrated beyond reasonable doubt – that the course of quantum experiments is critically influenced by the minds of the experimenters. In short we are *participants* in the phenomena we contrive to demonstrate. We are indeed helping to shape the universe. As Max Planck himself declared:

> I regard consciousness as fundamental. I regard matter as derivative from consciousness.[18]

Or in the words of the English physicist Sir James Jeans (1877–1946):

> The Universe begins to look more like a great thought than like a great machine.[19]

And this from the Irish physicist John Stewart Bell (1928–1990), creator of the paradigm-shifting Bell's theorem:

> As regards mind, I am fully convinced it has a central place in the ultimate nature of reality.[20]

Many others have said much the same. I do not feel it is too fanciful to relate all this to the ever-mysterious opening verse of the Gospel according to St John:

> In the beginning was the Word and the Word … was God.[21]

Why not for 'God' read 'universal mind'?

The hard-nosed might object, and indeed do object, that the idea of universal mind cannot be tested critically because the only way to show beyond reasonable doubt whether something exists or not, or has an effect or not, is to see what things are like when we know that the thing in question is definitely *not* there; whether it makes any difference. So it is obvious that vitamin C is vital because human beings fall apart, almost literally, if we are deprived of it. But if mind is truly universal – part of the fabric of the universe – then it is impossible to create conditions in which it is absent. So the idea that there is such a thing as universal intelligence, and that it makes a big difference to the way the universe works, seems in the end, in practice, to be untestable. We may be given hints of universal consciousness but we cannot demonstrate that we really need to invoke such a thing as we can with vitamin C. So the idea fails the Popper test.

But is this the end of the story? I would say no, because what really matters in the end is whether an idea is important, whether it is plausible, and whether it has explanatory power. The idea of universal intelligence meets all three requirements with flying colours. It is hugely important, because if it is true it changes everything; it is supported by some excellent physics; and it has the potential not simply to explain the physical universe but to bring together the two rival magisteria of science and religion. What more do we want?

Samuel Taylor Coleridge surely had such thoughts in mind, or at least at the back of his mind, when he wrote *The Eolian Harp* in 1795:

> And what if all of animated nature
> Be but organic Harps diversely fram'd,

> That tremble into thought, as o'er them sweeps
> Plastic and vast, one intellectual breeze,
> At once the soul of each, and God of all? [22]

All this moves us on to the second great question of metaphysics: how do we know what is true?

How do we know what's true?

We don't, is the short answer. Karl Popper provided what seems like solid reasons for classing ideas as science or not science, which is a good start. But he also warned that the ideas of *bona fide* science, though 'robust' in the sense that they resist the best attempts to disprove them, are nonetheless partial (we cannot know in advance all the things that ought to be taken into account) and provisional (waiting to be knocked off their perch). Socrates went one step further. At his trial (according to Plato) he said:

> I seem, then, in just this little thing to be wiser than this man at any rate, that what I do not know I do not think I know either.[23]

Confucius said much the same thing. We may be absolutely certain of something or other but we can never be certain that our certainty is justified. As Oliver Cromwell famously said to the Scottish parliamentarians (though the Quakers may have said it first): 'Think it possible that you may be mistaken' [24] – or at least consider that you are not in possession of all the relevant facts, and indeed never can be. Thus as Popper said in *The Beginnings of Rationalism* in 1958:

> Our attempts to see and to find the truth are not final, but open to improvement; that our knowledge, our doctrine, is conjectural; that it consists of guesses, of hypotheses rather than of final and certain truths.[25]

In the end all that we claim to know is a matter of *belief*. And this begs the further question: why do we believe some things and not others?

Scientists of the hard-nosed kind – and indeed all hard-noses in all disciplines – claim above all to be rational, and to base their ideas on evidence. This sounds very responsible and rigorous but in truth it is rooted in the old-fashioned notion of induction as espoused by Francis Bacon at the beginning of the 17th century. The idea is that if you accumulate enough facts, then the theories that explain those facts will somehow or other become obvious. But as David Hume pointed out in the 18th century, there is no reason at all to assume that accumulations of facts will spontaneously give rise to plausible explanations.[26] And as Popper pointed out very clearly in the quote above, it is not in reality how we acquire insight at all; we start with guesses and then with greater or lesser rigour put those guesses to the test.

In reality, the same set of 'facts' can lead different people – including scientists – to all kinds of different conclusions. Most strikingly perhaps, the most widely accepted standard model of cosmology tells us that the universe began about 13-and-a-bit billion years ago with the Big Bang. A lot of data – evidence – points us in that direction. But a lot of physicists of standing simply do not believe this. Some still favour some version of Fred Hoyle's original 'Steady State' theory: the idea that the universe is continually being created. Others favour a cycle of expansion and contraction. What intrigues me is why they favour alternatives at all. All have access to the same evidence but as one dissident said on BBC television recently (I can't remember who), 'the Big Bang just doesn't feel right!'

And that is it in a nutshell. The facts alert us to problems and we arrive by guesswork and refutation at an explanation, but whether or not we believe that explanation depends not only on the data (the evidence) but also on intuition: a feeling in the bones. And this is just as true of scientists – or at least of those scientists who are not simply box-tickers, going with the flow – as of everyone else. As Einstein commented:

> The supreme task of the physicist is to arrive at those universal elementary laws from which the cosmos can be built up by pure deduction. *There is no logical path to these laws; only intuition, resting on sympathetic understanding of experience, can reach them*.[27]

All this is my excuse for my repeated phrase, 'I like the idea that…' You do not have to be very hard-nosed to see that the fact that I like an idea does not make it true or particularly worthwhile. Indeed it does not. I mean only that a particular idea 'rings true'; or that I feel it in my bones that it is right. But the point is that this applies to all ideas – including those held by the very best scientists. Of course, the bones can be informed by 'sympathetic understanding of experience' but in the end it is not a 'logical path' that leads you, or me, or indeed Einstein, to favour one idea rather than another. It is in our bones. On rational grounds I am happy in matters of physics to trust Einstein's bones rather than my own, for he really was extraordinarily clever and scholarly, so I try to understand relativity rather than rejecting it out of hand, which my own uninformed bones would be inclined to do. And this is the true role of rationality: not to provide us with new ideas and insights but to help us to judge ideas according to our own or other people's intuitions.

But whereas I prefer Einstein's bones to mine in matters of physics, I favour my own bones over Dawkins' in matters of theology and of what is properly called spirituality (of which more later). Unfortunately, however, our present, post-Enlightenment age is hard-nosed to the nth degree, and many people – including or especially students and especially students of science – are bullied out of their intuitions and spiritual leanings by the hard-nosed self-proclaimed rationalists, who cannot see that rationalism taken alone has serious limitations. This is a pity. There is ground-work to be done – not to promulgate particular religious doctrines but to re-establish the idea that the thoughts and ideas that in the end are the most important of all cannot be arrived at merely by logic and calculation. The bones must be listened to, though also educated. Intuitions must both be acknowledged and cultivated. As part of this, we need to ask: where do our intuitions come from?

Where do our intuitions come from?

If, in the end, all our beliefs – all that we live our lives by – are rooted in a 'feeling in the bones', then it surely matters where those feelings come from. But the answer of course – as is always the truest answer to all life's biggest questions – is that nobody knows for sure.

It seems to me, though, that there is a spectrum of intuition. At one end lies animal instinct. At the other end is what is properly called spirituality, and mystical insight, and the sense of revelation.

'Animal instinct' should be interpreted broadly – because our own selves, all the micro-structures and the metabolic pathways that feed into our senses and brains began to evolve long before our ancestors qualified as animals. We have pathways in common with microbes and those pathways surely influence the way we look at and understand the world. Thus the biological idea of evolution feeds into the metaphysical idea of oneness. Many people object to the idea of evolutionary psychology that our thoughts and behaviour are to a significant extent shaped by our genes. Such a thought, they say, is 'determinist'. It seems to abnegate the notion of free will, which is a key to our humanness.

But to say that our genes affect our lives is a truism, not to be denied; and to say that our genomes have evolved is to say that they have been selected and shaped over 3.8 billion years or so by the pressures and opportunities offered by the universe at large. Each of us is a response to the problems that the universe confronts us with. All living creatures are in perpetual dialogue with the universe at large. I find that thought very pleasing.

As for the charge of determinism: there is no simple cause and effect in nature. Non-linearity applies at every level. To say that our genes affect the way we are – including our psychology – is merely to say that they lay out some of the ground. We have toast for breakfast rather than acacia leaves because we are human beings rather than giraffes. We are obliged to play a basically human game because we are human, but that does not mean that everything we do is predetermined. Tennis players are obliged to play by the rules of tennis on courts

of fixed dimensions but within those broad parameters they can and do play an infinite number of games. So we should not be afraid to acknowledge the thoughts and feelings, predilections, phobias, and prejudices that we are born with, and indeed it can be very helpful to do so. But all may be changed in the light of experience – and by human will.

Our thoughts and feelings too have surely been shaped by the kind of processes that Carl Jung drew attention to: the accumulated wisdom that he called the 'collective unconscious'.[28] However, the idea of the universal consciousness goes one step further than the collective unconscious (at least as I understand it). For Jung talks exclusively about humans. The idea of the universal consciousness is closer to animism: the idea that all things contain the seeds of consciousness to some extent; that those seeds at least begin to germinate in living creatures; and come fully into bloom in human beings – although there is no reason to assume that we are the last word, at least in theory. More astute creatures than us might or might not exist. But we can certainly envisage that they *could* exist – the universe is capable of producing them.

Of particular interest here is the idea that so far I have left hanging: that of spirituality. People of the hard-nosed kind often claim to be spiritually inclined – they do not want to be seen as complete philistines – but are wont to suggest that spirituality is simply a matter of heightened emotion: a physiological, hormonal response to some stimulus that we happen to find pleasing. Dawkins, for example, lays some claim to spirituality because he is moved by the music of Schubert. But there surely is more to spirituality than this. Spirituality should, I suggest, be taken to imply the sense of transcendence; what the late 19th–early 20th-century German philosopher and theologian Rudolf Otto (1869–1937) called a sense of the *numinous* – of "divine presence".[29] This sense of the numinous is achieved, in effect, by by-passing ultra-rational, cerebral intellect and tuning in directly to the universal consciousness. Many people – or is it most? – experience such a feeling from time to time, as Wordsworth described in *The Prelude*:

> A meditation rose in me that night
> Upon the lonely mountain when the scene
> Had passed away, and it appeared to me
> The perfect image of a mighty mind,
> Of one that feeds upon infinity,
> That is exalted by an under-presence,
> The sense of God, or whatsoe'er is dim
> Or vast in its own being […] [30]

The mystic may then be seen as one who is tuned in routinely to the universal consciousness. For William Blake the state that most of us would call mystical was more real than the sense impressions of the day-to-day. As he wrote in notes to accompany his painting *A Vision of the Last Judgement* in 1810:

> 'What', it will be questioned, 'when the sun rises, do you not see a round disc of fire somewhat like a guinea?' 'O no, no, I see an innumerable company of the heavenly host crying, "Holy. Holy, Holy is the Lord God Almighty.[31]

Perhaps too this is what Australian aboriginals mean by the dreamtime – which again is more real for them than the world most of us take to be reality. Are Blake and the indigenous Australians deluded, or are the rest of us blind? We should not take the answer for granted. Should we?

Blake, Wordsworth and Coleridge are of course key figures in what is known as 'Romanticism', which is commonly seen as a reaction to the ultra-rationalism of the Enlightenment; and although some recognised Romantics were avowed atheists, like Lord Byron, I reckon that a true Romantic must be inspired by what is properly called spirituality, and that spirituality in general is very much in the realm of metaphysics, and indeed is at the heart of all *bona fide* religions (those that are not mere cults). Thus as Coleridge commented in a lecture in 1812:

> I have heard it said that an undevout astronomer is mad. In the strict sense of the word, every being capable of understanding must be who remains, as it were, fixed in the ground in which he treads – who, gifted with the divine faculties of indefinite hope and fear, born with them, yet settles his faith upon that in which neither hope nor fear has any proper field for display. Much more truly, however, might it be said that an undevout poet is mad: in the strict sense of the word, an undevout poet is an impossibility.[32]

The Art of the Unknowable

To summarise then: metaphysics contributes a shortlist of crucial ideas to our attempts to understand the universe, to come to terms with it, and to learn to live harmoniously within it and with other people. And these crucial ideas are not supplied and cannot be supplied simply by science or by conventional philosophy.

Collingwood concluded that metaphysics in the end might reasonably be defined as 'the sum of all absolute presuppositions': the sum of all those essential concepts that are needed to underpin all our other ideas but which, in the end, cannot be shown to be true in a scientific sense.[33] Or as I like to put the matter – following in the footsteps of Bismarck and Medawar:

> Metaphysics is the art of the unknowable.

This leads us to one of the great contributions that the re-embracing of metaphysics could make – the acceptance that in the end, all is mystery. Life and the universe are beyond our ken. This may seem a lame and depressing way to summarise N thousand years of human contemplation – but as Einstein no less said in *Living Philosophies*:

> The most beautiful thing we can experience is the mysterious. It is the source of all true art and science.[34]

Einstein was a seriously good metaphysician. So, ideally, should we all be.

Colin invites anyone who would care to discuss these notions further to please get in touch with him by email at colin@colintudge.co.uk

***Colin Tudge** is a biologist by education and a writer by trade. He has worked for New Scientist and BBC Radio 3; is author of about 18 books on evolution, genetics, food and agriculture, and the philosophy of science; and is co-founder of the Oxford Real Farming Conference and the College for Real Farming and Food Culture – based on the ideas of his latest book,* The Great Re-Think *(Pari Publishing. 2021). Colin lives in Oxford with his wife and fellow co-founder, Ruth.*

Image Sources

Banner: Detail from 'The School of Athens', by Raphael, a fresco painted between 1509 and 1511 as a part of Raphael's commission to decorate rooms in the Vatican in Rome. The two central figures are Plato (left) (represented by Leonardo da Vinci) and Aristotle, his pupil, (right). Plato clutches a copy of *Timaeus* and Aristotle holds his *Nicomachean Ethics*. Image: via Wiki Media Commons.

Other Sources

[1] COLIN TUDGE, Feeding People is Easy (Pari Publishing, 2007).

[2] COLIN TUDGE, The Variety of Life (Oxford University Press, 2000).

[3] COLIN TUDGE, The Great Rethink (Pari Publishing, 2021).

[4] SEYYED HOSSEIN NASR, *Man and Nature: the Spiritual Crisis in Modern Man* (ABC International Group, 1997), p. 81.

[5] R.G. COLLINGWOOD, *An Essay on Metaphysics* (Oxford University Press Oxford, 1940).

[6] Hume expands on his ideas on causation in both his best-known books:

DAVID HUME, *A Treatise of Human Nature* (1739), edited by David Fate Norton & Mary J. Norton (Clarendon Press, 2007);

DAVID HUME, *An Enquiry Concerning Human Understanding* (1748), edited by Tom L. Beauchamp (Clarendon Press, 2000).

[7] PETER ATKINS, *Nature's Imagination* (Oxford University Press, 1995), p.125.

[8] RICHARD DAWKINS, *River Out of Eden* (Basic Books,1996) pp. 131–132.

[9] ALICE CALAPRICE (ed), *The Ultimate Quotable Einstein* (Princeton University Press, 2010).

Most of the scores of 'quotes' attributed to Einstein are contractions or precises of what he actually said. Calaprice suggests that "Everything should be made as simple as possible, but no simpler" which might be a shortened version of "It can scarcely be denied that the supreme goal of all theory is to make the irreducible basic elements as simple and as few as possible without having to surrender the adequate representation of a single datum of experience", from a lecture by Einstein in 1933.

[10] RICHARD DAWKINS, *River Out of Eden,* pp. 131–132.

[11] WILLIAM PALEY, *Natural Theology: or, Evidences of the Existence and Attributes of the Deity* (12th ed.) (J. Faulder, 1809).

[12] Personal comment.

[13] JEAN VAN HEIJENOOR, *A Source Book in Mathematical Logic,* 1879–1931. (Harvard University Press, 1967).

The relevant passages include: 'The completeness of the axioms of the functional calculus of logic' (1930), pp. 82–91; 'Some metamathematical results on completeness and consistency' (1930), pp. 595–96; 'On formally undecidable propositions of Principia Mathematica and related systems' (1931), pp. 596–616; 'On completeness and consistency' (1930), pp. 616–617.

[14] KARL POPPER, 'Falsificationism vs Conventionalism' in DAVID MILLER (ed.) *A Pocket Popper* (Fontana Press,1983), pp. 143–151.

[15] PETER MEDAWAR, *The Art of the Soluble* (Routledge, 1967).

This also appeared in a later book, *Pluto's Republic,* (Oxford University Press, 1982), p. 2.

[16] THOMAS KUHN, *The Structure of Scientific Revolutions* (University of Chicago Press, 1962).

[17] STEPHEN JAY GOULD, *Rocks of Ages: Science and Religion in the Fullness of Life* (Ballantine Books, 1999).

[18] MAX PLANCK, *The Observer,* January 25, 1931.

[19] SIR JAMES JEANS, *The Mysterious Universe* (Cambridge University Press, 1930), p. 137.

[20] JOHN S. BELL, 'Six Possible Worlds of Quantum Mechanics' in *Foundations of Physics,* Vol. 22, No. 19, 1992, p. 1213.

[21] The New Testament, John 1:1.

[22] SAMUEL TAYLOR COLERIDGE, 'The Eolian Harp', 1795. See I.A. RICHARDS, *The Portable Coleridge* (Penguin Books, 1997), p. 65.

[23] PLATO, *Apology* (The Apology of Socrates).

Henry Cary, in his translation of 1897, quotes Socrates (via Plato) thus: "I seem, then, in just this little thing to be wiser than this man at any rate, that what I do not know I do not think I know either". Available on the web.

[24] OLIVER CROMWELL, 'Letter to the General Assembly of the Church of Scotland', August 3, 1650, shortly before the Battle of Dunbar, the first major battle of Cromwell's invasion of Scotland. The full quote reads: "I beseech you, in the bowels of Christ, think it possible that you may be mistaken."

[25] KARL POPPER, *The Beginnings of Rationalism* (1958).

In DAVID MILLER (ed.), *A Pocket Popper,* p. 30: "the theory of knowledge proceeds by way of conjecture and refutations".

[26] DAVID HUME, *A Treatise of Human Nature.* Hume discusses what has become known as 'the problem of induction' in Book 1, part iii, section 6.

[27] ALBERT EINSTEIN, 'Speech to celebrate Max Planck's 60th birthday', Berlin, April 23, 1918. The whole text can be viewed on the Speakola website https://speakola.com/arts (created by Melbourne author and speaker Tony Wilson in August, 2016).

[28] CARL GUSTAV JUNG, 'The Structure of the Unconscious' (1916). In JUNG, *Collected Works,* Vol. 7 (1953) pp. 263–292.

[29] Otto introduced the concept of the 'numinous' in *Das Heilige* (1917). This was translated into English by John W. Harvey to become *The Idea of the Holy* (Oxford University Press,1923; 2nd edition, 1950).

[30] WILLIAM WORDSWORTH, *The Prelude.* Book 13, lines 66–74.

[31] William Blake, quoted by C.J.S. CLARKE in *Reality Through the Looking Glass.* The quote apparently comes from a catalogue that Blake wrote to accompany his painting, A Vision of the Last Judgment which was to be shown in an exhibition in 1810. But the exhibition was cancelled and the original painting seems to have gone missing.

[32] I. A. RICHARDS, *The Portable Coleridge,* p. 397.

[33] SIR PETER MEDAWAR, *Pluto's Republic.* (Oxford University Press, Oxford, 1984), p. 2.

[34] ALBERT EINSTEIN. The quote concludes his essay 'The World As I See It' (1931). First published in *Forum and Century,* Volume 84 (Forum Publishing Company, 1931), p. 193–194. Subsequently published in *Living Philosophies,* edited by Henry Goddard Leach (Simon & Schuster, 1931), pp. 3–7.