

*The Human World in the Physical Universe: Consciousness, Free Will and Evolution*  
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*Chapter One: The Human World/Physical Universe Problem*

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*Chapter One: The Human World/Physical Universe Problem*

*1 The Problem*

How is it possible for the world as we experience it to exist embedded in the physical universe? How can there be sensory qualities, consciousness, freedom, science and art, friendship, love, justice - all that which gives meaning and value to life - if the world really is more or less as modern science tells us it is?

According to modern science, so it would seem, everything that exists is made up of a very few different sorts of fundamental physical entities, which interact in accordance with precise (probabilistic) physical laws. In particular, everything that has to do with human life is made up of physical entities interacting in accordance with precise physical law. We are, it seems, no more than complex fragments of the physical universe. Human bodies are made up of cells, which in turn are made up of complex organic molecules, in turn made up of atoms, in turn made up of electrons, protons and neutrons, protons and neutrons in turn being made up of quarks and gluons. We have every reason to believe, and no good reason to disbelieve, that we are complex physical phenomena that occur in accordance with precise physical law. No processes associated with life have been discovered which conflict with ordinary physical law. The fact that viruses can be dismantled into component chemical substances - unquestionably non-living - which can then be put together again to form viruses indistinguishable from those occurring naturally indicates that there is no hard and fast distinction between the living and the non-living. Darwin's theory of evolution helps us to understand how simple forms of life like viruses can have gradually evolved into the multitude of complex forms of life in existence today, including ourselves. Everything that we are, in short, would seem to be just physics, all our thoughts, sensations, feelings, states of awareness being no more than complex neurological processes occurring in our brains, in turn ultimately no more than extremely complex interactions between the electrons, protons and neutrons that go to make up our brains.

You open your eyes, see a beautiful red rose before you, smell that delicious aroma of the rose, and hear your friend murmur "would not a rose smell as sweet by another name?", to which you reply "Ah, how right Shakespeare is!". There is here the beautifully sculptured red shape of the rose, its smell, the experience of seeing and smelling, the words uttered by your friend, heard by you, the meaning understood by you, so that you intentionally murmur your reply, conscious of what you are doing.

But if modern physics is right then almost all of this, so it would seem, is an illusion. The rose is a complex physical system that is colourless and odourless; instead of being red and smelling sweet, it absorbs and reflects light of such and such wavelengths, and emits molecules of such and such a structure. The reflected light enters your eyes, interacts with receptor cells of your retina, which cause neurons of your optic nerve to fire. This consists of

potassium and sodium ions being exchanged through the membranes of the neurons; this exchange process travels rapidly down the neurons of the optic nerves. Neurons join onto other neurons in the brain by means of synaptic junctions. The firing neurons of the optic nerve, on reaching synaptic junctions, cause so-called transmitter substances to be released; these travel across the synaptic junction and may, in combination with other junctions being similarly activated, cause the target neuron to fire. In this way the firing neurons of the optic nerve cause millions of further neurons to fire throughout the brain. Meanwhile, molecules released from the surface of the rose, drift through the air, enter your nose and cause olfactory sensory cells in your nose to react chemically, so that this leads to neurons of the olfactory nerve to fire. These in turn cause other neurons to fire throughout the brain, via synaptic junctions, as in the case of the visual nerves. Nowhere, however, is there anything remotely like the visual experience of seeing the rose, the olfactory experience of smelling the rose, the conscious awareness of the rose, its colour, shape, smell, beauty.

When your friend speaks, her vocal chords vibrate, which causes molecules in the air to vibrate; these vibrations spread outwards and on reaching your ears cause your eardrums to vibrate. These vibrations are transmitted, by three small bones in each middle ear, to the inner ear, a coiled tube filled with a fluid, with minute hairs along its length. Vibrations in the fluid of the tube cause the hairs to vibrate, at different positions along the tube depending on the frequency of the vibrations. This in turn causes neurons to fire in the auditory nerves. These neurons fire in exactly the same way as the neurons of the optic nerve, and all other neurons in the brain, the strength of a signal being indicated by the frequency of firing. The firing neurons of the auditory nerves cause millions, possibly billions of other neurons in the brain to fire, via activation of synaptic junctions, and eventually these cause certain conglomerations of neurons in the motor part of the brain to fire in a characteristic way, which causes breath to be exuded in such a way that your vocal chords are caused to vibrate, muscles of the tongue, lips and face being caused to contract in such a way that a characteristic pattern of vibrations of air molecules emerges from your mouth. These, in turn, have a similar effect on the ears and brain of your friend. And that is it. Hearing, meaning, understanding, communicating, the conscious acts involved in speaking and listening: all these vanish, and we are left with a multitude of vibrating electromagnetic impulses, vibrating molecules of the air, and firing neurons and synaptic junctions, all, ultimately, nothing more than vast systems of physical entities interacting with one another in accordance with the fundamental laws of physics.

"O fearful meditation!" For if we are merely extremely complex physical phenomena, in the way just indicated, how can our lives have any meaning or value? How can our inner world of sensations, feelings and thoughts exist? How can we be sentient and conscious? How can we have a mind or a soul? How can we control, and be responsible for, what we think, decide, and do if all that we do and are unfolds in accordance with precise physical law? How can there be such things as meaning, justice, understanding, beauty, sanity, democracy, civilization, science, literature, art and music if everything is just electrons, photons, quarks, etc., interacting in accordance with precise physical law? How can the rich variety of the experienced world exist - full of colour, sound and meaning - if it is all just physics? How can anything that gives meaning and value to our life exist if we are in reality nothing but complex physical phenomena?

This is our problem.

## 2 *Fundamental Problem of Philosophy*

It is the central, fundamental problem of modern philosophy. The problem is generated, roughly in the form that I have indicated, by the birth of modern science, and the acceptance of a view of the universe associated with modern science. The ancestry of the problem goes back further than that, at least to Democritus in the 4th century BC; but that is because Democritus held a view of the universe - atomism - that is close to the sort of view of the universe upheld, in one or other form, by those most closely associated with the creation of modern science.

The problem is central to the philosophical work of Galileo, Descartes, Locke, Spinoza, Leibniz, Kant, Schopenhauer and many other major figures of so-called "Western" philosophy. The problem straddles a multitude of disparate concerns. It straddles the whole of science, with particular emphasis, of course, on theoretical physics, neurology, psycho-neurology, psychology, artificial intelligence, evolution, the study of animal behaviour. It straddles the philosophy of science, moral philosophy, the philosophy of value, political philosophy, the philosophy of mind. Almost all the great problems of philosophy are involved; the mind/body problem, the problem of free will and determinism, problems in the philosophy of physics, problems of perception, epistemology, metaphysics, ontology, on and on.

It is the immense generality of the problem, and its profound importance, both for science, and for life, for our ideas about ourselves and what is of value in life, that puts it centre stage, as *the* fundamental problem of philosophy.<sup>1</sup>

And there is an additional point. The problem has the form of a *conceptual* problem. It amounts to a fissure, a contradiction between two vast areas of thought. It is a problem about *possibility*. How is it possible for there to be consciousness if what is inside our heads really is what modern science tells us it is, neurons and synaptic junctions or, more fundamentally, electrons, protons and neutrons interacting with one another? How is it possible for there to be free will if everything unfolds in accordance with precise physical law? How is it possible for anything to have any real value if everything, ultimately, is just physics? There is this horrible clash between what science tells us about the world and ourselves, and the way we ordinarily experience the world and ourselves, the way we require the world and ourselves to be if our lives are to have any value. The problem is to see how there can be *any* possible solution to the problem, that does justice both to science on the one hand, and to our experiences, to the value of our lives, on the other hand. It is not - as we shall see - that we have any number of different possible solutions, any one of which might be true, and the problem is to choose the correct one. The problem, rather, is to think up *anything* which just might constitute a possible solution, one which does not do too much violence to science, or to our experience of the world and ourselves, to the value of our lives. The problem, the conceptual or theoretical clash, indicates that there is something horribly wrong with the way we think about things, either in connection with science, or in connection with ourselves and our value, or both. It is the fierceness of the clash, and its immense generality, which makes it such a fundamental problem of philosophy.

A glance at the philosophical literature will *not* however bear out what I have just said. It is rather rare for books on philosophy to acknowledge the fundamental character of the problem "How is it possible for there to be life of value in the physical universe?" - the human world/physical universe problem as we may call it.<sup>2</sup> Philosophers discuss diverse subordinate problems - some of which have just been indicated - but rarely put these into

the overarching context of the fundamental problem.<sup>3</sup> It is as if modern philosophy lost sight of what its main concern ought to be.

As far as 20th century "analytic" philosophy is concerned, this failure was due to the impact of logical positivism. This holds that all meaningful (and true) propositions are either those that are analytic (true by definition as it were, like "all bachelors are unmarried"), or those that are verified by experience. This seemed to carry the implication that philosophy, not being an empirical discipline, must concern itself exclusively with analytic propositions, and with the analysis of concepts. Philosophy as the exploration of real fundamental problems could no longer proceed.

Logical positivism was rather generally rejected after the second world war, but for the wrong reasons, and the apparent implication that philosophy must restrict itself to analysis of meaning was widely taken for granted. Logical positivism was held to be inadequate because it provides too narrow an analysis of meaning, and philosophers threw themselves into the stultifying activity of providing a broader analysis of the meaning of words used in ordinary language, stimulated by such works as Wittgenstein's *Philosophical Investigations*, Ryle's *The Concept of Mind*, and Austin's *Sense and Sensibilia*,<sup>4</sup> All this misses the point. The logical positivist account of meaning does not even work for science since, strictly speaking, no scientific law or theory can be verified by experience. Metaphysical propositions, such as "every event has a cause", that can neither be verified nor falsified, can nevertheless be meaningful. The really important point is that philosophy should take up its proper task of tackling fundamental problems, even if this does involve considering theories about the ultimate nature of reality that are neither verifiable nor falsifiable.

In the last decade or so, however, academic philosophy has improved considerably in this respect. Increasingly, philosophers take science seriously, tackle fundamental problems, and abstain from engaging in the stultifying activity of analysis of the meaning of words; see, for example: Nagel (1986), Lockwood (1991), Dennett (1996), Kane (1998) and Chalmers (1996). In recent years, psychologists, neuroscientists and workers in the field of artificial intelligence and robotics have turned their attention in earnest to the problem of consciousness, and this, no doubt, has helped provoke philosophers into tackling the mind-body problem in a scientifically enlightened fashion - even to the extent, in one or two cases, of all but abandoning philosophy in the process. One thinks, here, for example, of Patricia Churchland (1986).

It is important, incidentally, not to reduce the human world/physical universe problem to the mind-brain problem - the problem of the relationship between our conscious experiences, feelings and thoughts on the one hand, and neurological processes going on in our brain on the other hand. The mind-brain problem is, of course, a vital part of the human world/physical universe problem; but it is only a part. In addition to this part, the human world/physical universe problem includes a range of additional problems: the problem of how perceptual features of things such as colours and sounds (as experienced by us) relate to physical features of things; the problem of how time, as this features as a part of our human world, relates to physical time; the problem of how value-features of things - living things, Nature, works of art - relate to the physical features of these things; the problem of how meaning, the content of books, theories, utterances, relate to the physical aspects of these things; and so on. If Cartesian Dualism is adopted, and everything which physics leaves out is, as it were, removed from the external world and put into our Cartesian minds, then the human world/physical universe problem does more or less reduce to the problem of the

relationship between mind and brain.<sup>5</sup> We should not, however, at the outset just assume that Cartesian Dualism is correct, especially as it is not correct. Cartesian Dualism is an early, immensely important, enormously influential, but unsuccessful attempt at the solution to the problem.

I shall argue, indeed, that in order to solve the mind-brain problem it is essential to put it into the broader context of the human world/physical universe problem. It is only if we do this that it becomes clear that the fundamental problem has as much to do with what the nature of the *physical* is, as what the nature of the *mental* is. Getting clear about the nature of the physical, and the nature of physical explanation in science, are vital first steps to resolving the most deep-rooted conceptual knots responsible for the mind-brain problem.<sup>6</sup> It is not obvious that this is the case if we fail to put the mind-brain problem into its proper, broader context.

And similar points arise in connection with other parts of the human world/physical universe problem. Given its immense scope, it is important to break this problem up into more restricted, specialized parts: but it is also important to attend to the broad, fundamental problem as well, and to inter-connect thought about the broad problem, and its specialized, restricted parts.<sup>7</sup>

Of those thinkers who have recognized the problem in its full generality, many have tried to defuse the problem in various ways, by softening the apparently grim metaphysical implications of science, or by diminishing the reality of what we experience and what is of value to us in life, so that the two aspects of the problem no longer clash in such a stark fashion.<sup>8</sup> I shall do the opposite. In chapters two and three I shall render the conflict between the metaphysics of physics, and human experience of value, in as stark and harsh a way as I can. Intellectual honesty, I believe, demands that we try to solve the most extreme, severe version of the problem available, and do not seek to evade the problem by softening it at its edges, blurring the contours of the conflict, so that it becomes increasingly difficult to see what the problem is, and we are left with no more than a vague feeling of unease and dissatisfaction.

### 3 *Cutting God in Half*

Not only is our problem fundamental to philosophy; it is fundamental to religion as well.<sup>9</sup> It is a fundamental religious problem that arises the moment basic difficulties associated with religious beliefs are confronted with a measure of intellectual honesty.

Christianity, Judaism, and Islam (but not all religions, not, for example, Buddhism), hold that God is the ultimate reality, the creator of the universe and everything in it, all-powerful, all-knowing and all-loving, the source of all value. This creed, like other substantial theses about the nature of things, needs to be treated as a *conjecture*, a *hypothesis*, which may, or may not, be true.<sup>10</sup> And we need to ask: Are there good grounds for preferring this conjecture to rival conjectures - such as, for example, that no such Being as God exists? What problems does the God-thesis solve, what phenomena does it explain? Can it be refuted?

There can be no doubt at all that the conjecture that an all-powerful, all-knowing, all-loving God exists does solve problems, and does make many things intelligible. The dreadful, apparently unsolvable problem of death is solved at a stroke: such a God would arrange for us to survive death. The dreadful problem of the unspeakable suffering of this world, the awful waste of human potential, the numbing injustice of human life: all this will be put right after death, if an all-powerful, all-knowing, all-loving God exists. And if such a God exists, we have an immediate explanation for the fact that our environment, here on

earth seems, in many ways (if not in all ways) especially designed to nourish us and support our existence. We can even understand why the universe is knowable to us, by means of science: God created both the universe, and human beings; being benevolent, He would naturally arrange things in such a way that there is a sufficient match between the nature of the universe and the nature of our minds for us to be able to improve our knowledge of the universe. God explains why science works.

But there is a dreadful snag. If God is all-knowing and all-powerful, then God must be knowingly in charge of natural phenomena, in particular those natural phenomena that cause human suffering and death as a result of earthquakes, drought, disease, accident. Even when people torture and kill other people, God is always a co-torturer and co-murderer, in that He decides the knife will not, at the last minute, turn into rubber, the bullet will not evaporate before it hits its target, the virus will not die or become abruptly harmless. Day after day, hour after hour, God knowingly tortures and murders innocent children - to put the point at its most emotionally inflammatory, but correctly.

The obvious conclusion to draw is that the hypothesis that an all-powerful, all-knowing, all-loving God exists is refuted by the most elementary tragic facts of human existence. This conclusion is inescapable once one child has suffered and died as a result of injury or disease - suffered and died as a result of the knowing actions of God (if He exists). A loving God would take care of His children in at least as humane a fashion as, let us say, a petty thief. No run-of-the-mill petty thief would torture his child to death over a period of days or months, a commonplace action for God (if He exists). God tortures and murders billions of people; indeed none of us escapes.

Nothing can excuse God for killing one child, let alone all of humanity, one after the other. And yet, over the centuries theologians, instead of emphasizing that the God conjecture is decisively refuted, have instead struggled to invent excuses for God's criminal acts. The excuses are dreadful, utterly immoral and hopeless, and yet they continue to be taken seriously today.

"God must allow us to suffer and die, because he must allow us our freedom" runs one excuse. So, should we equally demand of human parents that if their child runs onto the road in front of an incoming lorry, they should not interfere, so that the child may have his freedom? "God is unknowable, and we human beings cannot know why God performs these monstrous acts" runs another. But nothing can excuse God murdering a child slowly and agonizingly by means of cancer, let us say. People living in the Soviet Union under Stalin are on record as endlessly excusing the frightful crimes of Stalin; these excuses are morally and intellectually dreadful (however excusable in the circumstances): how can any excuse, whatever it might be, be any better for God's far more dreadful crimes? "God lets us suffer so that we may grow spiritually" runs a third excuse. Are child molesters to be excused on similar grounds? Can we be so sure that suffering ennobles? Would not this argument imply that we do a person a favour if we hurt him? "It is not God who does these dreadful things, but the Devil". If God is all-powerful and all-knowing, God has the power to stop the Devil; if He decides not to, then He is in part responsible for what goes on. "People suffer and die because of the sins of their ancestors." What an appallingly immoral argument! "God does not murder people; he acts as a surgeon, causing pain in order to cure: those who die live on in Heaven (at least those who deserve it do)." But a surgeon who caused unspeakable pain in a patient over weeks or months, without adequate explanation, and without anaesthetics, would be struck off the medical register, and would doubtless be prosecuted for assault to an

extreme degree: even if God does cause us to suffer so that we may be released into the after-life, this might mean that God does not murder, but it does not remotely excuse His actions. (On these grounds, no true believer could be accused of murder either, of course!)

Religious communities should hang their heads in shame at producing such appalling, immoral arguments. Taking such arguments seriously, even if only to set about refuting them, is in itself to take part in a corporate dance of insanity.

Why, why has humanity, or so much of humanity, allowed itself to be so bamboozled? Because the need for God is so potent, the fear of His non-existence so terrible. God's criminality is excused for the same reason, essentially, that Stalin's criminality was excused: the consequences of acknowledging that the crimes are real are too dreadful to contemplate. And this is backed up, in both cases, by a system of "education" which prompts one to believe that it is not God's (or Stalin's) criminality that is at issue, but one's own - any hint of a suspicion that God (or Stalin) is a monster instantly demonstrating one's own dreadful disposition for sin. How justified God (or Stalin) would be in punishing such suspicion, and how merciful God (or Stalin) so often proves to be in not bringing down instant punishment on those who so sin.

Granted that the conjecture that an all-powerful, all-knowing, all-loving God exists has been refuted, what do we put in its place? This is the really important question!

In order to answer it, the first point we need to note is that, as we have discovered that God in the orthodox sense does not, and cannot exist, we need to be more open-minded about what sort of entity God may be. The question of whether God exists or not can always be converted into a question, not about God's existence, but rather about what *sort* of entity God is. If we mean something very specific and highly problematic by "God", then it is all too likely that God, in this sense, does not exist. But if we mean something highly unspecific and unproblematic by "God", it becomes much more likely that "God", in this sense, does exist.<sup>11</sup>

One way of posing the question is: What is the nature of that Entity which (a) preserves as much as possible about what is best in the orthodox notion of God, and (b) exists? Reformulated in this way, the question becomes, not "Does God exist?", but rather "What is the nature of God?" where God, in this sense, exists by definition as it were.

The next step, in answering the above question, is to track down what it is in the orthodox conception of "God" that we have been discussing that makes it so impossible for "God" in this sense, to exist. We then need to broaden our conception of "God" appropriately, so that "God", in this sense, becomes at least a viable possibility, the "God"-thesis a viable conjecture.

It is not difficult to track down what it is about the orthodox conception of God that creates the difficulties we have been considering. These all come from the supposition that God is *both* all-powerful, and all-loving. This is what we need, of course, an all-powerful being who is also all-loving, so that everything that is most precious in existence will be effectively, lovingly taken care of. But in our world, this leads to the awful consequences that we have been considering.

One possibility, of course, is that God, far from being loving, is thoroughly evil. But this does not seem to do justice to all the wonderful things that there are in existence. What is so confusing is that life is such a mixture of joy and horror, the extraordinary, the prosaic and the unspeakable.

Perhaps God is confused, schizophrenic even, a dreadful mixture of love and hate? But this does not seem to do justice to the majesty of the universe, its intricate splendour. Could

this have been created by a neurotic?

One might take the thing further, by postulating two equally powerful gods, God and the Devil, one good, the other evil, locked in terrible combat, humanity somehow the field of battle.<sup>12</sup> But if this really were the case, there would be, one feels, more disruptive explosions in the natural world, as the two cosmic Beings fought out their mighty, eternal battle.

Another possibility, of course, is that God is all-loving, but lacks power. He sees the terrible things that go on, but is powerless to intervene. It is a version of this hypothesis that I wish to defend. As it stands, however, it is incomplete: nothing is said about the nature of that which *does* have power, which *is* the cause of natural phenomena, and thus the cause of so much of our suffering.

Here is how, in my view, the problem is to be solved. God must be cut in two. The God of *power* must be severed from the God of *love*, the God that is the source of all *value*. Or, if it seems just a little too brutal, too grandiose, to speak of cutting God in half, let us say, rather, that we need to cut the *concept* of God in half.

The God of cosmic power is utterly impersonal. It is that impersonal *something*, whatever It may be, that exists everywhere, eternally and unchanging, throughout all phenomena, and determines (perhaps probabilistically) the way phenomena unfold. It is what theoretical physics seeks to discover. It is Einstein's "God", eternal, omnipresent, all-powerful, but utterly impersonal, an It, not a conscious Being. It is that physical property of the fundamental physical entity, the fundamental physical field or whatever, that determines the way in which that which changes *does* change. It is what corresponds physically to the true unified theory of everything that physicists seek to discover.

It is this cosmic It that is responsible for all our suffering. And precisely because It is an It, incapable of knowing and feeling, It can be forgiven the terrible things that It does. If It knew that the laws of nature, working themselves out as usual, meant, in this particular case, horrible suffering and death from cancer for this child, agonizing burns for this person, burial in rubble for that person, the It would at once bend a law of nature here and there, so that these ghastly tragedies can be avoided. But this cosmic It has no mind, no understanding, no awareness: it goes blindly on Its way, incapable of knowing anything, and therefore can be forgiven.

But what of the other half of the traditional God, the God of value? This, I suggest, is what is best in us. It is that potentially or actually aware and loving self within us that sees, feels, knows and understands, at least partially, and either *does* intervene to prevent disaster, or is powerless to do so. The God of value is the soul of humanity, embedded in the physical universe, striving to protect, to care for, to love, but all too often, alas, powerless to prevent human suffering. (More generally, the God of value is that which is of most value, actually and potentially, in sentient life.)

What is usually characterized as belief in science and humanism is actually what emerges as a result of a rational evolution of belief in God. The scientific view of the universe, and the humanistic faith that it is individual human beings that are of supreme value in existence amount, when taken together, to a profoundly religious view, one which does not have the awful intellectual and moral defects of orthodox Theism (whether Christian, Judaic or Islamic). Science + Humanism only denies the existence of God, in a thoroughly disreputable sense of "God"; granted a somewhat more reputable sense of "God", Science + Humanism is a passionate affirmation of the existence of God.

But if this religious view solves problems that haunt orthodox Theism, it does so at the expense of creating an immense new problem. Having chopped God into two, into the God of Cosmic Power and the God of Cosmic Value, we are at once confronted by the problem: How are the two halves to be put together again? How is it possible for the God of Cosmic Value to exist embedded in the God of Cosmic Power - the physically comprehensible universe? This is the problem with which we began - the problem tackled by this book. It is an absolutely fundamental *religious* problem, as becomes apparent the moment certain basic ideas about the nature of God have been sorted out.

This book, in addition to being a work of philosophy, is also a tract on theology. Dear reader, you are warned!

#### 4 *Outline of Solution*

How, then, is our human world, imbued with sensory qualities, consciousness, free will, meaning and value to be understood as an integral part of the physical universe? How can we heal the great gulf between the human world and the physical universe in such a way that justice is done both to the richness, meaning and value of human life on the one hand, and what modern science tells us about the physical universe on the other hand? In the rest of this chapter I give in outline the solution to be developed in the rest of the book.

The solution to the problem, as I see it, is a new version of an old idea, which goes back at least to Spinoza, and is sometimes called the *two-aspect theory* or *property dualism*. According to this theory, there are two aspects to what exists, the physical on the one hand, and the mental, experiential or human on the other.

The world around us has two aspects: that which can (in principle) be described by natural science or, more precisely and comprehensively, by physics - the physical; and that which we can become aware of as a result of our sensory or emotional responses to things, the colour, sound, smell and feel of things, the human meaning and value of things - the perceptual or human aspect of things. And states and processes inside our heads have two aspects: the physical aspect, which natural science, or physics, seeks to depict (neurons, synaptic junctions, molecules, fundamental physical particles); and the mental aspect, which we become aware of when the states or processes in question occur in our own head.<sup>13</sup> The mental features of brain processes are, then, nothing more than what we become aware of (in a certain sense) when such processes occur in our own heads.

Cartesian dualism asserts that there are two distinct kinds of entity: physical entities, and minds. The two-aspect theory asserts that there is a dualism, not of kinds of entity, but of kinds of property. As we shall see, this difference enables the two-aspect theory to avoid one serious problem that plagues Cartesian dualism, namely the problem of how the brain interacts with the mind, and the mind with the brain.

There are, however, two further major problems that confront Cartesian dualism which also face traditional versions of the two-aspect theory.

First, both views seem to render the mental irredeemably mysterious and inexplicable. For, according to both views, the mental lies irredeemably beyond the scope of scientific explanation and understanding. This apparent inherent scientific unintelligibility of the mind might, indeed, be held to be the very nub of the mind-brain problem, the human world/physical universe problem. Ordinarily, perhaps, we are not too puzzled by the fact that we have inner experiences and are conscious. Invoke science, to arrive at a better explanation and understanding of inner experiences and consciousness, and we encounter neurons, synaptic junctions, exchange of potassium and sodium ions across semi-permeable

membranes and so on, but never anything, apparently, remotely like a sensation, a feeling, a conscious experience. The better the scientific explanation, the more inexplicable our inner experiences seem to become, the more they seem to disappear. The traditional two-aspect theory, like Cartesian dualism, just postulates that there is this realm of the mental lying forever beyond the scope of scientific explanation and understanding. In failing to resolve this key problem of the inherent scientific inexplicability of the mental, the traditional two-aspect view does no better than Cartesian dualism.

Second, the traditional two-aspect theory, like Cartesian dualism, fails to solve the problem of how there can be free will in a physicalistic universe. If the universe really is physically comprehensible, and hence such that some yet-to-be-discovered true theory of everything, T, predicts and explains everything physical that occurs, how can human beings ever exercise free will? How can anyone ever make anything happen as a result of a conscious decision? The real explanation for all human action, it seems, is a physical explanation that refers to physical processes going on inside our heads, our customary belief that our conscious decisions have some role in producing our actions being, it seems, no more than a comforting delusion. If the entire subsequent history of the universe was fixed (perhaps probabilistically) at the moment of the big bang, what role in human history can there be for conscious human intentions and decisions?

Interactionist Cartesian dualism can evade this problem by postulating that mind interacts with brain (just as brain interacts with mind). But this way of trying to solve the problem suffers from two defects. First, it involves postulating that persistent, small miracles occur in the brain, violating ordinary physical theory, events like those supposedly caused by poltergeists but somewhat less noticeable. Second, it leaves utterly mysterious how the mind does interact with the brain. This unsatisfactory interactionist approach to the problem is not, however, really open to the two-aspect theory. If the mental is no more than an aspect of the physical, it is not easy to see how this mental aspect, as mental aspect, can influence the physical. The two-aspect theory seems doomed to acknowledge that it is solely physical states and processes in our brains which cause human action, the role of the mental being non-existent and illusory, free will thus being an illusion.

It is above all with respect to these two major components of the human world/physical universe problem that this book seeks to make a contribution. The version of the two-aspect theory to be expounded here succeeds, I shall argue, in solving both of the above two problems. The solution, in outline, is as follows.

As far as the problem of the inherent scientific incomprehensibility of the mental is concerned, it is essential to appreciate, first, that physical explanation, and any scientific explanation reducible in principle to physical explanation, is designed to pick out only a highly specific kind of feature of things: the causally efficacious (which is what the physical aspect of things is). Non-causally efficacious features that have to do with what things look like or feel like, with what it is like to be something, or with what things mean - anthropomorphic features which bring ourselves into the picture in an essential way - are, from the outset, deliberately excluded from physical description and explanation. Any attempt to add on postulates linking physical and experiential or mental features would result in a theory which might be predictive but, necessarily, would be hopelessly non-explanatory. Excluding all reference to the experiential or mental aspect of things from physics is the price that must be paid if the extraordinarily explanatory theories of physics are to be developed. There is, in short, an *explanation* as to why the experiential or mental aspect of

things lies beyond the scope of scientific explanation.

The thesis, just stated, that the mental aspect of brain processes are non-causally efficacious needs to be qualified in two ways. First, this does not mean that mental processes are not caused by, and do not cause, physical processes. Mental processes are, I shall argue, contingently identical to brain processes, and thus to physical processes.<sup>14</sup> Mental processes, being identical to physical processes, are thus both caused by, and a part of the cause, of other physical processes, in the fully-fledged, powerful sense of "causation" that one encounters in theoretical physics. It is just that a physical, causal account and explanation of processes going on in the brain (supposing such a thing were possible) would construe these processes to be *physical* processes, and would make no mention of the mental, experiential aspect of these processes. Second, in describing brain processes as mental processes we are, in part, describing what may be called the "control" aspect of these processes; we are describing brain processes from the standpoint of the role they play in guiding or controlling the person's actions. But "control" presupposes "causation" in at least a common sense conception of causation.<sup>15</sup> Indeed, control presupposes the existence of much more than mere common sense causation. My decision to walk across the room and open the door does not just cause my actions (in a common sense conception of "cause"). Much more is involved. My decision, my mental processes, control my actions in the sense that there is feedback (by means of causal processes) between what I do, what I perceive and feel that I do, revised detailed (almost automatic) decisions about actions to be executed in the light of information received, leading to revised, intended actions. Mental processes monitor and guide actions, and do not merely "cause" actions.

Despite all this, the full physical, causal account of a piece of human action in its environment (supposing such a thing were possible) would describe all monitoring mental processes as purely physical processes. Any attempt to extend the physical description and explanation to include the mental aspect of brain processes would render the physical explanation so complex, so grotesquely *ad hoc*, that it would cease to be explanatory. This, in essence, is the explanation for the incapacity of natural science to explain the experiential aspect of our brain processes.

The fact that science cannot explain the mental does not mean, however, that the mental cannot be explained or understood at all. There is another mode of explanation and understanding, which I shall call *personalistic* explanation.<sup>16</sup> The experiential features of things, the mental features of brain processes, can be explained and understood personalistically.

Personalistic explanations seek to depict the phenomenon to be explained as something that one might oneself have experienced, done, thought, felt. In seeking personalistic understanding of another person, or being, I want to know how it would be for me to *be* the other person, thinking, feeling, hoping and fearing, seeing, imagining and doing what the other person thinks, feels, etc. I want to know how it would be for me to have occur in my own brain processes that are sufficiently similar, in relevant respects, to processes that occur in the other person's brain. There is an irredeemably *anthropomorphic* or *personal* dimension to personalistic understanding: it always involves understanding the other by using oneself as a model of the other, and rearranging, in one's imagination, aspects of oneself, such as one's circumstances and environment, character, beliefs, experiences, values, goals so that these come to be the circumstances etc., of the other person.

Personalistic explanation cannot be reduced to scientific explanation, for reasons that we

shall examine in chapter five. Personalistic explanation is, nevertheless, a fully authentic mode of explanation, one that is capable of rendering the mental aspect of brain processes genuinely comprehensible. Even though incapable of being understood scientifically, the mental can be understood personalistically. It is only if personalistic understanding is ignored or downgraded, and scientific understanding is taken to be the only legitimate mode of understanding, that the nature of the mental seems to become a profound mystery, resistant to all explanation.<sup>17</sup>

There has indeed been a long-standing tendency to regard the mental as inherently inexplicable precisely because of a failure to recognize the authenticity and autonomy of personalistic explanation. Why is this? Because personalistic explanations fail quite disastrously to satisfy orthodox criteria as to what constitute good explanations. The fault lies, however, with these orthodox criteria. These are associated with an immensely influential conception of inquiry which elsewhere I have called *the philosophy of knowledge*, according to which the basic intellectual aim of inquiry is to acquire *knowledge*.<sup>18</sup> Granted the intellectual standards of the philosophy of knowledge, personalistic explanation emerges as a hopelessly inadequate mode of explanation, one which cannot be taken seriously intellectually for a moment.

But, as we shall see in the concluding chapter of this book, and as I have argued elsewhere, (Maxwell, 1984a, especially chs. 3-4), when judged from the standpoint of a kind of inquiry rationally designed to help humanity realize what is of value in life, philosophy-of-knowledge inquiry is damagingly irrational. We need a new conception of rational inquiry, a new kind of academic inquiry, one which gives priority to the pursuit of wisdom rather than knowledge (wisdom being defined as the capacity to realize what is of value in life, thus including knowledge and technological know-how). Rational inquiry devoted to promoting wisdom (a conception of inquiry I shall call *wisdom-inquiry*) would give intellectual priority to tackling problems of living over problems of knowledge; personalistic understanding, in particular, would emerge as intellectually fundamental.<sup>19</sup> In terms of intellectual standards associated with rational inquiry devoted to promoting wisdom, personalistic understanding emerges as intellectually central and fundamental, basic, even, to natural science.

In short, accept the philosophy of knowledge and the mental, as something beyond the scope of science, remains stubbornly inexplicable. Reject the philosophy of knowledge and accept the philosophy of wisdom in its stead, and the mental, even though resistant to scientific understanding, becomes open to being explained and understood by means of the intellectually authentic and fundamental personalistic mode of explanation and understanding.

According to this version of the two-aspect theory, the world is riddled with what may be called *double comprehensibility*. On the one hand, everything is such that it is amenable (in principle) to being explained and understood *physically*. And on the other hand, some things, most notably sentient animals and conscious persons, are amenable to being explained and understood *personalistically*. The personalistically comprehensible is compatible with, but not reducible to, the physically comprehensible.

One demand that may be made of any claim to solve the mind-brain problem, the human world/physical universe problem, is that it explains *why* such and such correlations obtain between physical and mental aspects of "head" processes (to use a term intended to be neutral between physical and mental). This may be taken to mean that physical, or personalistic explanations can be extended in some way to provide an overall explanation as to why

physical and mental aspects of head processes are correlated as they are. But no such extension is possible, as we shall see in chapter five. Nor can correlations between physical and mental aspects of head processes be explained in terms of some entirely new kind of explanation (which reduces to physical and personalistic explanations, as special cases).

These negative conclusions do not mean, however, that nothing remains to be known or understood about the way the physically and personalistically comprehensible are inter-related. On the contrary, it is here that all the serious, solvable problems of knowledge and understanding lie.

In order to tackle these correlation problems, we need to introduce two further kinds of explanation: purposive explanation, and historical explanation. The first applies to goal-pursuing entities, such as bacteria, plants, animals, humans, thermostats, guided missiles, and robots, and explains what these things do in terms of actions being designed to realize goals in the given environment, there being no attribution of sentience or consciousness, however, to the entities to be understood. All personalistic explanations imply purposive explanations, but not vice versa. Historical explanations explain current states of affairs by indicating how they have arisen as a result of past events. Historical explanations may exploit just physical explanations, or purposive and personalistic explanations as well.

The serious, solvable part of the mind-brain problem involves discovering how to inter-relate scientific descriptions and explanations of neurological processes, purposive descriptions and explanations of control mechanisms and personalistic descriptions and explanations of mental processes going on inside our heads. This is the central problem of the neurosciences, artificial intelligence, and psychology (conducted, ideally, within the framework of philosophy-of-wisdom inquiry). There is also the major problem of understanding how doubly, or trebly comprehensible things, in particular conscious persons, can have come into existence in the physical universe. The way to solve this problem is to appeal to one particular kind of historical explanation, namely Darwin's theory of evolution. This can be interpreted as appealing to physical and purposive modes of explanation in order to specify an initially purposeless *mechanism* for the generation of purposive things, living things, in an ultimately purposeless universe. I shall argue that Darwinian theory can be extended so that it appeals to personalistic explanation as well. We shall see that a new version of Darwinian theory emerges from these considerations, one which asserts that the Darwinian mechanisms of evolution *themselves evolve* as they gradually incorporate more and more purposive and, in the end, personalistic aspects.

There are three important implications of the solution to the mind-brain problem just indicated. First it leads to a new, illuminating interpretation of Darwinian theory. Second, it leads to an important extension of Darwinian theory, a version of the theory able to help us understand how conscious persons have come into existence. And third, it provides us with a solution to the problem of how there can be free will in a physically comprehensible universe. Here, in outline, is my proposed solution to the free will problem.

Personalistic explanations of a person's deeds may be such that they assert that the person performed the deeds freely, through the exercise of free will. This will be the case if the personalistic explanations provide reasons for the deeds in question which are such that they require the person to have acted freely. Such freedom-ascribing personalistic explanations may well be true, I shall argue, even though everything occurs in accordance with some yet-to-be-discovered true physical theory of everything, T. But for this to be the case, an almost miraculous intermeshing of personalistic and physical

explanations must obtain. Reasons for action, referred to by freedom-ascribing personalistic explanations, must also be - must intermesh precisely with - physical causes of action, referred to by physical explanations, in such a way that both are true simultaneously.

How can such an almost miraculous intermeshing of personalistic and physical comprehensibility be understood to have arisen? As a result of Darwinian evolution. I shall argue, indeed, that Darwinian theory, suitably generalized to incorporate personalistic explanation, can be interpreted as providing an explanation for the gradual *evolution* of free will in the physical universe.

A crucial feature of this proposed solution to the free will problem is that the personalistic mode of explanation (capable of attributing free will to persons) is an intellectually genuine and autonomous mode of explanation not reducible to physical explanation. Without this, the proposed solution to the free will problem collapses.

It is also crucial that mental processes are (contingently identical to) neurological processes occurring in the brain. If this is not the case, it is scarcely conceivable that freedom-ascribing personalistic explanations in terms of reasons, and physical explanations in terms of causes could both be simultaneously true of one and the same thing, a piece of human action, so that the action is free even though the universe is fully physically comprehensible.

Here is a chapter by chapter summary of the rest of the book. In chapter two I sketch a view as to what is ultimately of value, and argue for an objective, realist view of value. In chapter three I discuss the question: What does modern science tell us about the nature of the universe? I argue that science has shown the universe to be physically comprehensible. If this is correct, the human world/physical universe problem takes on a particularly harsh form. In chapter four I review some past attempts at solving the human world/physical universe problem.

Finally, in chapter five, I begin to expound my own approach to the problem, the two-aspect view already outlined above. In chapter six I argue that this two-aspect view, with its claim that there are two kinds of intelligibles in the world (the physically intelligible and the personalistically intelligible), makes it possible for there to be free will in a physically comprehensible universe. Chapter seven tackles the problem of how consciousness and free will can have evolved. This leads to a new version of Darwinian theory, according to which the mechanisms of evolution themselves evolve, gradually incorporating more and more of the purposive. In chapter eight I discuss the question of where, and how, consciousness is functionally located in the brain.

Our human world, imbued with sensory qualities, consciousness, free will, meaning and value can, it seems, exist embedded in the physical universe. The God of value can be accommodated within the God of cosmic power. If this be conceded, a further question arises: Is it possible that one day a genuinely civilized world might come to exist in the physical universe, a wise, enlightened world which keeps avoidable human suffering to a minimum, and which encourages all human lives and what is of value to flourish? In the final chapter of the book I discuss the question of how we can *learn* how to create a more civilized world. We need, I argue, a new kind of academic inquiry, rationally designed to help us acquire wisdom and civilization. Within this new kind of wisdom-inquiry, as I have already indicated, personalistic understanding would emerge as intellectually fundamental.

*NOTES*

1. It would be better, perhaps, to say that the problem that we are concerned with is the fundamental problem of understanding, not just of philosophy, but of thought as a whole. Thus even physical science concerns itself only with a *part* of the problem - that part that has to do with the nature of physical reality. I take the somewhat unfashionable view, however, that philosophy is, by definition as it were, concerned with our most general, fundamental problems: see Maxwell (1980). It follows that if the human world/physical universe problem is our most fundamental *philosophical* problem, then it is our most fundamental problem *per se*.

2. The title of this book, and the characterization of the problem with which it is concerned as "the human world/physical universe problem", should not be taken to imply that this book is concerned only with how our *human* world can exist in the physical universe. Much more generally, the book seeks to understand how all that is of value associated with conscious, or at least sentient, life can exist in the physical universe, whether this life is associated with the earth, or some other planet. Rather naturally, perhaps, it is the version of the problem that arises in connection with *our human world* that is of concern, in the first instance, to us human beings. But in ch. 7 especially it will become apparent that it is essential to put the exclusively human version of the problem into the broader context of conscious or sentient animal life.

3. There are exceptions; see, for example: Whitehead (1985), Smart (1963), Nagel (1986). None of these works, however, argues that the human world/physical universe problem is *the* fundamental problem of philosophy, other philosophical problems being aspects of this fundamental problem. The fact of the matter is that one cannot begin to make sense of the way in which Descartes, Locke, Berkeley, Hume, Kant and others discuss problems of perception, epistemology and metaphysics, central to the philosophical tradition, without seeing such discussion as emerging out of, and being massively influenced by, Descartes' (failed) attempt to solve the human world/physical universe problem. Traditional philosophical problems of perception, epistemology and metaphysics *are* no more than aspects of the human world/physical universe problem. None of the above mentioned works succeeds in making these simple points.

4. Wittgenstein (1958), Ryle (1949), Austin (1962). In view of the fact that Wittgenstein's work introduced a new approach to the problem of meaning, and Ryle's book did the same for the problem of consciousness, it might seem harsh to accuse *these* works of being stultifying. However, both books advocate and exemplify (along with Austin's) the view that philosophical problems are to be dissolved by attending to the way words are actually used in ordinary life. It is this that had such a stultifying impact on much subsequent philosophy in the analytic tradition. One philosopher who stood out against this trend is Karl Popper: see Popper (1963), (1976).

5. One may strip Cartesian Dualism of everything except the claim that physics is only incomplete when it comes to conscious brains, because the one thing physics cannot capture is consciousness. A version of such a view has been defended recently by Chalmers (1996), as I will make clear in chapter four, section 16.

6. It is for this reason that this book includes serious attention to the question of what theoretical physics does tell us about the ultimate nature of reality: see chapter 3, 5 and appendix 3.

7. For a defence of this as a *general* point about rational problem-solving see Maxwell (1980), where I defend a doctrine that I would now call *critical specio-fundamentalism* (a doctrine that insists on inter-connecting tackling of fundamental and specialized problems).
8. On the one hand, those who argue that science only provides knowledge about that which is observable would soften the grim implications of science, were their arguments correct: see, for example, van Fraassen (1980). On the other hand, those who argue that, for all we know, inner experiences may not lie forever beyond the scope of science also help to soften up the problem: see, for example, Dennett (1991).
9. One can go further, and declare that "What is of value and how is it to be realized?" is *the* basic problem that there is, all other problems being more or less specialized aspects of this basic problem: see Maxwell (1984a).
10. What is at issue is not whether God's existence can be *proved*; substantial statements about the nature of the world cannot, quite generally, be proved. The issue, rather, is whether the *conjecture* that God exists can be *disproved*; and if not, whether it is a conjecture that is sufficiently explanatory, sufficiently capable of solving serious problems that cannot be solved by means of any rival conjecture, sufficiently free of serious drawbacks and defects, to be regarded as worthy of being upheld as a part of (conjectural) knowledge, or at least as a candidate for rational (conjectural) belief.
11. What we really need is a hierarchy of conceptions of God, from the highly specific, problematic and unlikely to exist, at the bottom of the hierarchy, to the highly unspecific, unproblematic, and quite likely to exist at the top. Such an 'aim-oriented rationalistic' framework, as I have called it elsewhere, provides us with the best chance of discovering the nature of God, in a sense of "God" that corresponds to something that actually exists. This mirrors, as I have explained elsewhere, the comparable situation in science: indeed, science can be interpreted as a rational attempt to discover the nature of God in one legitimate sense of "God". See Maxwell (1998) and (1984a). And see chs. 3 and 9, and appendix 3 of the present book.
12. This, evidently, is what George Bernanos, the novelist, believed. His novels describe the battles fought out between these cosmic Titans in the souls of human beings.
13. Conscious brains have, in a sense, three kinds of feature: physical, perceptual, and mental - the last being what the owner of the brain is aware of as a result of being, in part, the brain in question. The perceptual and mental may, however, be collapsed into one aspect, the experiential or human.
14. There is a famous argument by Saul Kripke (1981) which claims to establish there can be no contingent identities of the kind envisaged here (with "rigid designators"). In appendix 2 I refute Kripke's argument. Contingent identities exist and are easy to come by. In particular, it is entirely possible that our inner experiences are contingently identical to physical processes going on inside our skulls (when these are construed as control processes).

15. By the "common sense" conception of causation I mean the conception we employ when we say that flicking the light switch on caused the light to go on, or hurling the brick at the window caused it to break. Here, very roughly, A causes B if A is the most obvious change which led to the occurrence of B (and A and B are not just fortuitously correlated, or both caused by C, there being no causal connection otherwise between A and B). This common sense conception of causation, however philosophically sophisticated its formulation may be, is only a very crude version of the conception of causation encountered in physics. In physics, in specifying the cause of an event B, one needs to specify all the factors involved in bringing about B. Thus, granted that no causal influence travels faster than light, a cause of B would be the physical state of affairs one second before B throughout a spherical region of space of radius equal to the distance light travels in one second. In giving the physical cause of the light going on, in this sense, much more must be specified than the act of flicking on the switch.

16. I introduced the concept of personalistic explanation, as understood here, in Maxwell (1984a), 183-189 and 264-270 (there called "person-to-person" understanding). As we shall see in chapter six, personalistic explanation is related to, but distinct from, what others have called empathic understanding and folk psychology.

17. Identity theorists and many proponents of functionalism deny that the mental, conceived as something lying beyond the scope of science, exists at all. One major motivation for denying that the mental (in this sense) exists is to deny the existence of anything that is inherently inexplicable. The suppressed assumption here is that if the mental is scientifically inexplicable then it is inexplicable *per se*, no other autonomous mode of explanation being recognized.

18. See Maxwell (1984a), ch. 2, for an exposition of the philosophy of knowledge.

19. See Maxwell (1984a), 183-189, and chapter 9 of the present book, especially section 5.