Is the mind-body relationship mysterious?[1]

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Abstract

Why do some philosophers (Nagel, McGinn, Chomsky), despite all we know about evolution and embryology, think that consciousness makes the mind-body relation a problem still unsolved and perhaps insoluble by those with human brains? They ask how consciousness arises in matter, not in living organisms, whereas non-philosophers ask how far down the ladder of life it extends and when it arises in individuals of sentient and intelligent species. They desire the privacy of Locke's closet, furnished with phenomenological properties; and besides replacing Aristotle's 'folk' conception of causation by Hume's, they mathematicise physical explanation in line with Newton's First Law of Motion. Non-philosophers operate with 'vague' concepts of life, sentience and intelligence which allow them to treat these things as truly and naturally emergent. Machines that perform intelligent tasks are no more conscious of the reasons for their movements than actors performing them on the stage.

In *What Kind of Creatures Are We?*[2] Noam Chomsky distinguishes between mysteries, things we have to accept but cannot understand because we are only human, from problems, which human beings are by nature capable of solving, whether or not they have yet solved them. Theologians use this notion of a mystery: that the physical universe was created by a person who is not part of it, or that there are three persons in one god, would count as mysteries. And Chomsky says, not that the mind-body relationship *is* mysterious in this way, but that it might be. Thomas Nagel begins his paper 'What is it like to be a bat?'[3] with the words 'Consciousness is what makes the mind-body problem really intractable', and Colin McGinn (after some hesitation) comes down in favour the view that the mind-body relationship is indeed mysterious. 'The reason,' he says in *The Making of a Philosopher*[4], 'why we cannot make solid

[1] I am grateful to Noam Chomsky for clarifying to me (private communication) his position on this question, and to Anthony O'Hear for comments on an early version of this paper.

[2] New York: Columbia University Press 2016, 27; 56.

[3] *Philosophical Review* 83 (1974)

[4] New York: Harper Collins 2002, 204.

doi:10.1017/S0031819119000305 © The Royal Institute of Philosophy, 2019
First published online 23 August 2019

https://doi.org/10.1017/S0031819119000305 Published online by Cambridge University Press

progress with the mind-body problem is that our intelligence is not cut out for the job.'

What problem precisely is it that these thinkers believe we may not be capable of solving? What is it that we may have to accept without understanding? In the seventeenth century the problem was how the mind or soul, conceived as something non-material and unextended, moves the body: so Princess Elizabeth of Bohemia, writing to Descartes in June 1643. Mill in *A System of Logic*.1.3.8 described the mind as 'the mysterious something which thinks and feels'. Philosophers today who are puzzled by the mind-body relationship do not conceive the mind as something non-material and unextended. They believe that what thinks and feels is composed of flesh and bone, of cells, of molecules, of atoms and sub-atomic particles known to physicists: their mystery is how something so composed can think and feel. The consciousness of which Nagel speaks is not just human awareness of oneself. 'Conscious experience,' he says, 'is a wide-spread phenomenon. It occurs at many levels of animal life.'

Why, then, does he find consciousness mysterious? 'That mental states,' he says in a passage quoted by Chomsky (p.86), 'are states of the brain' is something 'we do not really understand [because] we are still unable to form a conception of *how* consciousness arises in matter, even if we are certain that it does.' There are two oddities about these words. First, he says that mental states are states 'of the brain'. We do not think that the brain has beliefs and desires, but that living organisms with brains have beliefs and desires. And secondly, he speaks of a conception of 'how consciousness arises in matter', whereas we think of it as arising in living organisms. What non-philosophers ask is not how it arises in matter, but how far down the ladder of life it extends, and when, in individuals of a sentient and intelligent species, it arises. Are plants conscious? Flowers turn towards the sun; are they aware of it? Are sea anemones conscious? Are earthworms? No one doubts that we human beings are conscious, but when does our consciousness start? A foetus is not conscious as soon as conception has taken place, and there is uncertainty about when it becomes conscious of pain, when of sound, and other sensory objects. We might decline to say that a new-born baby is conscious of itself, or of its movements and cries, though its cries certainly affect its organs of hearing.

Philosophers in the past have conceived mental states as related causally to actions, and, consistently with that conception, have taken the relationship between, on the one hand, beliefs, and on the other, desires, 'volitions' and purposive behaviour, to be contingent,

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not logical. In recent years that has been questioned. Beliefs, it has been thought, must as a matter of logical necessity be reflected in action; it is contrary to the concept of a belief that something should have beliefs but be totally incapable of action. Rather as a homing missile is so constructed that it locks onto a target, and if the target moves or changes direction, that causes the missile to move in such a way that it reaches the target, so animals generally inherit a structure such that not only do different events and situations make it necessary for them to move in certain ways if they are to stay alive and preserve their inherited structure, but those situations sometimes cause them to move in the needed ways. Moreover in the course of their lives they do what is necessary to reach 'end-states', as we may call them, more specific than just staying alive - marrying Helen, for example, or sacking Troy, or becoming King of Scotland -; and they are caused to do these necessary things by the situations which make them necessary. Consciousness of something, functionalist philosophers suggest, is being caused by it to do what is necessary to reach such a specific end-state, and having such an end-state, one the movements necessary for acquiring which are caused by the things that make them necessary, is desiring it. On this analysis of belief and desire the two are logically connected. Purposive acting or refraining from action is impossible for a thing without consciousness, and consciousness is impossible for a thing that has no end-states it can reach by different behaviour in different situations. The relation between stimulation of a sense-organ and bodily movement is causal and physical, but the stimulation is consciousness only if it is apt to cause the movement, and the movement is purposive only if caused by the stimulation.

We answer the non-philosophical questions about consciousness in ways which reflect this conception of consciousness and purpose. The question of sentience arises when a movement seems purposive. Is the movement of a flower purposive, for the sake of receiving light? We look at the internal structure of the plant, and see if it is such that its flowers can move differentially to differences in light. The way in which non-philosophers attend to internal structure and to movements is illustrated in this passage from the preface to Bernard Gooch's *The Strange World of Nature*[5]:

> In the autumn, small tufts of dead leaves can be seen sticking up here and there about the lawn. They are leaves that have jammed in the mouth of the worm's burrow after vain struggles in the

[5] London, Lutterworth Press, 1950, 8):

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> night to take them down into the creature's larder. Yet quite awkward leaves are very effectively taken underground. It will be noticed that most are taken down narrow end first, which is naturally the best way to drag then into a small hole. Worms are very fond of leaves, and it has been suggested that possibly a leaf tastes nicer at the base than at the tip. Possibly, therefore, the animal is simply taking hold of the end that it likes best and drawing this end first into its burrow. That may sometimes be the case. That is not always so can soon be seen. It is only necessary to scatter on the lawn small triangles of paper with one angle considerably more acute than the other two. If worms take the paper instead of leaves, in most cases they will take hold of them by the sharpest corner. Here there can be no question of one corner tasting better than another. Touching the different corners with its mouth, this humble unintelligent little creature selects the corner which above all suits its purpose best.

Earthworms are conscious of objects with shape just insofar as they are able to act because of the shape of leaves and bits of paper. We attribute sentience to them because we attribute appetite for food, but we should not attribute appetition to them if they did not have an organ of touch, the mouth, which is able to discriminate angular shapes. Mammals have parts sensitive to light and sound, parts, that is, which are differentially affected by different sounds and sights, and the purposive movements of a rabbit, for example, can be correlated with different sights and sounds that affect those parts of it. We think a foetus is aware of sounds if it has developed an organ of hearing and its movements in the womb can be correlated with different sounds that reach its ears.

A baby at birth is sentient, but not conscious of itself or intelligent. But a human child, unlike the young of some other species, cannot survive without being cared for by others. The people caring for a child want it to be able to hold things in its hand, to crawl, to walk, and to speak; and children repeat movements they see and sounds they hear, first unconsciously and unintentionally, but then in response to objects of awareness, and increasingly intentionally and consciously.

The modern notion of mind goes back to Plato. In *Theaetetus* 184-6 he distinguishes *nous*, which we translate 'mind', not from body or matter, but from *aisthêsis*, sentience or perceptual consciousness. Sentience includes discriminating colours, sounds, tastes, and temperatures and reacting to them. Intelligent thought, *noêsis*, involves discriminating between true and false, between what is and what is

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not the case, enumerating, comparing, working out what will be from what was and what is, and evaluating as good and bad. He continues (186 b-c):

> There are some things of which it is naturally possible for human beings and wild animals to be aware right from when they come into being, such things affecting us [*pathêmata*] as reach through the body to the soul [*psukhê*], but reasonings about these things in relation to being and to utility arrive, for those for whom they do arrive, with difficulty, over time, through many efforts [*pragmata*] and through education.

Similarly Aristotle in *Politics* 7 1334b22-5.

Aristotle observed that continuity pervades biology:

> Nature proceeds from inanimate things to animals little by little in such a way that, because of the continuity, we cannot perceive the boundary or to which those in between belong (*Historia Animalium* 8 588b4-6).

For Aristotle, however, the continuity was, so to speak, lateral and contemporaneous. Nature, he thought, presents a continuous range of things from the simple and inorganic to the most complex organisms, and this spread has existed for all past time. We today think the continuity also historical. There was a time when there was no life and modern scientists offer some account of how living organisms arose. Horses and *homines sapientes* have not existed for all past time. But as we understand the evolution of species, there are no sharp divisions. There is no first specimen of a species. And natural continuity is not like the continuity of the rational fractions in mathematics. They divide without remainder into fractions less than the square root of two and fractions greater. History does not divide without remainder into times when there are no human beings and times when there are some. Similarly there is probably no first moment when an organism is aware of something and no first movement an organism controls, and movements do not divide without remainder into those that are unconscious and uncontrolled and those that are conscious and controlled. There seems to be no first moment when a child knows how to spell (cf. *Theaetetus* 207-8), or becomes a bully. But a baby cannot spell, and there are adults who can.

A philosopher might say that the concepts involved in consciousness, concepts of life, sentience, intelligence and so on, are 'vague', but it is not that we have only a vague or fuzzy conception of these things; Plato's words are a model of limpidity; rather we conceive these things pretty clearly as themselves 'vague', inasmuch as times

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do not divide without remainder into those at which there is life, sentience, or intelligence, and times at which there is not. Our concepts of them are not mental likenesses, more or less clear, of things we can perceive; they are the product not just of observation but of intelligence. We work out end-states the organisms might have and compare ways in which they are affected with the movements they make. Attributing life, sentience and intelligence requires judgement, and judgement of the kind we ourselves need in practical affairs when we try to decide how it would be best to behave.

For Aristotle there was no problem about how consciousness arose, since he thought it had always existed. Non-philosophers today with a smattering of natural science think that it arose, that living organisms arose out of inanimate materials, that sentient and subsequently intelligent species arose one out of another, and that in individuals of intelligent species, sentience and intelligence arise gradually and continuously through natural processes and through domestication and education by human beings. What is it that mystifies some modern philosophers?

They say that consciousness has phenomenological properties which these processes do not explain. Nagel speaks of 'what it is like to be bat' but that is an unsatisfactory choice of words. It would be better to say 'what it *feels* like' since there are many respects in which *being* a bat or a human being is like *being* a specimen of some other species. His idea is that consciousness has a different feel for different species. Other philosophers talk of 'qualia': people who can see and hear experience qualia that are inaccessible to the blind and deaf.

It is, of course, possible to deny the existence of phenomenological properties. Wittgenstein in *The Brown Book* ii. 19 seems to suggest that philosophers falsely believe they are experiencing them when they concentrate on what they see and hear while philosophising. It is also possible to say that consciousness has these phenomenological properties, but the processes known to non-philosophers account for them. Differences in colour perception, for example, are now traced to physiological causes. The thinking, however, of puzzled philosophers seems to be this. Our simple predecessors thought that mental states and acts and psychological properties were states and acts of non-physical subjects. As such they were irreducible to physical states and events, and therefore incapable of physical explanation: for physical explanations can explain only states and events that can be formulated in physical terms. We have now disembarrassed ourselves of non-physical subjects; but while the structure of a living organism by virtue of which it is sensitive to things around it and reacts

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to them in such a way as to do what is necessary to achieve end-states is physically explainable, we have no physical explanation of the phenomenological properties of sentience and intelligence. To explain them physically we should have to formulate them in physical terms, reduce them to physical structures. Either it is logically impossible for them to be identified with anything physical, a possibility incompatible with that physicalism to which many philosophers today are drawn. Or it is logically possible for them to be reduced. In that case, either human brains are such that we can reduce them, but haven't yet done so. Explaining them is, in Chomsky's terms, an unsolved 'problem'. Or the reduction is too difficult for us; the physical states involved are too complicated for mere human beings to work out and formulate, and explaining the phenomenological aspect of consciousness is what Chomsky calls a 'mystery'. Computers that are said to play chess make moves which have a physical explanation in the processes that go on inside them, though in playing against these machines we attribute to them the purpose of defending their pieces and taking ours, and perhaps the processes in a very advanced computer are too complicated for a human brain to grasp; perhaps likewise the phenomenological qualities of consciousness are caused by processes too complicated for human beings to unravel.

Central in this thinking is the idea of physical explanation. We recognise and employ at least three kinds of explanation. Logical explanation is showing that something is logically necessary and applies in mathematics. Practical explanation is showing that it is necessary for something to be done and applies in explaining behaviour as purposive. And physical explanation is showing that something is physically necessary, and applies in explaining causally. But the notion of causal necessity has changed over the years.

From the earliest times people have had a notion of causation based upon human skill. We bring about changes in things like pieces of stone, lumps of clay, sheets of paper, grapes, sausages, by acting upon them. That allows a philosopher to distinguish three types of causal factor: a causal agent, causal action, and a causal condition, a condition, that is, under which the action is effective. Holding a match to a sheet of paper is effective in causing it to go up in flames only if it is dry; its being dry is a causal condition. Aristotle, who worked with this 'folk' notion, as we may call it, of causation, tied it to his notion of matter. He uses the term 'matter' [*hulê*, literally unworked wood] to cover that of which a thing is composed, or out of which it arises, or which it contains, and takes this, when analysing our notion of what is natural in *Physics* 2 192b8-193b21, to be that in the thing in virtue of which certain action upon it is the bringing

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about of a certain change. That a lump is of *clay* or a sheet of *paper* is a kind of internal condition of the efficacy of certain action upon it; it is what makes the change *natural* or physically necessary.

This notion came under pressure in the seventeenth century. Non-philosophers attribute causal powers to natural and artificial objects like blocks of ice, sheets of paper, china mugs, which are subject to change by causal action. A mug, they say, has the power to resist penetration by a finger and to depress a weighing machine on which it is placed, but it can be fragmented by a blow from a hammer. And they attribute the powers of the objects to the materials of which they are composed: the mug is liable to be shattered and not dented because it is composed of china, not pewter. But their folk natural science does not say whether the causal powers of the mug are powers of the material or simply identical with the material. For seventeenth century philosophers, working with the grammatical ideas of subject and predicate, that was an easy question. The material of an object could not possibly *be* its causal powers. Mugs and clay are subjects, powers are predicates, properties, attributes. The causal powers of the object derive from the causal powers of its material, and if the material is something like bronze or clay, which is itself composed of material, from powers of the ultimate material. But we can form no concept of a causal power of an ultimate material. Our paradigm of a predicate or property is shape. We have concepts of three dimensional shapes, a sphere, a cube, a tetrahedron, and can ascribe such shapes to quantities of the ultimate material, but alas, these are not powers to affect or be affected.

The modifications philosophers made to the folk notion are well known. The distinction between causal agents, causal action and causal conditions dropped out of sight. Aristotle had held that causal action must be contemporaneous with the change of which it is the causing. Hume says is a cause is 'precedent and contiguous' to that of which it is the cause, and this relationship of precedence and contiguity between two 'objects' becomes causal if 'all objects resembling the former are plac'd in a like relation of priority and contiguity to those objects that resemble the latter.' And J.L. Mackie in *The Cement of the Universe*[6] says: 'The earlier phase of a self-maintaining process [such as the spinning of a top] surely brings about, or helps to bring about, the later phase.'

These modifications reduced the notion of physical or causal necessity to that of regularity. But the regularity did not have to be physical. Philosophers could answer Princess Elizabeth's question

[6] Oxford: Clarendon Press 1974, 146

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of how mental states could move the body by saying they are regularly attended by them, and Donald Davidson could argue on the same basis that reasons are causes.

The notion of physical necessity was tightened up by Newton. His first law of motion states:

> That every body perseveres in its state of rest or of moving uniformly in a straight line, unless insofar as it is forced by impressed forces to change that state. [*Corpus omne perseverare in statu suo quiescendi vel movendi uniformiter in directo, nisi quatenus a viribus impressis cogitur statum illum mutare*].

This is not, in fact a law of motion so much as statement about what needs explaining. Aristotle in *Physics* 4. 18 and 8. 10 raises the question why an object that you throw continues to move after it has left your hand. Since the movement is not 'natural' – not, that is, due to the matter of which it is composed (Aristotle's concept of a fundamental power of attraction or repulsion) - a causal agent must be acting upon it. Aristotle took the movement of the projectile after leaving the hand to be a change that needs explaining; Newton's law tells us to treat it as a case of staying unchanged: the projectile's state of motion, quantified in terms of speed and direction, remains the same. Its movement is a 'self-maintaining process'. Newton's principles do allow for motion to be redistributed, so that the total amount of quantifiable motion remains unchanging, but smaller parts pass from one body to another. This redistribution is a self-maintaining process. Philosophers saw it happening on the billiard table. Locke, indeed, (*Essay* 2. 21. 4) and Hume (*Enquiry concerning Human Understanding* s. 50) thought it mysterious, but Berkeley (*Notebook B*, 146) noted: 'Doctrines of liberty, prescience etc explain'd by Billiard balls'. Newton's *Mathematical Principles of Natural Philosophy* mathematicised the new conception of causal explanation. Philosophers today are inclined to view the universe as a whole as a closed system, and conceive its history as a game of billiards with no beginning or end in which all change must be explained as redistribution of motion in a finite three-dimensional space analogous to the two-dimensional finite surface of a three-dimensional object like a sphere.

This conception of physical explanation, I think, underlies the thinking that consciousness is, or may be, mysterious. To explain phenomenological qualities it would be necessary to show how consciousness with these qualities is a continuation of the redistribution of motion (or something similarly quantifiable) in a closed system, and that might be beyond human capacity.

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The temptation of philosophers to mathematicise nature and reduce causal to logical necessity goes back to Plato if not to Pythagoras, and I shall return to it in a moment; but first I wish to suggest another seventeenth century source of modern dissatisfaction with scientific and commonsensical explanations of consciousness. If Newton's First Law has captured the imagination of philosophers, so have Locke's words in *Essay* 2.11.17:

> The understanding is not much unlike a closet wholly shut from light, with only some little openings left, to let in external resemblances, or ideas of things without.

The seventeenth century was the age not only of Leibniz and Newton but of civil wars and wars of religion. At such times, people want privacy. Even today we can feel that the privacy of our own homes is not quite enough: bailiffs, police-officers and religious fanatics can invade it. Locke's closet provides perfect privacy; nobody can come into it, or know better than we what is in it, or tell us what we ought to do with its contents. Its contents are private objects of consciousness, and the phenomenological properties of consciousness are felt as proof that we are safe in it. They may give us a sense of liberty, even of somehow creating ourselves.

The price for this privacy is discontinuity with the spatio-temporal world. Seventeenth and eighteenth century philosophers were willing to pay this price, and the feeling that the physical world's existence is a self-sustaining process in which nothing really happens except that motion gets redistributed may have made the price seem easier to pay. Nevertheless there is a simple objection to that idea. To explain the redistribution of motion on the billiard table we must suppose that the balls are composed of elastic material, with fundamental repulsive power. The notion of causal power is needed to understand the transfer of motion from one geometrical solid to another.

Natural science and common sense tell us that we actually are continuous with the natural world. Philosophers can have difficulty in accepting that because the concepts of nature with which they work are mathematical. As I said earlier, the concepts of life and consciousness are 'vague'. Times do not divide without remainder into times when there is no life or consciousness and times when there is some. Mathematical concepts of nature are sharp. Times divide without remainder into times at which any particular body (relatively, if you like, to some frame of reference,) is in motion and times at which it is at rest. By a 'time' I mean, as Russell does in his definition of motion in *The Principles of Mathematics*, s. 442, a

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durationless temporal item analogous to an extensionless spatial point. The same goes for being and not being in uniform motion. A question might be asked about starting and stopping: it seems that the 'switch' (as Colin Strang calls it in 'Plato and the Instant'[7]) between being and not being in motion must be instantaneous. Is the instant at which a body starts to move or stops one at which it is in motion or at rest? One could say that the instant at which it stops is the last at which it is in motion, and that the instant at which it starts is the first at which it is in motion; or that there is in fact no instant at which a body switches between being and not being in motion: that such an instant would be like a rational fraction that is equal to the square root of 2. Whichever we say does not affect the point that mathematical concepts of motion are not vague but sharp. There is certainly a *place* at which a body starts or stops, but that is one at which it is in motion at one time and at rest at another.

This difference between mathematical and psychological concepts seems to make it logically impossible to give a physical explanation of consciousness, at least if explanation is conceived mathematically. For us to explain it physically there would have to be some point on some quantifiable scale at which a body or a so-called organism switches between being conscious and not being conscious, and the vagueness of psychological concepts rules that out.

This difference also allows us to say that psychological qualities are emergent. Non-philosophers think that life, sentient and intelligent species and sentience and intelligence in individuals all emerge. Fear of emergence is based on the principle that nothing arises from nothing. The Greek thinkers who formulated it had in mind the arising of something quantifiable, some specific quantifiable kind of matter, and the principle is easily extended to motion, energy or anything mathematically measurable. Today we measure sight in eye tests, intelligence in intelligence tests, and there are practical reasons for doing this. But the concepts we have of sentience and intelligence as things that emerge are not concepts of things that are measurable, but rather, in the technical sense I indicated, vague.

We have passed from making missiles which lock onto a target to machines that test our skill at chess and Bridge, in using these machines, as I said, we play as if they were aware of our moves and had the purpose of winning, and Daniel Dennett in Chapter 11 of *Brainstorms*[8] considered how we might extend the notion of pain to a computer. Today we talk happily of artificial intelligence, and

[7] *Aristotelian Society*: Supplementary Volume 48 (1974) 63–79
[8] Brighton: Harvester 1981

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thinkers interested in nursing ethics[9] ask whether we should extend the notion of moral agency to 'intelligent' machines such as care robots and even accord rights to them. Are there, in fact, good reasons for denying that machines can be conscious and intelligent, or is that mere prejudice?

The obvious answer is that they cannot be sentient or intelligent because they are not living organisms but human artifacts. Aristotle takes it as obvious that anything with sentience or intelligence is alive. He analyses our concept of life by 'intelligence, sentience, changing and staying unchanged in place, and also taking in nourishment, growth and decay' (*De Anima* 2. 413a12-5). But he says these form an order, the earlier in his list presupposing the later, and that is the view of non-philosophers: intelligence is conceived, and not just discovered, to develop out of sentience, sentience out of moving of parts, moving of parts out of taking in of nourishment. The behaviour of a robot that has receptors sensitive to light and sound and parts which move so as to achieve human end-states is like that of a good actor in a play. When an actor plays a character seeing a ship at sea, the audience does not think that the actor actually sees a ship at sea. When an actor plays a character trying to kill another character called Mercutio, and a second actor plays that character trying to defend himself, the audience does not think that the first actor is really trying to kill someone called Mercutio, still less to kill the second actor. The movements and words spring from the author not the actors, though the actors have learned how to speak and act the parts. If a technician can construct robots that look like actors and can move and speak as actors do, the robots do not see the ship out at sea or try to kill each other, nor have they learnt, as actors do, to represent characters that see things are have purposes, but have been constructed by the technicians to represent actors.

Not long ago scientists were attracted to the idea that something does arise out of nothing, that atoms pop up wherever the expansion of the universe generates a sizeable empty space. That is not relevant to the question whether consciousness is mysterious. It is not suggested that it is due to the popping up of atoms, or even smaller items, in an organism's head. But the fact that psychological properties are vague enables us to hold, if we wish, both that they emerge and that the processes by which they emerge, the development of multicellular organisms, the formation of sense-organs, the purposive

[9] See Angus Robson, 'Intelligent machines, care work and the nature of practical reasoning, *Nursing Ethics* 2018, 1–11.

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movements of teachers, are continuations of earlier processes, redistributions of the same total quantity.

Nevertheless the history as we know it of the natural world is very unlike an everlasting game of billiards. First, apparently, there was no organic matter, then unicellular organisms arose, then multicellular, then sentient beings of increasing complexity and versatility, then social animals and animals that with speech and intelligence, then societies larger than primitive societies with more members than R.I.M Dunbar's Number[10]. A non-philosopher might think it remarkable that continuous redistribution of a quantity of something simple and homogeneous should show such a marked direction towards the complex and the intellectual. But that is not something a philosopher has any qualification to explain. A scientist might see it as a problem to discover an explanation within the natural world, some kind of 'anthropic principle'. A theologian may try to make intelligible the idea of a personal source, outside of it, of the whole natural order, and confess that such a source would be mysterious. But perhaps the most a philosopher can do is to show, as I have tried to show here, that consciousness in itself is neither a mystery nor a still unsolved problem but natural.

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[10] 'Co-evolution of neocortical size, group size and language in humans', *Behavioural and Brain Sciences* 16(4), 681–735.

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