

## Modern Consciousness and its Blind-spot

'Blind-spot' suggests that we might resolve the philosophical problem of freewill and determinism by approaching it as a scientific problem. Were that to happen – were determinism shown to be false – modern man would enter a terrain as foreign to his current way of looking at the world as the scientific outlook was to the medieval mind in the era of Galileo, Hobbes, and Descartes.

A man who believes both that the Arctic is a continent and that a submarine surfaced at the North Pole is a man with a problem: submarines cannot move around under continents so one of these two beliefs must be false. *This* man's problem is resolved by a matter of fact: the fact that the submarine came up out of the ocean depths at the North Pole establishes the fact that the Arctic is not a continent. The problem for everyman, though, the problem of freewill and determinism, is not so matter of fact because both beliefs (belief in freewill and belief in determinism) are assumptions. Scientific experiments could provide evidence that one or the other of these assumptions is true – or false.

Neuro-scientists may establish the fact of the matter with respect to freewill; they're already mapping the pathways between the human brain's limbic system and the pre-frontal cortex. 'Blind-spot' examines the basis of the assumption of determinism and makes the case that we might experimentally test whether human behaviour is in fact determined. This is a tall order, of course, but anecdotal evidence gives us reason to believe that digital technology can do for this type of research what the bubble chamber did for research into the sub-atomic realm.

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On February 12<sup>th</sup>, 2004, the *Radio National* Breakfast Programme reported that fridges had been bursting into flame, seemingly without cause. Something must have been causing those fridges to catch fire. Flames no more come into being without cause than do chickens. There must be *some* explanation. Things don't just happen without a cause – according to our scientific way of thinking. Everyone knows that – just as they know that they might have chosen to listen to RN on that day, had the idea to do so popped into their heads.

Ideas pop into my head all the time. I choose whether or not to listen to the radio, help someone cross the road, or read a book. And since things don't just happen without a cause it must be the case that my idea to take a walk is part of a causal sequence which can, in principle, be traced back to before I was born. Which is nonsense, surely? It's obvious, isn't it, that the decision to listen to RN originated in my head? Some ideas, then, can't be links in a continuous causal chain stretching back to the origins of the universe because that would mean I can't ever have made a free choice about how to act or what to believe. If my decisions originate with me then I have freewill but if they don't, if it's otherwise, then how can I be held responsible for what I say and do? My decision to help an old man across the street, for instance, would fetch me no brownie points since I was going to decide to help him come what may; I had no choice but to decide to help.

It's a cleft stick situation: I believe on the one hand that every event has a cause and yet believe on the other that I have freewill. Philosophers tend to doubt that any of us has freewill. They doubt it because they're unable to reconcile the belief that every event has a cause – the belief known as 'determinism' – with the claim that some choices originate within an individual human being. You don't have to be a philosopher to appreciate that there is indeed a contradiction, here. The man who believes, simultaneously, that every event is caused and that we have freewill is in the same logical circumstance as the student of maritime history who believes on the one hand that the Arctic is a continent and believes on the other that the nuclear-powered submarine *USS Skate* surfaced at the North Pole in 1959. Since submarines can't move about under continents, one of the student's beliefs must be false: in fact, it is false to believe that the Arctic is a continent.

Holding mutually exclusive beliefs is ultimately an untenable situation; as soon as we become aware of what we're doing we acknowledge that something has to give. It's easy to know which belief to abandon if the adjudication involves a matter of fact: the fact that a submarine could come up to the surface from the depths of the waters beneath the North

Pole demonstrates that it's false to believe that the Arctic is a continent. The case of believing that everything is caused *and* believing that we have freewill is not so matter of fact. Both beliefs are just that: *beliefs*, assumptions. Rupert Murdoch's vast network of digital communication is unlikely to detect chickens being created out of thin air but it may already contain the raw data which the next Kepler or Heisenberg will use to demonstrate, for a fact, that there are some aspects of human behaviour that are not caused.

I'm convinced that I freely choose how to act, that it's *my* decision whether or not to help the old man cross the road. And the philosophers are telling me that I had no choice, that everything I do is the effect of some chain of events stretching back for time out of mind. Not all of the philosophers, admittedly. There *are* some who doubt that every event has a cause. And we're with them, most of us moderns; we would allow that, while other types of events have a cause, our decisions and choices are 'self-caused'. To say that an event is 'self-caused' is to propose that it miraculously escapes from the chain of cause and effect to which every other event is shackled. The dilemma of accounting for self-caused decisions is referred to as *the problem of determinism*.

Determinism denies me my autonomy, strips me of any responsibility for my actions; I can take no pride in my good (nor feel remorse for my bad) behaviour. Some philosophers deny that there is a problem. They say that human freedom is compatible with determinism, that it's simply a matter of being realistic about what it means to be free. We're free, they maintain, just so long as we are not coerced. These 'compatibilist' philosophers have not so much *resolved* the problem of determinism as *dissolved* it – by diluting what it means to be free. Most of us would regard this definition of 'freedom' as too limited, not appreciably different from 'free-range.'

Those who recognise that belief in genuine freedom is indeed incompatible with belief in determinism have to choose between the two beliefs. Incompatibilist determinists regard human freedom to be a delusion (akin to the delusion that the sun goes round the earth). The advantage of the determinist position is that it's consistent with our scientific approach to the world out there. Since everything that happens in the normal everyday world is the effect of some prior cause, we're able to understand how things came to be as they are by examining the links in the causal chain. The disadvantage of adopting the scientific outlook, as already noted, is that I cannot, therefore, be held responsible for the actions I decide to take. Incompatibilist non-determinists – libertarians – on the other hand, regard determinism to be a delusion.

Most of us cannot shake the (libertarian) feeling that my decision to commit a charitable act starts with me. Feeling this is not enough, of course, because we also feel that the sun moves while the earth stands still. We now know that it's the other way around with respect to the sun and earth and may one day know that we're deluded in feeling that we originate decisions. We may not be deluded, though; perhaps some of my decisions *do* start with me; and if they do then it follows that not all normal everyday events *are* caused, that some things – mental events admittedly – come into existence without cause and cease to exist without cause. Those of us who adhere to the libertarian belief that human behaviour is not fully determined are implicitly rejecting the orthodox scientific outlook and need to come up with an alternative, a perspective which goes beyond what William James called the 'iron-block universe' imposed by the tyranny of determinism to an acausal account of human experience.

The determinist says that freewill is a false belief; those who believe in freewill reckon instead that determinism is a false belief. As a matter of fact, it may be that both beliefs are false. Perhaps freewill, like consciousness, comes in degrees, is a function of the relationship between the brain's limbic system and the pre-frontal cortex? We'll leave that to the neuro-biologist to investigate and turn our attention to establishing the fact of the matter concerning determinism with respect to human behaviour: are our actions fully determined or not? Like the neuro-scientist, we're sidestepping the philosophical argument as to whether

or not the metaphysical assumption of determinism holds water and proposing, instead, that the matter be decided by a scientific experiment. In order to drive home the point of the proposed experiment, we need to appreciate how the causal principle became the cornerstone of the edifice that is modern consciousness – the Scottish Enlightenment philosopher David Hume called causality “the cement of the universe” – and why it remains so.

In the late fifteenth and early sixteenth centuries, medieval man was faced with irreconcilable beliefs of the pre-scientific world of natural philosophy. Galileo, Hobbes, and Descartes zeroed in on Aristotle’s notion of nature’s ‘four causes’ as the metaphysical culprit holding man back from a clear understanding of how things are in the world out there and in teasing out the problem they laid the foundation for the scientific worldview. In the twentieth century, Heisenberg (with his *uncertainty principle*) and Jung (with *synchronicity*) continued to walk in the shoes of their Teutonic forebear, Leibniz, in seeking to retain something of the old Aristotelian conception of causality. Coming to terms with what drove them to doubt determinism will clarify the purpose of the experiment to discover whether or not there’s a serious blind-spot clouding modern consciousness.

Medieval philosophers debated whether or not God pre-determines everything that happens; modern philosophers want to know whether the laws of physics determine whatever happens. In which respect, we might be tempted to conclude that not much has changed. When God was running the show whatever happened – even unspeakable tortures suffered by recalcitrant free-thinkers – was in accord with the divine purpose. Scientific determinism provides no such comfort: there is no purpose. Purpose was made redundant by the employment of the new, improved method for mining knowledge. Scientific knowledge is the outcome of enquiry into *how* a given phenomenon occurred. Asking *why* it occurred doesn’t come into it. Moreover, asking *why* is to cook the books somewhat in that it assumes purpose. Scientific enquiry took the place of natural philosophy because it enables us to see how the world came to be as it is, how we came to be as we are; using this tool, we have accumulated knowledge by solving problems piecemeal. The pre-scientific approach to knowledge sought to solve the most intractable over-arching mysteries before the more straightforward ones. The approach being suggested here is that when it comes to our underlying metaphysical beliefs we must suspend the *how* question in favour of discovering *what*, e.g., what is the fact of the matter concerning the causal principle?

Galileo’s (thought-) experiments provided piecemeal solutions to problems of traditional (Aristotelian) physics and went a long way to undermining the Aristotelian edifice. Galileo’s analysis of freefall motion is a famous example: a rock dropped from a great height accelerates toward the ground; according to the precepts of Aristotelian physics, there’s a place for everything in the world and everything tends to move toward its place; the closer it gets to its natural place the faster it moves. For the medieval mind, then, an object in freefall accelerates toward the earth because of an inherent tendency to get to where it belongs. Using mathematics and citing experimental evidence, Galileo showed that freefall motion is mechanical, not teleological. And when Galileo trained his telescope upon the sky, what he saw changed everything. The great man had crossed the line and it was inevitable, he realised, that when the dust settled everyone would see things from a fundamentally different point of view. They did; we do: the Aristotelian conception of a discontinuous universe, of a sub-lunar terrestrial world made of one type of stuff and a celestial realm beyond the moon made of another, is false. Before Galileo there was natural philosophy; after him came science.

Galileo undermined the medieval concept of causality, demonstrated that we do not need ‘purpose’ to explain the world of motion. Descartes went much further in explicitly setting out to start again from the ground up working with a mechanistic concept of causality. Medieval (Aristotelian) causality was a cumbersome four-pronged affair where *formal*, *material*, *efficient* and *final* causes each had a part to play when something happened. Medieval man thought of the world out there as something of a biological phenomenon

where (active-masculine) *form* imbued (passive-feminine) *matter* with substance. Different substances had different potential attributes. The chicken form, for example, had the potential attributes of laying eggs, crossing the road, etc. Amorphous (formless) matter lacked attributes *per se* but acquired them when a given form gave it substance. According to the medieval natural philosopher when the ‘fowl form’ resides in primal matter it organises matter into the substance of a chicken; this is the *formal cause* of the chicken. The corporeal body of the chicken is the *material cause* whilst the *efficient cause* is the union of the male seed with the female egg. The purpose of this union (that there be egg-laying, road-crossing substances) is the *final cause*. In this conceptual world the *efficient cause* operates on behalf of the *formal cause* to bring about the *final cause*; it’s a means to an end, and makes *actual* what would otherwise remain merely *potential*. All manner of things in the medieval world out there are explicable in terms of formal, material, efficient and final causes. But Aristotelian causality failed to satisfactorily explain the world out there.

This teleological conception of causality is quite foreign to our modern way of thinking. We would admit only one of these four so-called *causes*: the efficient cause; and only the mechanics of *how* the chicken came to be born, making no assumption about it being a means to an end. From our modern perspective, whatever happens in the world out there is contingent: A is contingent upon B is contingent upon C, and so on. For us, the chicken was born because of a chain of events leading to the fertilisation of an egg, division of cells, and so on in a series of chemical reactions.

Following on from the work of Galileo and influenced by Thomas Hobbes’ insistence that events can only be intelligibly accounted for in terms of mechanical causes, Rene Descartes conceived of the world out there as a vast mechanism and endeavoured to detail its mathematical structure. He hypothesised that the material world is a mathematical machine extended in space; events which occur in this world are mechanically caused. Mindful of Galileo’s fate and appreciative of the implications for human behaviour if the world is nothing but a mechanism, Descartes imagined another world, the unextended non-physical world of thinking substance. Changes occur in the material world (*res extensa*) via mechanical causes. But the immaterial world of thinking substance (*res cogitans*) is not subject to mechanical causality. Descartes’ metaphysical dualism, then, holds that the world out there is mechanistic whilst our thoughts are not. Human beings are not mere mechanisms but partake of *res cogitans* and have, thereby, freewill – unlike chickens, which are machines.

Determinism is the doctrine that everything which happens (above the level of the atom) is mechanically caused. As a rough generalisation, English-speaking philosophers have tended to be empiricists who regard human behaviour as determined, the effect of mechanical causes, whereas Continental philosophers have been rationalists who, when it comes to explaining human behaviour, want to navigate by the old teleological Aristotelian stars. Empiricists believe that our minds start out as empty vessels and acquire knowledge via experience, via the senses. Rationalists hold that one can know what there is to know by sitting in an armchair and applying deductive (or mathematical) logic. Seventeenth-century rationalists were somewhat over-impressed by the ‘revelations’ of mechanical physics; Galileo had appeared to demonstrate that simply by uncovering the mathematics of its clockwork we can know how the world out there ticks. There, set apart from the empirical world of the five senses, was an equally objective but abstract (Platonic) realm that could be apprehended by reason. Rationalists believe that a world grasped via the senses would be nothing but a fog of meaningless perceptions.

Untethered rationalism, though, soon builds metaphysical castles in the air. Immanuel Kant sought to bring rationalism down to earth and to skirt what he believed were the worrying implications for human freedom of empiricist mechanical philosophy. Unconvinced by compatibilist claims that freedom could live side-by-side with determinism, Kant proposed that the empirical (phenomenal) world out there experienced by the senses is

subject to the laws of nature whilst (noumenal) understanding is governed by the laws of reason. What we see, smell, hear, touch and taste could not be experienced without first being arranged and ordered by the innate concepts of our understanding. Thus, for example, we would not be able to experience actual instances of causes and effects in the world out there, would not make the necessary connection between the thorn and the flat bicycle tyre, were we not born with the *concept* of cause and effect already formed.

Phenomena, in Kant's philosophy, are those things which occur in the world out there. Phenomena are governed by the laws of physics and mechanical causality. We infer from our experience of these phenomena, however, that there is a world beyond our experience, a world of noumena. Noumena are teleological. The faculty of reason is a noumenon which enables us to operate freely, ungoverned by mechanical causality. According to Kant, we'd have no reason to believe anything unless the understanding is free; if those who claim that we're not free, that all of our decisions are determined, are correct then they must have arrived at this conclusion without good reason, mechanically. Only insofar as we are free to choose are we able to reason to a logical conclusion. Freedom is the fundamental principle of the noumenal world, says Kant, so determinism is false.

Kant wrote his major works in the late 18<sup>th</sup> century. By then Newton's clockwork universe was taken for granted and James Cook had landed on the east coast of Australia. Cook's *Endeavour* returned from the South Seas with knowledge of the fact that not all swans are white. Prior to this, it had been thought that all swans were white because no-one had ever seen a swan of any other colour. Sailors saw black swans Down-under. This illustrated a flaw in the operation of the causal principle to which David Hume had already drawn attention: just because something happens today, Hume points out, that's no reason to believe that it will necessarily happen tomorrow. Just because night has followed day for as long as anyone can remember there's no rational basis for believing it will do so tomorrow; there's no necessity for one event to occur because another event has occurred; there's no rational basis, moreover, for believing in cause and effect; the phenomenon of cause and effect is nothing but the thus far observed 'constant conjunction' of two types of events; it's mere habit. We believe that a bike tyre will deflate if penetrated by a thorn, says Hume, because it's our experience that this is invariably what happens. There is no *necessary* connection, says Hume, between cause and effect. There are subtle debates concerning Hume's "cement of the universe" but when all is said and done the determinist has made a clean break from Aristotle and adopted an exclusively mechanical concept of causality whereas the libertarian who believes in freewill harks back to Aristotle's teleological concept of causality.

We want to shift the debate from the metaphysics of causality to an analysis of determinism as a scientific hypothesis. In the 1920's Karl Popper proposed that scientific hypotheses must be falsifiable in principle. The falsification principle requires of us that in proposing a theory of how things are we suggest what sort of evidence – were it produced – would undermine the theory. Newton's theory, for example, was falsifiable in principle when proposed and subsequently shown to be false, or at least not universally true. The falsification test is a useful criterion for scientific knowledge because – when applied – it will expose as metaphysical flim-flam what might otherwise masquerade as a scientific hypothesis.

Determinism is falsifiable. Reviewing the evidence of quantum experiments, Werner Heisenberg concluded that it had been falsified when, in 1927, he formulated the uncertainty principle. At the sub-atomic level, where we're dealing with infinitesimally small quantities, there's a high degree of uncertainty; mechanical causality, here, fails to account for the phenomena. In the light of this, philosophers generally acknowledge that the notion of universal determinism is false. At the everyday level, though, where the quantities are large, it's the uncertainty which is infinitesimal and the mechanical cause *can* account for phenomena. Garden variety determinism, then, determinism above the sub-atomic level, has

not been falsified. But that does not mean it cannot be falsified; there's not a firewall, here. We're no more entitled to draw a line between an undetermined sub-atomic realm and a determined everyday world than Aristotle was to arbitrarily separate the sub-lunar world from the celestial realm.

Heisenberg wondered whether Aristotelian causality might not be a better tool for scientific enquiry than the blunt instrument of mechanical causality. In re-floating Aristotle's concepts of form and matter Heisenberg revitalised the teleological conception of causality which Leibniz, Kant and the various post-Kantians had refused to let go of. They held fast to the final cause because human behaviour seemed to demand it. And while Darwin's mid-19<sup>th</sup> century hypothesis of the mechanism of natural selection explains much about how apparently teleological phenomena are actually mechanical, the final cause remains at the heart of the freewill-determinism debate. For example, we spoke, earlier, of 'compatibilist' philosophers who seek to dissolve the problem of determinism by employing a narrow definition of human freedom. Well, there's another group which wants to claim compatibility between freewill and determinism by expanding the meaning of determinism; this group argues that all events are caused but that human motives, reasons and intentions are special types of cause and it's this special character which guarantees that man has a free choice. This is actually an argument that while most causes of human behaviour are *mechanical* there are some that are *final* causes. Resort to the final cause, to teleology, is an acknowledgement that we originate some decisions, that determinism is false.

Philosophers can argue the toss but only scientific experiment will be able to establish that determinism is false, if it is. Phenomena associated with depth-psychology suggest a fruitful line of enquiry, here. Depth-psychology, per se, is unfalsifiable, little more than an institutionalised confidence trick. Some of its findings, though, bear scrutiny in the wider context. For example, Freud was so perplexed by things which happened in the consulting room that he considered it possible that we read each other's thoughts. It was Jung, of course, who had the more open mind about so-called 'psychic phenomena.' Many would say that Jung was a charlatan, or a mystic, unscientific at best. And insofar as the famous Swiss psychiatrist abandoned the assumption of mechanical causality, he was indeed 'unscientific'. In the narrow sense. As he continually reminds his reader, Jung was "steeped in philosophy" – Kantian philosophy. Kant's noumenon re-appeared in Jungian psychology as the *archetype*. Devoid of the trappings of depth-psychology, the archetype may be the modern version of Aristotelian *potentia* that would satisfy Heisenberg. Whatever else might be said about the archetype as an explanatory principle, it is an *acausal* explanatory principle, grounded in the final cause, teleology. Jung coined the term 'synchronicity' for a phenomenon which he believed betrayed the operation of archetypes in human behaviour.

Synchronicity refers to 'meaningful coincidence', a coincidence experienced by the individual as having a numinous quality. Jung regarded such coincidences as evidence of the existence of the archetype as a noumenon. As a scientific hypothesis, that's a long bow to draw. A more sober explanation for the numinous (spooky) feeling which we sometimes experience when a coincidence occurs is that the odds are decidedly against such a thing happening. It feels spooky because extraordinary coincidences appear to contradict our ingrained belief about how events come about. *Feeling* spooky, though, is not enough; it needs *be* spooky if there's anything significant, here.

The first step in understanding whether or not some coincidences actually contradict the cornerstone assumption of our modern outlook – mechanical causality – will be to quantify the phenomenon. Apart from measuring the frequency of coincidences, we'd need to give some weight to types of coincidences. We're all aware, for example, of the surprising coincidence of birthdays. When the probability of a specific birthday coincidence is calculated it may be that it was quite likely – or it may have been extraordinarily unlikely. It would be extraordinary, for example, to find yourself in a room where everyone was the same height and had the same birthday; you'd want to know how the situation came about,

whether it was contrived. The experience of such a coincidence would be as much an affront to our belief about the way the world is as experiencing a chicken coming into existence without cause.

The orthodox sceptical response to the phenomenon of extraordinary coincidence takes its cue from Hume's Cleanthes who, in a different but related context, says that if he can explain how each person came to be in a room then it's unreasonable of anyone to expect him to explain how the collection of people came to be there. It's not, however, the collection, *per se*, which needs to be explained but its special character; extraordinary coincidence needs to be explained – or at least acknowledged. It is reasonable to challenge the improbability of a given coincidence; it's reasonable to question whether or not a reported extraordinary coincidence occurred. It's surely unreasonable, though, to adopt a knee-jerk response as a matter of course, to invariably deny either the improbability or the fact of a reported coincidence. A variation on this sceptical theme is the claim that since we're pattern-seeking individuals we will find patterns in any random set of data so there's no point in testing whether or not the phenomenon of coincidence points to something fundamental about reality which we've overlooked. This is an argument whose corollary is the claim that determinism is unfalsifiable.

The scientific approach requires that where there's smoke we consider the possibility of fire. It's wasteful of scarce resources to design experiments for testing crackpot scientific theories but 'crackpot' must not be confused with 'unorthodox'; given that there is *prima facie* evidence from quantum physics that determinism is false and since the fact of ubiquitous coincidence would constitute evidence against the theory that human behaviour is exclusively determined, it would be good science to conduct an experiment which helps quantify what's going on in the world out there with respect to coincidence.

The quantum data supporting the uncertainty principle is to hand but we have only anecdotal evidence, no collated data to speak of, concerning human behaviour. Yet that, too, is available for capture: millions of people communicate thousands of times via the various applications of twenty-first century technology. Ironically, we may have to await the advent of the quantum computer to crunch the numbers that such an investigation of human behaviour will require. And there'll be ethical issues, too, of course, but it's possible (some would say likely) that even garden variety determinism will be falsified by analysis of the choices and decisions that are nowadays stamped as electronic fingerprints on almost every digital device. Communications technology will provide an ever-increasing range of possible test sites – the call-centre having the most to offer, here – wherein experiments could be conducted. On a good day, and with the stars forming the right angle, a series of experiments might do for science what Galileo did for natural philosophy.

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