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6 The Relation between Cause and Effect: David Hume, *Enquiry concerning Human Understanding**

Our next extract sees Hume taking further his critical examination of the foundations of scientific knowledge. The idea of causation is central to the scientific enterprise. Science, as commonly understood, aims to do more than produce mere statistical correlations: it purports to uncover the underlying *causes* that are responsible for the phenomena we observe. Thus, when we speak of the law of gravity, we commonly mean more than that objects have been observed behaving in certain ways; we have the notion of some *power* or *force* which *makes* a stone move towards the centre of the earth when dropped. The events studied by scientists, we believe, are typically more than series of random occurrences – they are *connected* together, so that a given cause *produces* or *necessitates* the resulting effect. In the late seventeenth and early eighteenth centuries, philosophers began a systematic inquiry into the nature of such supposed causal powers and forces (compare Berkeley's observations in extract 4, above).

In his *Enquiry concerning Human Understanding* (1748), from which the present and the preceding extract are taken, Hume set himself to examine the nature of 'power, force, energy or necessary connection'.¹ His strategy, which stems from his 'empiricist' account of knowledge, is to ask from what sensory impression this notion of necessary connection is derived.² His disturbing answer is that nothing we observe, either in the outside world, or from our inner awareness of how we initiate our own bodily movements, is sufficient to account for this concept. When we see one billiard ball hitting another, all we actually observe is the movement of ball A, followed

by the movement of ball B: any further conception of some power or force, of some link between the first event and the second, goes beyond anything we can detect through the senses. (The same goes for the way we move our limbs – we know we do it, but the *power* or *force* involved is something entirely beyond our comprehension). 'All events,' as Hume puts it, 'seem entirely loose and separate. One event follows another; but we never can observe any tie between them.' Hume's conclusion is twofold. First, when we talk of A causing B, all we can properly mean by this is that events of type A are followed by events of type B; causation reduces to mere regularity, or 'constant conjunction'. Second, our belief in some necessary link or connection between causes and effects derives merely from our subjective expectations: 'the mind is carried by habit, upon the appearance of one event, to expect its usual attendant'. Taken together with Hume's critique of inductive generalization (see preceding extract), this constitutes a devastating attack on the rationality of science. In the first place, our tendency to generalize from limited data is not warranted by any rational process of argument or reasoning; and in the second place, our belief in real causal connections in nature is founded merely on subjective habit or expectation, not reason. If scientists think of themselves as uncovering the secret connections that will unlock the mysteries of nature, if they claim to investigate the underlying 'powers' or 'forces' in things, Hume's blunt reply is that 'we have no idea of such a connection, nor any distinct notion of what it is we desire to know'.

* David Hume, *An Enquiry concerning Human Understanding* [1748], extracts from Section VII, parts 1 and 2; with modified spelling and punctuation. Several editions of the complete text are available, including that edited by T. Beauchamp (Oxford: Oxford University Press, 1999), with introduction and notes for students.

¹ Note that in Hume's original text the term is spelled throughout in the old way (nowadays rarely found): 'connexion'.

² For the term 'empiricist', see introduction to Part I, extract 8, above. Compare also introduction to Part II, extract 7.

But the means, by which this is effected; the energy, by which the will performs so extraordinary an operation; of this we are so far from being immediately conscious, that it must for ever escape our most diligent enquiry.

For *first*, is there any principle in all nature more mysterious than the union of soul with body; by which a supposed spiritual substance acquires such an influence over a material one, that the most refined thought is able to actuate the grossest matter? Were we empowered, by a secret wish, to remove mountains, or control the planets in their orbit, this extensive authority would not be more extraordinary, nor more beyond our comprehension. But if by consciousness we perceived any power or energy in the will, we must know this power; we must know its connection with the effect; we must know the secret union of soul and body, and the nature of both these substances; by which the one is able to operate, in so many instances, upon the other.

Secondly, we are not able to move all the organs of the body with a like authority; though we cannot assign any reason besides experience for so remarkable a difference between one and the other. Why has the will an influence over the tongue and fingers, not over the heart or liver? This question would never embarrass us, were we conscious of a power in the former case, not in the latter. We should then perceive, independent of experience, why the authority of will over the organs of the body is circumscribed within such particular limits. Being in that case fully acquainted with the power or force by which it operates, we should also know why its influence reaches precisely to such boundaries, and no farther.

A man, suddenly struck with palsy in the leg or arm, or who had newly lost those members, frequently endeavours, at first to move them, and employ them in their usual offices. Here he is as much conscious of power to command such limbs as a man in perfect health is conscious of power to actuate any member which remains in its natural state and condition. But consciousness never deceives. Consequently, neither in the one case nor in the other, are we ever conscious of any power. We learn the influence of our will from experience alone. And experience only teaches us how one event constantly follows another; without instructing us in the secret connection, which binds them together, and renders them inseparable.

Thirdly, we learn from anatomy that the immediate object of power in voluntary motion is not the member itself which is moved, but certain muscles, and nerves, and animal spirits,¹ and, perhaps, something still more minute and more unknown, through which the motion is successively propagated, ere it reach the member itself whose motion is the immediate object of volition. Can there be a more certain proof, that the power, by which this whole operation is performed, so far from being directly and fully known by an inward sentiment or consciousness, is, to the last degree mysterious and unintelligible? Here the mind wills a certain event. Immediately another event, unknown to ourselves, and totally different from the one intended, is produced. This event produces another, equally unknown. Till at last, through a long succession, the desired event is produced. But if the original power were felt, it must be known. Were it known, its effect also must be known; since all power is relative to its effect. And *vice versa*: if the effect be not known, the power cannot be known nor

¹ Animal spirits: a fine gas or vapour supposed to be the medium for the transmission of impulses through the nervous system.

instance or experiment where we have observed a particular event to follow upon another, we are not entitled to form a general rule, or foretell what will happen in like cases; it being justly esteemed an unpardonable temerity to judge of the whole course of nature from one single experiment, however accurate or certain. But when one particular species of event has always, in all instances, been conjoined with another, we make no longer any scruple of foretelling one upon the appearance of the other, and of employing that reasoning, which can alone assure us of any matter of fact or existence. We then call the one object, *Cause*; the other, *Effect*. We suppose that there is some connection between them; some power in the one, by which it infallibly produces the other, and operates with the greatest certainty and strongest necessity.

It appears, then, that this idea of a necessary connection among events arises from a number of similar instances which occur of the constant conjunction of these events; nor can that idea ever be suggested by any one of these instances, surveyed in all possible lights and positions. But there is nothing in a number of instances, different from every single instance, which is supposed to be exactly similar; except only, that after a repetition of similar instances, the mind is carried by habit, upon the appearance of one event, to expect its usual attendant, and to believe that it will exist. This connection, therefore, which we *feel* in the mind, this customary transition of the imagination from one object to its usual attendant, is the sentiment or impression from which we form the idea of power or necessary connection. Nothing farther is the case. Contemplate the subject on all sides; you will never find any other origin of that idea. This is the sole difference between one instance, from which we can never receive the idea of connection, and a number of similar instances, by which it is suggested. The first time a man saw the communication of motion by impulse, as by the shock of two billiard-balls, he could not pronounce that the one event was *connected*; but only that it was *conjoined* with the other. After he has observed several instances of this nature, he then pronounces them to be *connected*. What alteration has happened to give rise to this new idea of *connection*? Nothing but that he now *feels* these events to be *connected* in his imagination, and can readily foretell the existence of one from the appearance of the other. When we say, therefore, that one object is connected with another, we mean only that they have acquired a connection in our thought, and give rise to this inference, by which they become proofs of each other's existence – a conclusion which is somewhat extraordinary, but which seems founded on sufficient evidence. Nor will its evidence be weakened by any general diffidence of the understanding, or sceptical suspicion concerning every conclusion which is new and extraordinary. No conclusions can be more agreeable to scepticism than such as make discoveries concerning the weakness and narrow limits of human reason and capacity.

And what stronger instance can be produced of the surprising ignorance and weakness of the understanding than the present? For surely, if there be any relation among objects which it imports to us to know perfectly, it is that of cause and effect. On this are founded all our reasonings concerning matter of fact or existence. By means of it alone we attain any assurance concerning objects which are removed from the present testimony of our memory and senses. The only immediate utility of all sciences is to teach us how to control and regulate future events by their causes. Our thoughts and enquiries are, therefore, every moment, employed about this relation. Yet so imperfect are the ideas which we form concerning it, that it is impossible to give