

SECTION 6

SBN 56

Of Probability¹⁰

1 **THOUGH** there be no such thing as *Chance* in the world; our ignorance of the real cause of any event has the same influence on the understanding, and begets a like species of belief or opinion.

2 There is certainly a probability, which arises from a superiority of chances on any side; and according as this superiority encreases, and surpasses the opposite chances, the probability receives a proportionable encrease, and begets still a higher degree of belief or assent to that side, in which we discover the superiority. If a dye were marked with one figure or number of spots on four sides, and with another figure or number of spots on the two remaining sides, it would be more probable, that the former would turn up
10 than the latter; though if it had a thousand sides marked in the same manner, and only one side different, the probability would be much higher, and our belief or expectation of the event more steady and secure. This process of the thought or reasoning may seem trivial and obvious; but to those who consider
SBN 57 it more narrowly, it may, perhaps, afford matter for curious speculation.

3 It seems evident, that, when the mind looks forward to discover the event, which may result from the throw of such a dye, it considers the turning up of each particular side as alike probable; and this is the very nature of chance, to render all the particular events, comprehended in it, entirely equal. But finding a greater number of sides concur in the one event than in the other,
20 the mind is carried more frequently to that event, and meets it oftener, in revolving the various possibilities or chances, on which the ultimate result depends. This concurrence of several views in one particular event begets immediately, by an inexplicable contrivance of nature, the sentiment of belief, and gives that event the advantage over its antagonist, which is supported by a smaller number of views, and recurs less frequently to the mind. If we allow, that belief is nothing but a firmer and stronger conception of an object than what attends the mere fictions of the imagination, this operation may, perhaps, in some measure, be accounted for. The concurrence of these

¹⁰ Mr. LOCKE divides all arguments into demonstrative and probable. In this view, we must say, that it is only probable all men must die, or that the sun will rise to-morrow. But to conform our language more to common use, we ought to divide arguments into *demonstrations*, *proofs*, and *probabilities*. By *proofs* meaning such arguments from experience as leave no room for doubt or opposition.

SBN 56

several views or glimpses imprints the idea more strongly on the imagination; gives it superior force and vigour; renders its influence on the passions and affections more sensible; and in a word, begets that reliance or security, which constitutes the nature of belief and opinion.

- 4 The case is the same with the probability of causes, as with that of chance. There are some causes, which are entirely uniform and constant in producing a particular effect; and no instance has ever yet been found of any failure or irregularity in their operation. Fire has always burned, and water suffocated every human creature: The production of motion by impulse and gravity is an universal law, which has hitherto admitted of no exception. But there are other causes, which have been found more irregular and uncertain; nor has rhubarb always proved a purge, or opium a soporific to every one, who has taken these medicines. It is true, when any cause fails of producing its usual effect, philosophers ascribe not this to any irregularity in nature; but suppose, that some secret causes, in the particular structure of parts, have prevented the operation. Our reasonings, however, and conclusions concerning the event are the same as if this principle had no place. Being determined by custom to transfer the past to the future, in all our inferences; where the past has been entirely regular and uniform, we expect the event with the greatest assurance, and leave no room for any contrary supposition. But where different effects have been found to follow from causes, which are to *appearance* exactly similar, all these various effects must occur to the mind in transferring the past to the future, and enter into our consideration, when we determine the probability of the event. Though we give the preference to that which has been found most usual, and believe that this effect will exist, we must not overlook the other effects, but must assign to each of them a particular weight and authority, in proportion as we have found it to be more or less frequent. It is more probable, in almost every country of EUROPE, that there will be frost sometime in JANUARY, than that the weather will continue open throughout that whole month; though this probability varies according to the different climates, and approaches to a certainty in the more northern kingdoms. Here then it seems evident, that, when we transfer the past to the future, in order to determine the effect, which will result from any cause, we transfer all the different events, in the same proportion as they have appeared in the past, and conceive one to have existed a hundred times, for instance, another ten times, and another once. As a great number of views do here concur in one event, they fortify and confirm it to the imagination, beget that sentiment which we call *belief*, and give its object the preference above the contrary event, which is not supported by an equal number of experiments, and recurs not so frequently to the thought in transferring the past to the

10

SBN 58

20

30

SBN 59

40

future. Let any one try to account for this operation of the mind upon any of the received systems of philosophy, and he will be sensible of the difficulty. For my part, I shall think it sufficient, if the present hints excite the curiosity of philosophers, and make them sensible how defective all common theories are, in treating of such curious and such sublime subjects.

SECTION 7

SBN 60

Of the Idea of Necessary Connexion

PART 1

1 THE great advantage of the mathematical sciences above the moral consists in this, that the ideas of the former, being sensible, are always clear and determinate, the smallest distinction between them is immediately perceptible, and the same terms are still expressive of the same ideas, without ambiguity or variation. An oval is never mistaken for a circle, nor an hyperbola for an ellipsis. The isosceles and scalenum are distinguished by boundaries more exact than vice and virtue, right and wrong. If any term be defined in geometry, the mind readily, of itself, substitutes, on all occasions, the definition for the term defined: Or even when no definition is employed, the object itself may be presented to the senses, and by that means be steadily and
10 clearly apprehended. But the finer sentiments of the mind, the operations of the understanding, the various agitations of the passions, though really in themselves distinct, easily escape us, when surveyed by reflection; nor is it in our power to recall the original object, as often as we have occasion to contemplate it. Ambiguity, by this means, is gradually introduced into our reasonings: Similar objects are readily taken to be the same: And the conclusion becomes at last very wide of the premises.

2 One may safely, however, affirm, that, if we consider these sciences in a proper light, their advantages and disadvantages nearly compensate each other, and reduce both of them to a state of equality. If the mind, with greater
SBN 61
20 facility, retains the ideas of geometry clear and determinate, it must carry on a much longer and more intricate chain of reasoning, and compare ideas much wider of each other, in order to reach the abstruser truths of that science. And if moral ideas are apt, without extreme care, to fall into obscurity and confusion, the inferences are always much shorter in these disquisitions, and the intermediate steps, which lead to the conclusion, much fewer than in the sciences which treat of quantity and number. In reality, there is scarcely a proposition in EUCLID so simple, as not to consist of more parts, than are to be found in any moral reasoning which runs not into chimera and conceit. Where we trace the principles of the human mind through a few
30 steps, we may be very well satisfied with our progress; considering how soon

nature throws a bar to all our enquiries concerning causes, and reduces us to an acknowledgment of our ignorance. The chief obstacle, therefore, to our improvement in the moral or metaphysical sciences is the obscurity of the ideas, and ambiguity of the terms. The principal difficulty in the mathematics is the length of inferences and compass of thought, requisite to the forming of any conclusion. And, perhaps, our progress in natural philosophy is chiefly retarded by the want of proper experiments and phænomena, which are often discovered by chance, and cannot always be found, when requisite, even by the most diligent and prudent enquiry. As moral philosophy seems hitherto to have received less improvement than either geometry or physics, we may conclude, that, if there be any difference in this respect among these sciences, the difficulties, which obstruct the progress of the former, require superior care and capacity to be surmounted.

10

3 There are no ideas, which occur in metaphysics, more obscure and uncertain, than those of *power, force, energy, or necessary connexion*, of which it is every moment necessary for us to treat in all our disquisitions. We shall, therefore, endeavour, in this section, to fix, if possible, the precise meaning of these terms, and thereby remove some part of that obscurity, which is so much complained of in this species of philosophy.

SBN 62

4 It seems a proposition, which will not admit of much dispute, that all our ideas are nothing but copies of our impressions, or, in other words, that it is impossible for us to *think* of any thing, which we have not antecedently *felt*, either by our external or internal senses. I have endeavoured¹¹ to explain and prove this proposition, and have expressed my hopes, that, by a proper application of it, men may reach a greater clearness and precision in philosophical reasonings, than what they have hitherto been able to attain. Complex ideas may, perhaps, be well known by definition, which is nothing but an enumeration of those parts or simple ideas, that compose them. But when we have pushed up definitions to the most simple ideas, and find still some ambiguity and obscurity; what resource are we then possessed of? By what invention can we throw light upon these ideas, and render them altogether precise and determinate to our intellectual view? Produce the impressions or original sentiments, from which the ideas are copied. These impressions are all strong and sensible. They admit not of ambiguity. They are not only placed in a full light themselves, but may throw light on their correspondent ideas, which lie in obscurity. And by this means, we may, perhaps, attain a new microscope or species of optics, by which, in the moral sciences, the most minute, and most simple ideas may be so enlarged as to fall readily under our apprehension, and

20

30

¹¹ Section 2.

be equally known with the grossest and most sensible ideas, that can be the object of our enquiry.

5 To be fully acquainted, therefore, with the idea of power or necessary connexion, let us examine its impression; and in order to find the impression with greater certainty, let us search for it in all the sources, from which it may possibly be derived. SBN 63

6 When we look about us towards external objects, and consider the operation of causes, we are never able, in a single instance, to discover any power or necessary connexion; any quality, which binds the effect to the cause, and renders the one an infallible consequence of the other. We only find, that the one does actually, in fact, follow the other. The impulse of one billiard-ball is attended with motion in the second. This is the whole that appears to the outward senses. The mind feels no sentiment or inward impression from this succession of objects: Consequently, there is not, in any single, particular instance of cause and effect, any thing which can suggest the idea of power or necessary connexion. 10

7 From the first appearance of an object, we never can conjecture what effect will result from it. But were the power or energy of any cause discoverable by the mind, we could foresee the effect, even without experience; and might, at first, pronounce with certainty concerning it, by the mere dint of thought and reasoning. 20

8 In reality, there is no part of matter, that does ever, by its sensible qualities, discover any power or energy, or give us ground to imagine, that it could produce any thing, or be followed by any other object, which we could denominate its effect. Solidity, extension, motion; these qualities are all compleat in themselves, and never point out any other event which may result from them. The scenes of the universe are continually shifting, and one object follows another in an uninterrupted succession; but the power or force, which actuates the whole machine, is entirely concealed from us, and never discovers itself in any of the sensible qualities of body. We know, that, in fact, heat is a constant attendant of flame; but what is the connexion between them, we have no room so much as to conjecture or imagine. It is impossible, therefore, that the idea of power can be derived from the contemplation of bodies, in single instances of their operation; because no bodies ever discover any power, which can be the original of this idea.¹² SBN 64

¹² Mr. LOCKE, in his chapter of power, says, that, finding from experience, that there are several new productions in matter, and concluding that there must somewhere be a power capable of producing them, we arrive at last by this reasoning at the idea of power. But no reasoning can ever give us a new, original, simple idea; as this philosopher himself confesses. This, therefore, can never be the origin of that idea.

- 9 Since, therefore, external objects, as they appear to the senses, give us no idea of power or necessary connexion, by their operation in particular instances, let us see, whether this idea be derived from reflection on the operations of our own minds, and be copied from any internal impression. It may be said, that we are every moment conscious of internal power; while we feel, that, by the simple command of our will, we can move the organs of our body, or direct the faculties of our mind. An act of volition produces motion in our limbs, or raises a new idea in our imagination. This influence of the will we know by consciousness. Hence we acquire the idea of power or energy; and are certain, that we ourselves and all other intelligent beings are possessed of power. This idea, then, is an idea of reflection, since it arises from reflecting on the operations of our own mind, and on the command which is exercised by will, both over the organs of the body and faculties of the soul. 10
- 10 We shall proceed to examine this pretension; and first with regard to the influence of volition over the organs of the body. This influence, we may observe, is a fact, which, like all other natural events, can be known only by experience, and can never be foreseen from any apparent energy or power in the cause, which connects it with the effect, and renders the one an infallible consequence of the other. The motion of our body follows upon the command of our will. Of this we are every moment conscious. 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. *SBN 65* 20
- 11 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 controul 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 connexion 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. 30
- 12 *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.

- 13 A man, suddenly struck with a 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 connexion, which binds them together, and renders them inseparable. SBN 66
10

- 14 *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, 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 must also 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 felt. How indeed can we be conscious of a power to move our limbs, when we have no such power; but only that to move certain animal spirits, which, though they produce at last the motion of our limbs, yet operate in such a manner as is wholly beyond our comprehension? 20
30
SBN 67

- 15 We may, therefore, conclude from the whole, I hope, without any temerity, though with assurance; that our idea of power is not copied from any sentiment or consciousness of power within ourselves, when we give rise to animal motion, or apply our limbs to their proper use and office. That their motion follows the command of the will is a matter of common experience, like other

natural events: But the power or energy by which this is effected, like that in other natural events, is unknown and inconceivable.¹³

16 Shall we then assert, that we are conscious of a power or energy in our own minds, when, by an act or command of our will, we raise up a new idea, fix the mind to the contemplation of it, turn it on all sides, and at last dismiss it for some other idea, when we think that we have surveyed it with sufficient accuracy? I believe the same arguments will prove, that even this command of the will gives us no real idea of force or energy.

17 *First*, It must be allowed, that, when we know a power, we know that very circumstance in the cause, by which it is enabled to produce the effect: For these are supposed to be synonymous. We must, therefore, know both the cause and effect, and the relation between them. But do we pretend to be acquainted with the nature of the human soul and the nature of an idea, or the aptitude of the one to produce the other? This is a real creation; a production of something out of nothing: Which implies a power so great, that it may seem, at first sight, beyond the reach of any being, less than infinite. At least it must be owned, that such a power is not felt, nor known, nor even conceivable by the mind. We only feel the event, namely, the existence of an idea, consequent to a command of the will: But the manner, in which this operation is performed; the power, by which it is produced; is entirely beyond our comprehension. 20

18 *Secondly*, The command of the mind over itself is limited, as well as its command over the body; and these limits are not known by reason, or any acquaintance with the nature of cause and effect; but only by experience and observation, as in all other natural events and in the operation of external objects. Our authority over our sentiments and passions is much weaker than that over our ideas; and even the latter authority is circumscribed within very narrow boundaries. Will any one pretend to assign the ultimate reason of these boundaries, or show why the power is deficient in one case and not in another. 30

¹³ It may be pretended, that the resistance which we meet with in bodies, obliging us frequently to exert our force, and call up all our power, this gives us the idea of force and power. It is this *nisus* or strong endeavour, of which we are conscious, that is the original impression from which this idea is copied. But, *first*, we attribute power to a vast number of objects, where we never can suppose this resistance or exertion of force to take place; to the Supreme Being, who never meets with any resistance; to the mind in its command over its ideas and limbs, in common thinking and motion, where the effect follows immediately upon the will, without any exertion or summoning up of force; to inanimate matter, which is not capable of this sentiment. *Secondly*, This sentiment of an endeavour to overcome resistance has no known connexion with any event: What follows it, we know by experience; but could not know it *a priori*. It must, however, be confessed, that the animal *nisus*, which we experience, though it can afford no accurate precise idea of power, enters very much into that vulgar, inaccurate idea, which is formed of it. 10

- 19 *Thirdly*, This self-command is very different at different times. A man in health possesses more of it, than one languishing with sickness. We are more master of our thoughts in the morning than in the evening: Fasting, than after a full meal. Can we give any reason for these variations, except experience? Where then is the power, of which we pretend to be conscious? Is there not here, either in a spiritual or material substance, or both, some secret mechanism or structure of parts, upon which the effect depends, and which, being entirely unknown to us, renders the power or energy of the will equally unknown and incomprehensible? SBN 69
- 20 Volition is surely an act of the mind, with which we are sufficiently acquainted. Reflect upon it. Consider it on all sides. Do you find any thing in it like this creative power, by which it raises from nothing a new idea, and with a kind of FIAT, imitates the omnipotence of its Maker, if I may be allowed so to speak, who called forth into existence all the various scenes of nature? So far from being conscious of this energy in the will, it requires as certain experience, as that of which we are possessed, to convince us, that such extraordinary effects do ever result from a simple act of volition.
- 21 The generality of mankind never find any difficulty in accounting for the more common and familiar operations of nature; such as the descent of heavy bodies, the growth of plants, the generation of animals, or the nourishment of bodies by food: But suppose, that, in all these cases, they perceive the very force or energy of the cause, by which it is connected with its effect, and is for ever infallible in its operation. They acquire, by long habit, such a turn of mind, that, upon the appearance of the cause, they immediately expect with assurance its usual attendant, and hardly conceive it possible, that any other event could result from it. It is only on the discovery of extraordinary phænomena, such as earthquakes, pestilence, and prodigies of any kind, that they find themselves at a loss to assign a proper cause, and to explain the manner, in which the effect is produced by it. It is usual for men, in such difficulties, to have recourse to some invisible intelligent principle,¹⁴ as the immediate cause of that event, which surprizes them, and which, they think, cannot be accounted for from the common powers of nature. But philosophers, who carry their scrutiny a little farther, immediately perceive, that, even in the most familiar events, the energy of the cause is as unintelligible as in the most unusual, and that we only learn by experience the frequent CONJUNCTION of objects, without being ever able to comprehend any thing like CONNEXION between them. Here then, many philosophers think themselves obliged by reason to have recourse, on all occasions, to the same 20
30
SBN 70

¹⁴ Θεός ἀπὸ μηχανῆς.

principle, which the vulgar never appeal to but in cases, that appear miraculous and supernatural. They acknowledge mind and intelligence to be, not only the ultimate and original cause of all things, but the immediate and sole cause of every event, which appears in nature. They pretend, that those objects, which are commonly denominated *causes*, are in reality nothing but *occasions*; and that the true and direct principle of every effect is not any power or force in nature, but a volition of the Supreme Being, who wills, that such particular objects should, for ever, be conjoined with each other. Instead of saying, that one billiard-ball moves another, by a force, which it has derived from the author of nature; it is the Deity himself, they say, who, by a particular volition, moves the second ball, being determined to this operation by the impulse of the first ball; in consequence of those general laws, which he has laid down to himself in the government of the universe. But philosophers, advancing still in their enquiries, discover, that, as we are totally ignorant of the power, on which depends the mutual operation of bodies, we are no less ignorant of that power, on which depends the operation of mind on body, or of body on mind; nor are we able, either from our senses or consciousness, to assign the ultimate principle in one case, more than in the other. The same ignorance, therefore, reduces them to the same conclusion. They assert, that the Deity is the immediate cause of the union between soul and body; and that they are not the organs of sense, which, being agitated by external objects, produce sensations in the mind; but that it is a particular volition of our omnipotent Maker, which excites such a sensation, in consequence of such a motion in the organ. In like manner, it is not any energy in the will, that produces local motion in our members: It is God himself, who is pleased to second our will, in itself impotent, and to command that motion, which we erroneously attribute to our own power and efficacy. Nor do philosophers stop at this conclusion. They sometimes extend the same inference to the mind itself, in its internal operations. Our mental vision or conception of ideas is nothing but a revelation made to us by our Maker. When we voluntarily turn our thoughts to any object, and raise up its image in the fancy; it is not the will which creates that idea: It is the universal Creator, who discovers it to the mind, and renders it present to us.

Thus, according to these philosophers, every thing is full of God. Not content with the principle, that nothing exists but by his will, that nothing possesses any power but by his concession: They rob nature, and all created beings, of every power, in order to render their dependence on the Deity still more sensible and immediate. They consider not, that, by this theory, they diminish, instead of magnifying, the grandeur of those attributes, which they affect so much to celebrate. It argues surely more power in the Deity to delegate a certain degree of power to inferior creatures, than to produce

every thing by his own immediate volition. It argues more wisdom to contrive at first the fabric of the world with such perfect foresight, that, of itself, and by its proper operation, it may serve all the purposes of providence, than if the great Creator were obliged every moment to adjust its parts, and animate by his breath all the wheels of that stupendous machine.

23 But if we would have a more philosophical confutation of this theory, perhaps the two following reflections may suffice.

24 *First*, It seems to me, that this theory of the universal energy and operation of the Supreme Being, is too bold ever to carry conviction with it to a man, sufficiently apprized of the weakness of human reason, and the narrow limits, to which it is confined in all its operations. Though the chain of arguments, which conduct to it, were ever so logical, there must arise a strong suspicion, if not an absolute assurance, that it has carried us quite beyond the reach of our faculties, when it leads to conclusions so extraordinary, and so remote from common life and experience. We are got into fairy land, long ere we have reached the last steps of our theory; and *there* we have no reason to trust our common methods of argument, or to think that our usual analogies and probabilities have any authority. Our line is too short to fathom such immense abysses. And however we may flatter ourselves, that we are guided, in every step which we take, by a kind of verisimilitude and experience; we may be assured, that this fancied experience has no authority, when we thus apply it to subjects, that lie entirely out of the sphere of experience. But on this we shall have occasion to touch afterwards.¹⁵

25 *Secondly*, I cannot perceive any force in the arguments, on which this theory is founded. We are ignorant, it is true, of the manner in which bodies operate on each other: Their force or energy is entirely incomprehensible: But are we not equally ignorant of the manner or force by which a mind, even the supreme mind, operates either on itself or on body? Whence, I beseech you, do we acquire any idea of it? We have no sentiment or consciousness of this power in ourselves. We have no idea of the Supreme Being but what we learn from reflection on our own faculties. Were our ignorance, therefore, a good reason for rejecting any thing, we should be led into that principle of denying all energy in the Supreme Being as much as in the grossest matter. We surely comprehend as little the operations of one as of the other. Is it more difficult to conceive, that motion may arise from impulse, than that it may arise from volition? All we know is our profound ignorance in both cases.¹⁶

¹⁵ Section 12.

¹⁶ I need not examine at length the *vis inertiae* which is so much talked of in the new philosophy, and which is ascribed to matter. We find by experience, that a body at rest or in motion continues for ever in its present state, till put from it by some new cause; and that a body impelled takes as much

PART 2

26 But to hasten to a conclusion of this argument, which is already drawn out to too great a length: We have sought in vain for an idea of power or necessary connexion, in all the sources from which we could suppose it to be derived. It appears, that, in single instances of the operation of bodies, we never can, by our utmost scrutiny, discover any thing but one event following another; without being able to comprehend any force or power, by which the cause operates, or any connexion between it and its supposed effect. The same difficulty occurs in contemplating the operations of mind on body; where we observe the motion of the latter to follow upon the volition of the former; but are not able to observe or conceive the tie, which binds together the motion and volition, or the energy by which the mind produces this effect. The authority of the will over its own faculties and ideas is not a whit more comprehensible: So that, upon the whole, there appears not, throughout all nature, any one instance of connexion, which is conceivable by us. All events seem entirely loose and separate. One event follows another; but we never can observe any tie between them. They seem *conjoined*, but never *connected*. And as we can have no idea of any thing, which never appeared to our outward sense or inward sentiment, the necessary conclusion *seems* to be, that we have no idea of connexion or power at all, and that these words are absolutely without any meaning, when employed either in philosophical reasonings, or common life.

SBN 74

10

20

27 But there still remains one method of avoiding this conclusion, and one source which we have not yet examined. When any natural object or event is presented, it is impossible for us, by any sagacity or penetration, to discover, or even conjecture, without experience, what event will result from it, or to carry our foresight beyond that object, which is immediately present to the memory and senses. Even after one instance or experiment, where we have

motion from the impelling body as it acquires itself. These are facts. When we call this a *vis inertiae*, we only mark these facts, without pretending to have any idea of the inert power; in the same manner as, when we talk of gravity, we mean certain effects, without comprehending that active power. It was never the meaning of Sir ISAAC NEWTON to rob second causes of all force or energy; though some of his followers have endeavoured to establish that theory upon his authority. On the contrary, that great philosopher had recourse to an ethereal active fluid to explain his universal attraction; though he was so cautious and modest as to allow, that it was a mere hypothesis, not to be insisted on, without more experiments. I must confess, that there is something in the fate of opinions a little extraordinary. DES CARTES insinuated that doctrine of the universal and sole efficacy of the Deity, without insisting on it. MALEBRANCHE and other CARTESIANS made it the foundation of all their philosophy. It had, however, no authority in ENGLAND. LOCKE, CLARKE, and CUDWORTH, never so much as take notice of it, but suppose all along, that matter has a real, though subordinate and derived power. By what means has it become so prevalent among our modern metaphysicians?

10

observed a particular event to follow upon another, we are not entitled to form a general rule, or foretel 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 connexion between them; some power in the one, by which it infallibly produces the other, and operates with the greatest certainty and strongest necessity.

SBN 75

10

28 It appears, then, that this idea of a necessary connexion 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 connexion, 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 connexion. Nothing farther is in 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 connexion, 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 *connexion*? Nothing but that he now *feels* these events to be *connected* in his imagination, and can readily foretel 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 connexion 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

20

30

SBN 76

40

make discoveries concerning the weakness and narrow limits of human reason and capacity.

29 And what stronger instance can be produced of the surprizing 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 controul and regulate future events by their causes. Our thoughts and enquiries 10 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 any just definition of *cause*, except what is drawn from something extraneous and foreign to it. Similar objects are always conjoined with similar. Of this we have experience. Suitably to this experience, therefore, we may define a cause to be *an object, followed by another, and where all the objects, similar to the first, are followed by objects similar to the second*. Or in other words, *where, if the first object had not been, the second never had existed*. The appearance of a cause always conveys the mind, by a customary transition, to the idea of the effect. *SBN 77*
 Of this also we have experience. We may, therefore, suitably to this experience, 20 form another definition of *cause*; and call it, *an object followed by another, and whose appearance always conveys the thought to that other*. But though both these definitions be drawn from circumstances foreign to the cause, we cannot remedy this inconvenience, or attain any more perfect definition, which may point out that circumstance in the cause, which gives it a connexion with its effect. We have no idea of this connexion; nor even any distinct notion what it is we desire to know, when we endeavour at a conception of it. We say, for instance, that the vibration of this string is the cause of this particular sound. But what do we mean by that affirmation? We either mean, *that this vibration is followed by this sound, and that all similar vibrations have been followed by similar sounds*: Or, *that this vibration is followed by this sound, and that upon the appearance of one, the mind anticipates the senses, and forms immediately an idea of the other*. 30 We may consider the relation of cause and effect in either of these two lights; but beyond these, we have no idea of it.¹⁷

¹⁷ According to these explications and definitions, the idea of *power* is relative as much as that of *cause*; and both have a reference to an effect, or some other event constantly conjoined with the former. When we consider the *unknown* circumstance of an object, by which the degree or quantity of its effect is fixed and determined, we call that its power: And accordingly, it is allowed by all philosophers, that the effect is the measure of the power. But if they had any idea of power, as it is in itself, why could not they measure it in itself? The dispute whether the force of a body in motion

30 To recapitulate, therefore, the reasonings of this section: Every idea is copied from some preceding impression or sentiment; and where we cannot find any impression, we may be certain that there is no idea. In all single instances of the operation of bodies or minds, there is nothing that produces any impression, nor consequently can suggest any idea, of power or necessary connexion. But when many uniform instances appear, and the same object is always followed by the same event; we then begin to entertain the notion of cause and connexion. We then *feel* a new sentiment or impression, to wit, a customary connexion in the thought or imagination between one object and its usual attendant; and this sentiment is the original of that idea 10 which we seek for. For as this idea arises from a number of similar instances, and not from any single instance; it must arise from that circumstance, in which the number of instances differ from every individual instance. But this customary connexion or transition of the imagination is the only circumstance, in which they differ. In every other particular they are alike. The first instance which we saw of motion, communicated by the shock of two billiard-balls (to return to this obvious illustration) is exactly similar to any instance that may, at present, occur to us; except only, that we could not, at first, *infer* one event from the other; which we are enabled to do at present, after so long a course of uniform experience. I know not, whether the reader will readily apprehend this reasoning. I am afraid, that, should I multiply words about it, or throw it into a greater variety of lights, it would only become more obscure and intricate. In all abstract reasonings, there is one point of view, which, if we can happily hit, we shall go farther towards illustrating the subject, than by all the eloquence and copious expression in the world. This point of view we should endeavour to reach, and reserve the flowers of rhetoric for subjects which are more adapted to them.

SBN 78

10

SBN 79

20

be as its velocity, or the square of its velocity; this dispute, I say, needed not be decided by comparing its effects in equal or unequal times; but by a direct mensuration and comparison.

As to the frequent use of the words, *force, power, energy, &c.* which every where occur in common conversation, as well as in philosophy; that is no proof, that we are acquainted, in any instance, with the connecting principle between cause and effect, or can account ultimately for the production of one thing by another. These words, as commonly used, have very loose meanings annexed to them; and their ideas are very uncertain and confused. No animal can put external bodies in motion without the sentiment of a *nisus* or endeavour; and every animal has a sentiment or feeling from the stroke or blow of an external object, that is in motion. These sensations, which are merely animal, and from which we can *a priori* draw no inference, we are apt to transfer to inanimate objects, and to suppose, that they have some such feelings, whenever they transfer or receive motion. With regard to energies, which are exerted, without our annexing to them any idea of communicated motion, we consider only the constant experienced conjunction of the events; and as we *feel* a customary connexion between the ideas, we transfer that feeling to the objects; as nothing is more usual than to apply to external bodies every internal sensation, which they occasion.

10

SBN 78

20

SECTION 6

PROBABILITY] *THN* 1.3 also treats the subject of knowledge and probability; *EHU* 6 corresponds in important respects to *THN* 1.3.11–13. See also *THN* 1.3.2 and passages on probability beginning 1.3.6.4. The notion of probability had a rich history in philosophy, mathematics, and science, and several controversies surrounded the interpretation of probability and chance during the 17th and 18th centuries. Prominent figures included Pascal^B and Pierre de Fermat (1601–65) ('Letters between Fermat and Pascal'), Arnauld^B and Nicole^B (*Logic or the Art of Thinking*), French mathematician J. Bernoulli (1654–1705) (*Ars conjectandi* 3), French mathematician Pierre Rémond de Montmort (1678–1719) (*Essay d'analyse sur les jeux de hazard*), and de Moivre (*Doctrine of Chances*). See also Locke,^B *Essay* 4.15, and the 'Correspondence between Leibnitz and Bernoulli', in *Translations from James Bernoulli* (on estimating probabilities). Hume's positions are in the tradition descending from Arnauld–Nicole and Locke.

For modern scholarship on the development of theories of probability, see Lorraine Daston, *Classical Probability in the Enlightenment*; Ian Hacking, *The Emergence of Probability*; Barbara Shapiro, *Probability and Certainty in Seventeenth-Century England*; Anders Hald, *A History of Probability and Statistics and their Applications before 1750*; and F. N. David, *Games, Gods and Gambling*.

n. 10 **Mr. LOCKE^B divides all arguments]** Footnote reference: John Locke, *An Essay concerning Human Understanding* 4.15–16. See also *Essay* 4.1–3 on knowledge, probability, and evidence. Prior to the publication of Locke's *Essay* in 1690 several British thinkers had examined divisions of arguments, degrees of evidence, and legitimate grounds of assent. Their purposes were often grounded in religious interests. Examples include Wilkins, *Of the Principles and Duties of Natural Religion* 1.1 and 1.3; physician and philosopher Walter Charleton (1619/20–1707), *The Immortality of the Soul Demonstrated by the Light of Nature*, 'Dialogue the Second', 186–8; Boyle, *Reconcilableness of Reason and Religion* 8 (*Works*, 4: 93–7); Glanvill, sermon 3: 'Moral Evidence of a Life to Come', in *Seasonable Reflections and Discourses*; and John Tillotson,^B 'The Wisdom of Being Religious' (*Works*, sermon 1).

n. 10 *demonstrations, proofs, and probabilities*] See Locke^B on the distinction between 'proofs' and 'demonstrations' and analysis of 'demonstration' (*Essay* 4.2.1–4, 4.15.1–4, 4.16.6–9). Locke regards 'demonstration' as necessarily including 'proof' as an element; unlike Hume's treatment, Locke's is not a distinction between two degrees of the same sort of thing. Locke uses 'proof' to refer to what we might consider the steps in a proof. Hume's distinction therefore does not entirely parallel Locke's.

John Laird (relying in part on Baxter) maintained that Hume 'borrowed this threefold division from the Chevalier Ramsay' (Laird, *Hume's Philosophy*, 90 and n.). This hypothesis is based on *The Travels of Cyrus* 6, where expatriate Scottish philosopher and tutor Andrew Michael Ramsay (1686–1743) used similar terminology and ideas. (Hume obliquely refers to this book by Ramsay at *NHR*, n. 87. A 1757 edn. is in the Hume Library.) Ramsay's hierarchy of three degrees (see *Travels of Cyrus*, 1: xix–xxiv; 2: 52–3, 62) is closer to Hume's usage than Locke's two degrees, suggesting that Hume may be following Ramsay rather than Locke. However, no additional evidence confirms that Hume was indebted to Ramsay for the distinction.

Some of Hume's predecessors offered similar distinctions. See, for example, Wilkins, *Principles and Duties of Natural Religion* 1.3.3–5 (where 'indubitable certainty' is contrasted to infallible certainty and fallibility). In Wilkins and other figures, such as Tillotson,^B this view is related to the distinction between metaphysical and moral certainty, elaborated in ann. Section 10.3–4.

In *THN* 1.3.11.2 Hume proposes that we 'distinguish human reason into three kinds, viz. *that from knowledge* [rational demonstration or truths of reason], *from proofs* [causal arguments free of doubt and uncertainty], *and from probabilities* [arguments from probability, which are inferior in certainty and evidence to those causal arguments that are free of doubt and uncertainty]'. He notes that although the gradation from proofs to probabilities is 'insensible' in many cases, they are distinct categories.

46.1 *Chance*] The ancient contrast between chance and causation diminished with the rise of modern accounts of probability. 'Chance' became associated with unpredictability, luck, fortune, risk, and hazard, rather than the absence of causes. The thesis that 'chance' and related terms are mere words without corresponding realities is found in Collins, *Human Liberty*, 107; Chambers, *Cyclopædia*, 'chance'; English clergyman, classical scholar, and master of Trinity College, Cambridge, Richard Bentley (1662–1742), 'A Confutation of Atheism . . . Third and Last Part' (Fifth Boyle Lecture), 6–13; and Clarke,^B *Sermons on Several Subjects*, sermon 98 (*Works*, 1: 619). Variants of the same thesis are found in Wollaston, *Religion of Nature Delineated* 5.14; and de Moivre, *Doctrine of Chances* (252–3; compare preface). See also *EHU* 8.25; *Dialogues* 9.3 ('Chance is a word without a meaning'); and *THN* 1.3.11.4–7, 1.3.12.1.

46.1 *ignorance of the real cause*] Probability theorists often assumed determinism (what Hume treats in Section 8 as 'necessity') and condemned belief in the real existence of chance or fortune. Paradoxically, figures such as Bernoulli, de Moivre,

and French mathematician and political theorist the marquis de Condorcet (Marie-Jean-Antoine-Nicolas Caritat; 1743–94) gave meaning to ‘chance’, and allowed for a theory of chance, only to deny that it exists in reality.

46.4 superiority of chances on any side] Games of chance and underlying probabilities were subjects of both intellectual and moral interest in the 18th century. Mathematicians such as Bernoulli (*Ars conjectandi* 3) and de Moivre (*Doctrine of Chances*) investigated the superiority of chances. See Chambers, *Cyclopædia*, ‘gaming’, and *THN* 1.3.11, ‘Of the probability of chances’.

46.13 process of the thought or reasoning] Hume is discussing quantitative computation and belief proportional to past frequency. Often, however, ‘probability’ is linked to reasoning, reasonableness, and reasonable belief. See the accounts in Gassendi, Arnauld,^B Boyle, Bernoulli, Pascal,^B Butler, and Wilkins, to list figures mentioned elsewhere in these annotations. See also ‘probabilité’ in the *Encyclopédie* of Diderot and D’Alembert.

46.17 dye . . . particular side] Compare Hume’s discussion of dice, sides, probability, and related topics in *THN* 1.3.11.6. For similar views about probability and the use of dice in a work with which Hume was familiar, see Wollaston, *Religion of Nature Delineated* 3.16 (56, 59).

Numerous works on probability and gaming had used the example of dice to illustrate basic problems, propositions, and theories. Early and influential treatments of dice in probability theory included Gerolamo Cardano (1501–76), *Liber de ludo aleæ* (*The Book on Games of Chance*, in *Cardano: The Gambling Scholar*), especially chs. 7–13. Later and more expansive treatises of imposing historical importance in which the example appears include Montmort, *Essay*, preface and third part, ‘Explication de ce jeu’ (1713 2nd edn., pp. iii–xxiv, 173–215); Bernoulli, *Ars conjectandi* 3; and de Moivre, *Doctrine of Chances*, 9–24, 37–8, 41, 44–5, 51–5, 123–8, 160–1. See also the discussions of dice in Pascal^B and Fermat (‘Letters between Fermat and Pascal’, especially 229–50).

46.19 entirely equal] The thesis that chances are equal when frequencies are equal is presented in more detail in *THN* 1.3.11.5, 8, 12; 1.3.12.15.

47.5 probability of causes, as with that of chance] See *THN* 1.3.12, which is entitled ‘Of the probability of causes’; and *THN* 1.3.11, entitled ‘Of the probability of chances’.

47.10 universal law] See the quotation from Newton,^B *Opticks* 3.1, in ann. 27.39. *THN* 1.3.12.16 presents an account of gravity that resembles Cotes’s 1713 preface to Newton’s *Mathematical Principles* (2nd edn.):

the attractive force of the entire bodies arises from and is composed of the attractive forces of the parts, because . . . if the bulk of the matter be augmented or diminished, its power is proportionately augmented or diminished. We must therefore conclude that the action of the earth is composed of the united actions of its parts, and therefore that all terrestrial bodies must attract one

another mutually. . . . This is the nature of gravity upon earth. (Motte–Cajori, p. xxii.)

47.12 **rhubarb . . . purge, or opium a soporific**] A purge is a cathartic (cleansing) or scouring medicine, here a laxative. Rhubarb was sometimes used as a purge to produce evacuations of the bowels, but it did not always bring about the desired effect. Opium contains morphine and acts as a narcotic. Opium was sometimes given to patients, but it too did not always bring about the desired effect. Exactly the same examples of opium and rhubarb were used to illustrate irregularity and uncertainty in Locke, *Essay* 4.3.25, and Chambers, *Cyclopædia*, 'ignorance'. Leibniz^B then reproduced the same examples from Locke in *New Essays* (pub. 1765) 4.3.25. See also Johnson's *Dictionary* ('opium') and Hume's use of these examples in *Abstract* 32.

47.14 **irregularity . . . secret causes . . . prevented the operation**] Compare Clarke,^B *Sermons on Several Subjects*, sermon 98 (*Works*, 1: 617–21); Bernoulli, *Ars conjectandi* 4.1–3; and de Moivre, *Doctrine of Chances*. On secret causes, see the similar view in Locke,^B *Essay* 4.16.12.

47.29 **frost . . . open**] 'Open' here means clear and free from frost. Butler used the example of expecting frost in England in January and the role of probable judgments (*Analogy*, introduction) during his discussion of the Indian prince example that Hume presents at *EHU* 10.10.

47.31 **approaches to a certainty**] presumably a conclusion based on exceptionless evidence (not merely high probability) of a phenomenon. See the exposition, with a similar emphasis, in Locke,^B *Essay* 4.16.6–9; and Wollaston, *Religion of Nature Delineated* 3.16 (57).

48.4 **common theories**] 'Received systems' are presumably here identical to the 'common theories'. These theories treated *knowledge*, *understanding*, and *demonstration*, but lacked serious treatment of *probability*, which falls short of knowledge. At *Abstract* 4 Hume indicates that the 'common systems' of Locke,^B Malebranche^B (see previous citations for both), and Arnauld^B and Nicole,^B *Logic or the Art of Thinking* (fourth part, chs. 6–15; Buroker, 246–73) all emphasize understanding and demonstration, while failing to address questions of 'probabilities, and those other measures of evidence on which life and action entirely depend, and which are our guides even in most of our philosophical speculations'. Hume there attributes to Leibniz^B insights about defects in these theories.

SECTION 7

49.2 **clear and determinate**] Hume is presumably following Locke,^B who had decided that the Cartesian language of 'clear and distinct ideas' was inexact. He declared that he had '*in most places chose to put determinate or determined, instead of clear and distinct. . . . By determinate, when applied to a simple Idea, I mean that*

simple appearance, which the Mind has in its view, or perceives in it self, when that Idea is said to be in it' (*Essay*, Epistle to the Reader, 13). Locke used the language of 'clear and distinct ideas' regularly in his first three editions, and never succeeded in entirely removing it from his text.

49.6 ellipsis . . . scalenum] An ellipsis is an oval figure cut obliquely from the section of a cone (not parallel to the base, which would be a circle). A scalenum is a scalene triangle, which has sides of unequal length.

49.28 EUCLID^B] 'Geometry' was sometimes referred to as 'Euclid', and Euclid's *Elements* was still a standard manual in Hume's era. Hume mentions Euclid in several works; in *THN* 1.2.4 he uses Euclidean notions and definitions (of 'point', 'surface', 'rectilinear figure', etc.), but does not name Euclid.

50.6 natural philosophy . . . physics] 'Natural philosophy' (see ann. 5.1) and 'physics' were sometimes used as synonyms in the 18th century.

50.14 obscure and uncertain . . . power, force, energy, or necessary connexion] In *THN* 1.3.14.7 Hume complained of the 'prodigious diversity' of philosophical opinions on this issue—citing Malebranche,^B *Search after Truth* 6.2.3. Malebranche denies both that objective necessary connections between items in nature can be discovered and that there is real causal interaction between these items; true connections are between the will of God and created (or re-created) entities. When Hume criticizes the notion of objective necessary connection, he may be criticizing this doctrine in Malebranche. None the less, as *THN* 1.3.14.7 and 1.4.5.31 suggest, Hume's account of necessary connection may be most heavily indebted to Malebranche.

50.26 Complex ideas . . . simple ideas] For the philosophical background of Hume's views on simple and complex ideas, see Locke,^B *Essay* 2.2, 2.11.6–7, 2.12, 3.4.6–7. Locke discussed how the mind compounds ideas, as did Addison^B (*Spectator* 416). Both mention an associationist theory that in some respects resembles Hume's in Section 3; see ann. 17.1 and the more extended analysis in *THN* 1.1.1.2–10; 1.1.4.1, 7; 1.1.6.3; 1.1.7.14.

51.12 the whole that appears to the outward senses] This theme is found in Malebranche^B and other occasionalists (see ann. Section 7.21); sceptical origins are found in Sextus Empiricus, *Outlines of Pyrrhonism* 3.13–19 (chs. 4–5). Locke^B acknowledged that we do not observe causal powers through the outward senses, but was confident that these powers exist, that we can detect them in our own agency, and that they are needed to explain causal relations; see ann. n. 12 and 52.5.

51.25 Solidity] Compare Locke,^B *Essay* 2.4. Solidity is a spatio-temporal primary quality (though Cartesians disputed its existence)—see ann. Section 12.15 below and the numerous uses of this notion in *THN*.

51.29 machine . . . concealed from us] Theses about the overambitious claims of some writers to discover hidden causes are basic to Hume's arguments about science (the present context) and religious belief (in Section 11 below). On the

'whole machine'—that is, the entire universe—see Hume's *Dialogues* 2.5, 18; 7.14; 11.11; 12.5.

n. 12 LOCKE^B . . . **chapter of power**] Footnote reference: John Locke, *An Essay concerning Human Understanding* 2.21. See especially sects. 1–16. Hume gives a near-identical reference to Locke in a note in *THN* 1.3.14.5. At 2.21.1 (see also 2.2.2 and 2.7.8) Locke discusses how the mind 'comes by that *Idea* which we call *Power*'.

52.5 **internal power**] See 7.16 below. For the thesis that the 'operations of our own minds' furnish a basis for 'the idea of power', see Locke,^B *Essay* 2.1.2–4; 2.7.8; 2.21.1–5; 2.22.2, 10; 2.23.28, 33; 3.6.11; English clergyman Henry Lee (d. 1713), *Anti-Scepticism: Or, Notes upon Each Chapter of Mr. Lock's Essay* 2.19.2–3; Leibniz,^B *New Essays* (pub. 1765) 2.21–3; Irish philosopher and Anglican bishop Peter Browne (d. 1735), *The Procedure, Extent, and Limits of Human Understanding*, 387–8. On Locke^B and felt power, compare ann. n. 12.

52.26 **supposed spiritual substance**] Compare *THN* 1.4.6 on personal identity and *Dialogues* 6.5 on spiritual substance. See also the struggle between Hylas and Philonous over 'spiritual substance' in Berkeley,^B *Dialogues* 3 (also *Principles* 1.139). Hume may be directing these statements primarily at Descartes^B and his followers for their views on substance, continuance, identity, and interaction. Presumably anyone who accepted Cartesian dualism is a target, including Locke.^B

52.33 **nature of both these substances**] Hume's discussion of substance is here directed to the 'secret union of soul and body'. Broader discussions of substance appear in *THN* 1.1.6, 1.4.3.1–8, 1.4.5.2–6; see also *Abstract* 28 and 'Of the Immortality of the Soul' 3, 5–6. Hume's belief that experience does not penetrate to a deeper substance had been anticipated by Locke,^B *Essay* 2.13.18–9; 2.23.1–4, 37; 3.5.3—and developed on Lockean assumptions in Irish philosopher John Toland (1670–1722), *Christianity Not Mysterious* 3.2.

53.16 **anatomy . . . power in voluntary motion**] Paris and Edinburgh had emerged as centres of instruction in anatomy. However, Hume's argument here may rely on passages in Malebranche.^B See *Search after Truth* 6.2.3, *Elucidation* 15. See also ann. 8.15.

53.18 **animal spirits**] nerves or nervous spirits; the system that makes sensation and voluntary motion possible—a thin nerve fluid or humour inside narrow tubes and pores. This fluid was thought to be the material source of nervous transmission in animals and humans. See references and definitions in Chambers, *Cyclopædia*: 'animal spirits', 'brain', 'memory', 'passion', and 'spirits' (and eight appearances of 'animal spirits' in *THN*). Many ancient physicians believed in animal spirits. A modern proponent in the medical community was English physician and professor of natural philosophy Thomas Willis (1621–75), who is discussed below in ann. Section 9; see his *Cerebri anatome* 11. Cheyne, by contrast, maintained that the 'contriv'd' and 'dark' hypothesis of animal spirits is unconfirmed (*The English Malady* 1.9).

Hume's source could have been Malebranche,^B who used 'animal spirits' in the passage cited immediately above and in a related discussion of anatomy and volition; see *Search after Truth* 2.1.2, 2.1.5, 5.1, with a favourable citation of Descartes's 'treatise *De l'homme*'. See Descartes,^B *Treatise on Man (Philosophical Writings, 1: 100–7); Passions of the Soul* 1.7–16, 34–49; and Letter to Vorstius (*Philosophical Writings, 3: 225–6*). Étienne Gilson's *Index Scolastico–Cartésien* ('esprits animaux') contains a useful body of references on animal spirits.

54.20 **power . . . entirely beyond our comprehension]** This argument concerning power and actions of mind resembles arguments in Malebranche,^B though the reference to an infinite being does not follow Malebranche's view on divine causation (see *Search after Truth* 6.2.3 and Elucidation 15). Hume might be using Malebranche's premisses to turn the argument against him.

n. 13 *nîsus*] impulse or effort. *Nîsus* is defined in Hume's Index (below) as 'strong endeavour'. The concept of *nîsus* was developed by Aristotelian philosophers, who held that movement throughout nature derives from the operation of a principle that is analogous to desire or endeavour. This *nîsus* drives objects to develop. See also n. 17.

55.30 **invisible intelligent principle]** See Hume's introduction to *NHR* (and also *NHR* 2.2, 2.5, 3.4, 4.1, 5.2, 8.2, 15.5), where he presents the thesis that, with a few exceptions, belief in 'invisible, intelligent power' has been 'diffused over all persons in all nations and ages'.

n. 14 Θεός ἀπὸ μηχανῆς] This phrase means 'god out of a machine'. The expression derives from Hellenic and Roman drama, in which a 'deity', represented by an actor, interceded in human affairs. Some playwrights, including Euripides (5th c. BC), ended certain dramas by using a mechanical device to lower to the stage a god who solved problems generated by human situations by using superior judgement and commands. See Plato,^B *Cratylus* 425d–426a; Aristotle,^B *Poetics* 1454^b.

Leibniz^B uses the equivalent Latin expression, 'deus ex machina', to denounce the metaphysical hypothesis that Hume here has under consideration. Leibniz regarded the God of the occasionalists as a *deus ex machina* for resolving the mind–body problem. He maintained that occasionalists lack an 'explanation drawn from the order of secondary causes' and take 'recourse to miracle' (*Primary Truths* and *A New System of the Nature and Communication of Substances*, in *Philosophical Essays*, 33, 143–5). See also reports on Leibniz and this problem in Bayle,^B *Dictionary*, 'Rorarius' [H].

The expression Θεός ἀπὸ μηχανῆς is of unknown origins, though it apparently became proverbial in post-Renaissance literature. In his 1748 (first) edition, Hume used in the text the phrase '*quasi Deus ex machina*'—like a god out of a machine. In 1750 this Latin version was moved to a footnote ('*Quasi Deus ex machina*. Cic. de Nat. Deorum'), then deleted in subsequent editions. This reference was apparently to Cicero's *De natura deorum* 1.20.53. However, Cicero^B does not use either '*Quasi deus ex machina*' or '*Deus ex machina*'. His text reads: 'Quod quia quem ad modum

natura efficere sine aliqua mente possit non videtis, ut tragici poetae cum explicare argumenti exitum non potestis confugitis ad deum' ('For in so far as you cannot see how nature can cause this without some intelligent mind, you have recourse to a god, like the tragic poets when unable to arrange the conclusion of a plot'). Hume apparently viewed Cicero as referring to the phenomenon, not as using the phrase.

55.37 **many philosophers]** In a similar passage in *THN* 1.4.5.31 Hume provides a footnote to 'Father Malebranche and other Cartesians'. His reference there, and here, is to Malebranche,^B *Search after Truth* (6.2.3 and Elucidations 1 and 15, especially reply to the sixth proof) and to other occasionalists; see also ann. n. 16. Philosophers who thought that 'the energy of the cause is . . . unintelligible' in the relevant sense include Berkeley.^B

56.3 **sole cause of every event]** Occasionalists who held this or a closely related view about divine causation included Malebranche,^B *Search after Truth* 6.2.3 (cf. 3.2.3 and *Dialogues on Metaphysics*, dial. 7); French occasionalist philosopher Gerauld (Géraud) de Cordemoy (c.1620–84), *Six discours sur la distinction & l'union du corps & de l'ame*, 'Discours 4—De la première cause du mouvement' (*Œuvres*, 136–40, 143–4, especially conclusions 3–4 and axiom 5); French physician and philosopher Louis de La Forge (1632–66), *Traité de l'esprit de l'homme* 16, especially pp. 251–9 (1666 edn.); German Cartesian philosopher Johannes Clauberg (1622–65), *Disputationes physicae* 13, 17–18, in *Opera omnia philosophica*. These occasionalists were building on Descartes,^B who suggests that God is the cause of both the motion of bodies (and that this moving force is not in the bodies themselves) and the acts and effects of the human will; see *Principles of Philosophy*, 1: 24, 40–1 (*Philosophical Writings*, 1: 201, 206); *Objections and Replies* 3 (*Philosophical Writings*, 2: 134). See Hume's interpretation of Descartes in n. 16 (and ann. n. 16).

56.5 **causes . . . nothing but occasions]** In *Letter from a Gentleman* 32 Hume (or his editor, Kames) expressed the following opinions on the problem:

These Philosophers last-mentioned substituted the Notion of *occasional Causes*, by which it was asserted that a Billiard Ball did not move another by its Impulse, but was only the Occasion why the Deity, in pursuance of general Laws, bestowed Motion on the second Ball. But, tho' this Opinion be very innocent, it never gained great Credit, especially in *England*.

See also *THN* 1.3.14.32 on the 'cause'–'occasion' distinction.

Occasionalists seldom straightforwardly described causes as mere occasions. More commonly, they assumed or implied that this is so in the course of an argument that nothing that is finite has the power to necessitate an effect. All motion is therefore generated by God. See Malebranche,^B *Search after Truth* 3.2.3, 6.2.3; Elucidation 15; Louis de La Forge, *Traité de l'esprit de l'homme* 16, especially pp. 246–7, 251–8, 263–4 (1666 edn.); Cordemoy, *Six discours sur la distinction & l'union du corps & de l'ame*, 'Discours 4—De la première cause du mouvement' (*Œuvres*,

136–9, 142–4); and Clauberg, *Metaphysica de ente* 13, 15 (setting forth the principles of cause and action), and *Disputationes physicae* 18 (on divine causation), in *Opera omnia philosophica*.

56.7 volition of the Supreme Being] In occasionalist philosophy, when an event is thought to causally affect another event, an action of God is required; contra Descartes,^B body and mind do not causally interact. See Malebranche,^B *Search after Truth* 3.2.6, 6.2.3; Elucidations 1, 15; Clauberg, *Corporis et animæ in homine conjunctionis* 4, 7, 52 (on mind and body), and *Disputationes physicae* 17 (on movement of the body), in *Opera omnia philosophica*; and Flemish philosopher Arnold Geulincx (1624–69), *Opera philosophica*, 2: 186–90.

56.16 operation of mind on body] In *Search after Truth*, Elucidation 15, Malebranche^B argues that the sole cause is God, who establishes a union between mind and body and operates on the basis of laws of the conjunction of mind and body. See also Clauberg, *Opera omnia philosophica*, *Corporis et animæ in homine conjunctionis* 14, 52, in *Opera omnia philosophica*; Geulincx, *Opera philosophica*, 2: 150–3, 261–5; and the next annotation.

56.26 second our will] The theory that the human will is merely the occasion of movement in the body is found in Malebranche^B (*Search after Truth* 6.2.3); La Forge, *Traitté de l'esprit de l'homme*, 131–4, 196–7, 251–9, 264 (1666 edn.); Cordemoy, *Six discours sur la distinction & l'union du corps & de l'ame*, 'Discours 4—De la première cause du mouvement' (*Œuvres*, 140–3); Clauberg, *Corporis et animæ in homine conjunctionis* 14, and *Theoria corporum viventium* 32, in *Opera omnia philosophica*; Geulincx, *Opera philosophica*, 2: 176–7, 196–7.

57.5 stupendous machine] As a possible way of extricating occasionalists (and perhaps other believers in divine providence), Hume here presents the alternative of deism for consideration.

57.17 analogies and probabilities have any authority] Hume discusses this problem in *Dialogues* 2, 6–7, 12. The passage may be an allusion to Butler's *Analogy*.

n. 16 I need not examine] This footnote substantially overlaps with a passage in *Letter from a Gentleman* 32, which Hume was drafting (later modified by Kames) at approximately the same time that he was drafting the first or 1748 edition of *EHU*. For exact differences, see the collation in the Introduction.

n. 16 vis inertiae] force of inertia (also force of inactivity). Though Kepler introduced the Latin term, Newton's treatment would more likely have attracted Hume's attention. Departing from Descartes,^B Newton^B began to use the term 'inertia' to refer to the internal force of a body (*vis interna corporis*) that resists change. He incorporated the Cartesian conception in definition 3 of the *Mathematical Principles*: 'The vis insita, or innate force of matter, is a power of resisting, by which every body, as much as in it lies, continues in its present state, whether it be of rest, or of moving uniformly forwards in a right line' (*Mathematical Principles*, 2). Newton subsequently reformulated this *vis insita* as *vis inertiae* and made it proportional to the mass of a

body. This reformulation enabled him to use mathematical calculations and made the *vis inertiae* more than merely a force in the explanation of motion. He placed this new account in a broader theory of motion in *Opticks* 3.1 (397):

The *Vis inertiae* is a passive Principle by which Bodies persist in their Motion or Rest, receive Motion in proportion to the Force impressing it, and resist as much as they are resisted. By this Principle alone there never could have been any Motion in the World. Some other Principle was necessary for putting Bodies into Motion; and now they are in Motion, some other Principle is necessary for conserving the Motion.

Vis inertiae is discussed in simplified terms in Cheyne, *Philosophical Principles of Natural Religion* 1, especially 1.7 (citing Newton). Clarke^B criticizes Leibniz^B for an inadequate understanding of the notion in their correspondence (Clarke, Fifth Reply, in *Works*, 4: 690–1). Scottish philosopher Andrew Baxter (1686–1750), a follower of Clarke and near-neighbour of Hume's (though contact between them is undocumented), published one of the most comprehensive theories of the *vis inertiae* in Hume's day. He defined *vis inertiae* as 'resistance to a change of [matter's] present state of rest or motion' (p. 77) and held that this property is essential to matter. He maintained that material beings (unlike God and human souls) lack active powers and have only the power to resist change. See *An Enquiry into the Nature of the Human Soul*, sect. 1, especially pp. 11, 22–7 (and the note on 27–9). Baxter may be under criticism in n. 16, but, if so, Hume would seem to be reading him as a Cartesian or an occasionalist.

n. 16 **the new philosophy]** The reference is to modern natural philosophy or experimental philosophy, as influenced by developments in many advancing sciences. The new philosophy arose in the work of figures such as Galileo, Bacon,^B Gassendi, Descartes,^B Hobbes, Wilkins, Boyle, and Newton.^B The philosophy was considered 'new' because it replaced prevailing scholastic views and embraced experimental methods. Boyle, a forceful supporter, discusses what are 'called the new philosophers' in the preface to *The Christian Virtuoso*. Bayle^B links 'the new philosophy' to theories of perception and scepticism in natural philosophy (*Dictionary*, 'Pyrrho' [B]).

n. 16 **acquires itself]** Scientific laws of inertia first arose as scientists began to depart from classical physics, which had construed motion as requiring external agency for both initiation and continuation. Without using the term 'inertia', Galileo formulated the hypothesis that once a body is in motion, it continues in that motion until affected by an external source of resistance. Descartes^B developed Galileo's hypothesis as the law of inertia; see *Principles of Philosophy* 2.37.

n. 16 **NEWTON^B . . . second causes]** Chambers (*Cyclopædia*, 'cause') defines 'second causes' as 'those which derive the power, and faculty of acting, from a first cause. Such Causes don't properly act at all; but are acted on: and therefore are improperly called causes: of which kind are all those that we call natural causes. . . .

[S]econd Cause . . . is acted upon by some superior or first cause, to produce any effect.' See Hume's gloss on 'second causes' in *THN* 1.3.14.11.

Maclaurin presented the following interpretation of Newton.^B

Tho' [God] is the source of all efficacy, yet we find that place is left for second causes to act in subordination to him. . . . [Powers] are not to be considered as mere immediate volitions of his (as they are often represented) but rather as instruments made by him, to perform the purposes for which he intended them. If, for example, the most noble phenomena in nature be produced by a rare elastic *ætherial medium*, as Sir Isaac Newton conjectured, the whole efficacy of this medium must be resolved into his power and will, who is the supreme cause. . . . (*An Account of Sir Isaac Newton's Philosophical Discoveries*, 388–9 (published after *EHU* went to press)).

In the 1750 or second edition of *EHU* Hume formulated his statement of Newton's view in n. 16 so that Newton accepted 'an etherial active Matter' (*EHU*, 1750 edn., 118n.). In 1754 physician and natural philosopher John Stewart (1715?–59) criticized Hume's thesis in a paper discussed in the Introduction to this volume (see 'Reception in the 1750s'). This paper led Hume to change 'matter' to either 'second causes' or 'fluid'. Newton struggled with some of the relevant distinctions in his *Opticks*, and Clarke^B (see ann. n. 16) pursued issues in his correspondence with Leibniz.^B On Malebranche,^B likely another of Hume's sources, see below. This dispute, especially at the hands of Clarke, Maclaurin, and Stewart, had theological implications. For theological problems and metaphysical distinctions preceding and informing the literature on second causes, see Gassendi, *Syntagma: Physics* 1.4.8.

n. 16 **etherial active fluid**] Before the *Mathematical Principles* Newton^B offered a theory of the ether similar to that of Descartes.^B He hypothesized mediated action at a distance, but did not advance hypotheses regarding the *nature* of the medium. In the *Mathematical Principles* Newton suspended hypotheses about both the ether and the causal mechanism in gravitation, maintaining that gravitational attraction can be explained in terms of a universal mathematical law that does not presume action at a distance. His strategy led to his famous statement that

hitherto I have not been able to discover the cause of those properties of gravity from phenomena, and I frame no hypotheses [*hypotheses non fingo*]; for whatever is not deduced from the phenomena is to be called an hypothesis; and hypotheses, whether metaphysical or physical, whether of occult qualities or mechanical, have no place in experimental philosophy. . . . [I]t is enough that gravity does really exist, and act according to the laws which we have explained. (*Mathematical Principles* 3, general scholium (547)).

n. 16 **DES CARTES^B insinuated . . . MALEBRANCHE^B and other CARTESIANS**] Descartes's philosophy suggests, without concluding, that God is the moving force of bodies. This moving force is not in the bodies themselves. His recondite views on

divine causation and the dependence of all events on God are not easily situated within the paradigm of the occasionalist model. See *Principles of Philosophy* 1.21; 2.36, 39, 42; *Objections and Replies* 5 (*Philosophical Writings*, 2: 253–5) and 6 (*Philosophical Writings*, 2: 293–4); and ‘Letter to Princess Elizabeth’ of 6 Oct. 1645 (*Philosophical Writings*, 3: 272). In Malebranche’s theory, everything takes place because of the intervention of God; no causes other than God exist in nature. See Malebranche, *Search after Truth* 6.2.3 and Elucidation 15. See the explication of his and other Cartesians’ views about the efficacy of the Deity in ann. Section 7.21 ff.

n. 16 LOCKE,^B CLARKE,^B and CUDWORTH^B] English philosophers Locke, Clarke, and Ralph Cudworth discussed philosophical issues about whether matter has force, but none adopted occasionalism. Cudworth was a significant figure in metaphysics, but not in the scientific controversies discussed in this footnote. Clarke was a Newtonian who did not have a supplementary ether theory and left matter wholly passive. These philosophers are mentioned in *Letter from a Gentleman* 32: ‘Cudworth, Lock[e] and Clark make little or no mention of [occasionalist doctrines of causation]. Sir Isaac Newton (tho’ some of his Followers have taken a different Turn of thinking) plainly rejects it, by substituting the Hypothesis of an Æthereal Fluid, not the immediate Volition of the Deity, as the Cause of Attraction.’

n. 16 **modern metaphysicians**] The modern metaphysicians are those continental or British writers who (subsequent to the time of Locke^B and Clarke^B) embrace occasionalism. Besides the occasionalists, Berkeley^B is the most prominent modern metaphysician not specifically listed. Though prominent, he never had any ‘authority in ENGLAND’, where his views were universally rejected.

59.20 **customary transition**] In his discussion of necessary connection Malebranche^B anticipated Hume’s idea that the mind projects necessity onto objects and events; see ann. n. 17 below (‘apply to external bodies’ . . .). Other philosophers had commented on the human capacity to project sentiments onto objects in the case of heat, sound, colour, and the like. See the discussion of ‘translating . . . our Passions to things without us’ in Glanvill, *Scepsis scientifica* 12. See also *THN* 1.3.14.24–5.

n. 17 **square of its velocity**] The dispute here mentioned is between Leibniz^B (and his followers), on the one hand, and the Cartesians and Newtonians, on the other. Leibniz argued that the force (*vis viva*, or living force) of a body in motion is properly measured by the formula mv^2 —that is, the product of mass (m) and velocity (v) squared. Cartesians and Newtonians defended the simpler formula mv , the product of mass and velocity, and held that mv is the quantity conserved. These formulae vied for status in mechanics. Eventually it was appreciated that mv^2 described the force of a moving body over a given distance, whereas mv described the force over a given time. Part of the problem in the dispute arose from what the opponents were attempting to measure. Similarly, there was a variation in the experiments used to confirm their hypotheses: Leibniz used examples such as raising weights, whereas Newtonians and Cartesians appealed to colliding bodies.

n. 17 *nisus* or endeavour] See ann. n. 13.

n. 17 **apply to external bodies every internal sensation]** Malebranche^B spoke of the mind's tendency 'to spread itself onto the objects it considers by clothing them with what it has stripped from itself' (*Search after Truth* 1.12.5, 5.6), thereby leading to 'error'. In *THN* 1.3.14.25 Hume discusses the mind's 'great propensity to spread itself on external objects'. Many philosophers held that objects are not themselves coloured, cold, or odorous; rather, such properties are in our minds and projected onto events or objects.

61.21 **readily apprehend this reasoning]** This conclusion about necessary connection prompted Hume to say in *THN* 1.3.14.24 that 'of all the paradoxes, which I have had, or shall hereafter have occasion to advance . . . the present one is the most violent, and that 'tis merely by dint of solid proof and reasoning I can ever hope it will have admission, and overcome the inveterate prejudices of mankind'. See also *Abstract* 32–4.