The argument of this paper may be summarized as follows. Causal propositions (propositions of the type “x causes y”) are ambiguous. Such a proposition may have any one of three meanings (possibly more; but three is enough for this paper). The ambiguity, however, is of a rather odd kind. Sense I, which is historically the original sense, is presupposed by the others, and remains strictly speaking the one and only “proper” sense. When we assert propositions containing the word cause in senses II and III, we are “saying” one thing and “meaning” another; we are describing certain things as if they were things of a kind which we do not actually believe them to be. This always has an element of danger in it: the danger of inadvertently beginning to “mean” what one had only intended to “say”, i.e., of thinking that things are what we describe them as if they were. This danger is much worse when our “metaphors” get “mixed”. This is what has happened with the so-called “idea of causation” from the time of Kant onwards. It is a confusion of certain characteristics belonging to sense II with certain others belonging to sense III. Nothing can be done, therefore, towards clearing up our minds about causation, by merely analysing the idea as it stands and detailing the various elements it contains; for these elements are mutually contradictory. We must carry the process further, by segregating the elements under different heads, and distinguishing these as different “senses” of the word. But even this is not enough. A further step in the process is needed: namely a critical discussion of each “sense” taken singly. When this is done it will be found that the best way of avoiding confusion will be to restrict our use of the word cause to occasions on which it is used in its “proper” sense, No. I; that on the occasions on which we use it in sense II we should be wise to use instead the terminology of means and ends; and that when we use it in sense III we should do better to speak of “laws” and their “instances”.

I.

In the first sense of the word cause, that which is caused is the free and deliberate act of a conscious and responsible agent, and “causing” him to do it means affording him a motive for doing it. For “causing,” we may substitute “making,” “inducing,” “persuading,” “urging,” “forcing,” “compelling,” according to differences in the kind of motive in question.

This is at the present time a current and familiar sense of the word (together with its cognates, correlatives, and equivalents) in English, and of the corresponding words in other modern languages; also of causa in ancient Latin and ἀριστεύω in ancient Greek. A headline in a newspaper in 1936 ran “Mr. Baldwin’s speech causes adjournment of House.” This did not mean that Mr. Baldwin’s speech compelled the Speaker to adjourn the House whether or no that event conformed with his own ideas and intentions; it meant that on hearing Mr. Baldwin’s speech the Speaker freely made up his mind to adjourn. In the same sense we say that a solicitor’s letter causes a man to pay a debt, or that bad weather causes him to return from an expedition.

It is not only a correct modern sense, it is also of great antiquity. In Latin, causa is the regular word for “agenda,” as when (until quite recently) the Vice-Chancellor at Oxford opened the business of Convocation, every Tuesday afternoon, with the exordium “causa huius convocationis est ut...” and then recited the items of business. I have heard it suggested that this is a “metaphorical” use of the word cause, presupposing and derived from what I call sense III, i.e., the sense in which one thing in nature is said to be the cause of another. This is not the case. Historically, sense I is the earliest of the three, as anyone can see for himself who will work through the articles...
between the proposition that the act expediencies, B is the murderer. There is no contradiction to commit by pointing out certain facts or urging certain is responsible for it. If

in the new Liddell and Scott, the article causa in Lewis and Short, and the article cause in the Oxford English Dictionary. Senses II and III have been developed out of it by a process which I shall trace in the sequel.

A cause in this sense consists of two elements, a causa quod or efficient cause and a causa ut or final cause. The causa quod is a situation, or state of things existing; the causa ut is a purpose, or state of things to be brought about. Neither of these could be a cause if the other were absent. A man who tells his stockbroker to sell a certain holding may be caused to act thus by a rumour about the financial position of that company; but this rumour would not cause him to sell out unless he wanted to avoid being involved in the affairs of an unsound business. And per contra, a man’s wish to avoid falling over a precipice would not cause him to stop walking in a certain direction if he knew there was no precipice in that direction.

The causa quod is not a situation or state of things as such, it is a situation or state of things known or believed by the agent in question to exist. If a prospective litigant briefs a certain barrister because of his exceptional ability, the cause of his doing so is not this ability simply as such, it is this ability as something known to the litigant or believed in by him.

The causa ut is not a desire or wish as such, it is an intention. A man is “caused” to act in a certain way not by wanting to act in that way (for it is possible to want so to act without so acting) but by meaning to act in that way. There may be cases where mere desire leads to action without the intermediate phase of intention; but such action is not deliberate.

Causes of this kind may come into operation through the act of a second conscious and responsible agent, in so far as he (1) informs or persuades the first that a certain state of things exists, as when a man’s solicitor informs or persuades him of a certain barrister’s exceptional ability; or (2) exhorts or otherwise persuades the first to form a certain intention. This second agent is said to “cause” the first to do a certain act, or to “make him do it”.

The act so caused, however, is still an act; it could not be done (and therefore could not be caused) unless the agent did it of his own free will. If A causes B to do an act β, β is B’s act and not A’s; B is a free agent in doing it, and is responsible for it. If β is a murder, which A persuaded B to commit by pointing out certain facts or urging certain expediencies, B is the murderer. There is no contradiction between the proposition that the act β was caused by A, and the proposition that B was a free agent in respect of β, and is thus responsible for it. On the contrary, the first proposition implies the second.

Nevertheless, in this case A is said to “share the responsibility” for the act β. This does not imply that a responsibility is a divisible thing, which would be absurd; an absurdity into which people do no doubt fall, e.g., when they speak of collective guarantees. It means that whereas B is responsible for the act β, A is responsible for his own act, α, viz., the act of pointing out certain facts to B or urging upon him certain expediencies, whereby he induces him to commit the act β. When a child, accused of a misdeed, rounds on its accuser saying, “you made me do it,” he is not excusing himself, he is implicating his accuser as an accessory. This is what Adam was doing when he said “the woman whom thou gavest me, she gave me of the tree and I did eat.”

A man is said to act “on his own responsibility” or “on his sole responsibility” when (1) his knowledge or belief about the situation is not dependent on information or persuasion from anyone else, and (2) his intentions or purposes are similarly independent. In this case (the case in which a man is ordinarily said to exhibit “initiative”) his action is not uncaused. It still has both a causa quod and a causa ut. But because he has done for himself, unaided, the double work of envisaging the situation and forming the intention, which in the alternative case another man (who is therefore said to cause his action) has done for him, he can now be said to cause his own action as well as to do it. If he invariably acted in that way, the total complex of his activities could be called self-causing (causa sui); an expression which simply refers to an absence of persuasion or inducement on the part of another, and has been unintelligently denounced as nonsensical only because people will not ask themselves what they mean by the word cause.

II.

In sense II, no less than in sense I, the word cause expresses an idea relative to human action; but the action in this case is an action intended to control, not other human beings, but things in “nature,” or “physical” things. In this sense, the “cause” of an event in nature is the handle, so to speak, by which we can manipulate it. If we want to produce or to prevent such a thing, and cannot produce or prevent it immediately (as we can produce or prevent certain movements of our own bodies), we set about looking for its “cause”. The question “what is the cause of an event γ?” means in this case “how can we produce or prevent γ at will?”

This sense of the word may be defined as follows. A cause is an event or state of things which it is in our power to produce or prevent, and by producing or preventing which we can produce or prevent that whose cause it is said to be. When I speak of “producing” something, I refer to such occasions as when e.g. one turns a switch and thus produces the state of things described by the proposition “the switch is now at the ON position.” By preventing
something I mean producing something incompatible with it, e.g., turning the switch to the OFF position.

This is an extremely common sense in modern everyday usage. The cause of a bruise is the kick which a man received on his ankle; the cause of malaria is the bite of a mosquito; the cause of a boat’s sinking is her being overloaded; the cause of books going mouldy is their being kept in a damp room; the cause of a person’s sweating is that he has taken aspirin; the cause of a furnace going out in the night is that the draught door was insufficiently open; the cause of seedlings dying is that nobody watered them; and so forth.

The search for causes in sense II is “natural science” in that sense of the phrase in which natural science is what Aristotle calls a “practical science,” valued not for its truth pure and simple but for its utility, for the “power over nature” which it gives us: Baconian science, where “knowledge is power” and where “nature is conquered by obeying her”. The field of a “practical science” is the contingent, or in Aristotle’s terminology “what admits of being otherwise”. The switch, for example, is on, but it admits of being off; i.e., I find by experiment that I am able to turn it to the OFF position. To discover that things are contingent is to discover that we can produce and prevent them.

A conspicuous example of practical natural science is medicine. A great deal of time and money is now being spent on “cancer research,” whose purpose is “to discover the cause of cancer”. If we knew the cause of it, we should be able to prevent or cure it; that is the aim of all this work. But why should it be assumed that knowing the cause of cancer would enable us to produce or prevent it? Suppose someone claimed to have discovered the cause of cancer, but added that his discovery though genuine would not in practice be of any use because the cause he had discovered was not a thing that could be produced or prevented at will. Such a person would be universally ridiculed and despised. No one would admit that he had done what he claimed to do. It would be pointed out that he did not know what the word cause (in the context of medicine, be it understood) meant. For in such a context a proposition of the form “x causes y” implies the proposition “x is something that can be produced or prevented at will” as part of the definition of “cause”.

This sense of the word is not exclusively modern. It can be traced back through Latin usages of causa to the Greek αἰτία, αἰτίων (and the equivalent πρόφασις) in the Hippocratic writings of the 5th century B.C. Before that, these words meant accusation, blame, pretext or the like.

A “cause” in sense II never means something which is able by itself to produce the “effect”. When in this sense we say that x causes y, we are never talking about x by itself. We are always talking about x in combination with other things which we do not specify; these being called conditiones sine quibus non. For example, damp will not cause books to go mouldy unless there are mould-spores about.

The relation between the cause and these “conditions”, as I shall call them, has often been misunderstood, for example by Mill. Mill defines the cause of an event as its invariable antecedent (a definition applicable to sense III, not to sense II). If so, the event should follow given the cause and nothing else. If certain conditions are necessary, over and above the cause, in order that the event should follow (which is true of sense II and not of sense III), then surely the true cause is not what we have just called the cause but this plus the said conditions. Mill concludes that the true cause is the sum of a set of conditions, and that what people ordinarily call the cause is one of these, arbitrarily selected and, by a mere misuse of language, dignified with a name that properly belongs only to the whole set.

Closer inspection would have shown Mill that this “selection” is by no means arbitrary. It is made according to a definite principle. If my car “conks out” on a hill and I wonder what the cause is, I shall not consider my problem solved by a passer-by who tells me that the top of a hill is further away from the earth’s centre than its bottom, and that consequently more power is needed to take a car uphill than to take her along the level. All this is quite true; what the passer-by has described is one of the conditions which, together, form the “true cause” of my car’s stopping; and as he has “arbitrarily selected” one of these and called it the cause, he has done just what Mill says we always do. But now suppose an A.A. man comes along, opens the bonnet, holds up a loose high-tension lead, and says “look here, sir, you’re running on three cylinders”. My problem is now solved. I know the cause of the stoppage. It is the cause, just because it has not been “arbitrarily selected”; it has been correctly identified as the thing that I can put right, after which the car will go properly. If had I been a person who could flatten out hills by stamping on them, the passer-by would have been right to call my attention to the hill as the cause of the stoppage; not because the hill is a hill, but because I can flatten it out.

The cause is not “arbitrarily selected,” it is identified according to a principle which is in fact the definition of the term cause in sense II. It is not, properly speaking, “selected” at all; for selection implies that the person selecting has before him a finite number of things from among which he takes his choice. But this does not happen. In the first place, the conditions of any given event are quite possibly infinite in number, so that no one could thus marshal them for selection even if he tried. In the second
place, no one ever tries to enumerate them completely. Why should he? If I find that I can get a result by certain means, I may be pretty sure that I should not be getting it unless a great many conditions were fulfilled; but so long as I get it I do not mind what these conditions are. If owing to a change in one of them I fail to get it, I still do not want to know what they all are; I only want to know what the one is that has changed.

From this a principle follows which I shall call "the relativity of causes". Suppose that the conditions of an event \( y \) include three things, \( \alpha, \beta, \gamma \); and suppose that there are three persons, \( A, B, C \), of whom \( A \) is able to produce or prevent \( \alpha \) and only \( \alpha \); \( B \) is able to produce or prevent \( \beta \) and only \( \beta \); and \( C \) is able to produce or prevent \( \gamma \) and only \( \gamma \). Then if each of them asks "what was the cause of \( y \)?" each will have to give a different answer. For \( A \), \( \alpha \) is the cause; for \( B \), \( \beta \); and for \( C \), \( \gamma \). The principle may be stated by saying that for any given person, the cause of a given thing is that one of its conditions which he is able to produce or prevent. For example, a car skids while cornering at a certain point, turns turtle, and bursts into flame. From the car-driver’s point of view, the cause of the accident was cornering too fast, and the lesson is that one must drive more carefully. From the county surveyor’s point of view, the cause was a defective road-surface, and the lesson is that one must make skid-proof roads. From the motor-manufacturer’s point of view, the cause was defective design, and the lesson is that one must place the centre of gravity lower.

If one of these three parties "threw the blame" for the accident on one of the others, if for example the surveyor said "it is the business of drivers to prevent accidents of that sort; it isn’t mine," we all know that nothing would be done, by him at any rate, towards preventing them; that is to say, his "knowledge" of their cause would be a "knowledge" that did not result in power. But since a cause in this sense of the word is by definition something whose knowledge is power, this means that his so-called knowledge is not knowledge at all. The proposition in which he states it is in fact a nonsense proposition: "the cause of \( y \) from my point of view, i.e., that one of its conditions which I am able to produce or prevent, is something which somebody else is able to produce or prevent, but I am not." Hence the futility of blaming other people in respect of events in which we and they are together involved. Everyone knows that such blame is futile; but without such analysis of the idea of cause as I am here giving, it is not easy to see why it should be.

A further corollary of the same principle is that, for a person who is not able to produce or prevent any of its conditions, a given event has no cause at all, and any statement he makes about it will be a nonsense statement. Thus, the managing director of a large insurance company once told me that his wide experience of motor accidents had convinced him that the cause of all accidents was people driving too fast. This of course was a nonsense statement; but one could expect nothing better from a man whose practical concern with these affairs was limited to their after-effects. In sense II of the word cause, only a person who is practically concerned with a certain kind of event can form an opinion about its cause. For a mere spectator there are no causes. When Hume tried to show how the mere act of spectation could in time generate the idea of a cause, where "cause" meant the cause of empirical science, he was trying to explain how something happens which in fact does not happen.

If sciences are constructed consisting of causal propositions in sense II of the word cause, they will of course be in essence codifications of the various ways in which the people who construct them can bend nature to their purposes, and of the means by which in each case this can be done. Their constituent propositions will be (a) experimental (b) general.

(a) In calling them experimental I mean that their assertion will depend on "experiment". No amount of "observation" will serve to establish such a proposition; for any such proposition is a declaration of our ability to produce or prevent a certain state of things by the use of certain means, and no one knows what he can do, or how he can do it, until he tries. Nevertheless, he may by "observing" and "thinking" form the opinion that he can probably do a given thing that resembles one he has done in the past.

(b) Because the proposition "\( x \) causes \( y \)" is a constituent part of a practical science, it is essentially something that can be "applied" to cases arising in practice; that is to say, the terms \( x \) and \( y \) are not individuals but universals, and the proposition itself, rightly understood, reads "any instance of \( x \) is a thing whose production or prevention is means respectively of producing or preventing some instance of \( y \)". It would be nonsense, in this sense of the word cause, to inquire after the cause of any individual thing as such. It is a peculiarity of sense II, that every causal proposition is a "general proposition" or "propositional function". In sense I, every causal proposition is an "individual proposition", which cannot be read in the above form. In sense III, causal propositions might equally well be either individual or general.

If the above analysis of the cause-effect relation (in sense II) into a means-end relation is correct, why do people describe this means-end relation in cause-effect terminology? People do not choose words at random, they choose them because they think them appropriate. If they apply cause-effect terminology to things whose relation is really that of means and end, the reason must be that they want
to apply to those things some idea which is conveyed by
the cause-effect terminology and not by the means-end ter-
minality. What is this idea? The answer, I think, is not
doubtful. The cause-effect terminology conveys an idea not
only of one thing’s leading to another, but of one thing’s
forcing another to happen or exist; an idea of power or
compulsion or constraint.

From what impression, as Hume pertinently asks, is this
idea derived? I answer, from impressions received in our
social life, in the practical relations of man to man; specif-
ically, from the impression of “compelling” or “causing”
some other man to do something when, by argument or
command or threat or the like, we place him in a situation
in which he can only carry out his intentions by doing that
thing; and conversely, from the impression of being com-
pelled or caused to do something.

Why, then, did people think it appropriate to apply this
idea, thus derived, to the case of actions in which we achieve
our ends by means, not of other human beings, but of things
in nature? In order to answer this question we must remem-
ber that sense II of the word cause is especially a Greek
sense, and in modern times especially associated with the re-
vival of Greek ideas in the earlier Renaissance thinkers; and
that both the Greeks and the earlier Renaissance thinkers
held quite seriously an animistic theory of nature. They
thought of what we call the material or physical world as a
living organism or complex of living organisms, each with
its own sensations and desires and intentions and thoughts.
In Plato’s Timaeus, and in the Renaissance Platonists whose
part in the formation of modern science was so decisive, the
constant use of language with animistic implications is nei-
ther an accident nor a metaphor; these expressions are
meant to be taken literally and to imply what they seem to
imply, namely that the way in which men use what we now-
adays call inorganic nature as means to our ends is not in
principle different from the way in which we use other men.
We use other men by assuming them to be free agents with
wills of their own, and influencing them in such a way that
they shall decide to do what is in conformity with our plans.
This is “causing” them so to act, in the first and original
sense of that word. If “inorganic nature” is alive in much
the same way as human beings, we must use it according to
the same principles; and therefore we can apply to this
use of it the same word “cause” in the same sense, viz. as
implying –

1. That there are certain ways in which natural things be-
have if left to themselves;
2. That man, being more powerful than they, is able to
thwart their inclination to behave in these ways, and by
the exercise of his superior magic to make them behave,
not as they like, but as he likes.

And if anybody is so truthful as to admit that, in our ex-
perimental science, we do constantly use language which
taken literally implies all this, but argues that it is “mere
metaphor” and never meant to be taken literally, I reply:
then express yourself literally; and you will find that all
this language about causation disappears, and that you are
left with a vocabulary in which all that is said is that we
find certain means useful to certain ends.

III.

Sense III of the word cause represents an attempt to apply
it not to “practical science” but to “theoretical science.”
I shall first explain the characteristics which would belong
to this sense if the attempt were successful, and then con-
sider certain difficulties which in the long run prove fatal
to it.

(1) In the contingent world to which sense II belongs, a
cause is contingent (a) in its existence, as depending for its
existence on human volition (b) in its operation, as depend-
ning for the production of its effect on conditiones sine qui-
bus non. In the necessary world to which sense III belongs,
a cause is necessary (a) in its existence, as existing whether
or no human beings want it to exist (b) in its operation, as
producing its effect no matter what else exists or does not
exist. There are no conditiones sine quibus non. The cause
leads to its effect by itself, or “unconditionally”; in other
words the relation between cause and effect is a one-one
relation. There can be no relativity of causes, and no diver-
sity of effects due to fulfilment or non-fulfilment of
conditions.

I propose to distinguish the one-many and many-one†
character of the cause-effect relation in sense II from its
one-one character in sense III by calling these senses loose
and tight respectively. A loose cause requires some third
extraneous both to itself and to its effect to bind the
two together; a tight cause is one whose connexion with its
effect is independent of such adventitious aids.

In order to illustrate the implications of sense III, I will
refer to the contradiction between the traditional denial of
actio in distans (which, I suppose, would hold as against
action across a lapse of time, no less than across a distance
in space) and the assumption, commonly made nowadays,
that a cause precedes its effect in time. I shall argue that
actio in distans is perfectly intelligible in sense II, but non-
sense in sense III.

If I set fire to the end of a time-fuse, and five minutes
later the charge at its other end explodes, there is a
† One-many, because a cause in sense II leads to its effect only
when the conditiones sine quibus non are fulfilled. Many-one,
because of the relativity of causes.
"causal" connexion between the first and second events, and a time-interval of five minutes between them. But this interval is occupied by the burning of the fuse at a determinate rate of feet per minute; and this process is a conditio sine qua non of the causal efficacy ascribed to the first event. That is to say, the connexion between the lighting of the fuse and the detonation of the charge is "causal" in the loose sense, not the tight one. If in the proposition "x causes the explosion" we wish to use the word cause in the tight sense, x must include any such conditio sine qua non. That is, it must include the burning of the whole fuse; not its burning until "just before" that process reaches the detonator, for then there would still be an interval to be bridged, but its burning until the detonator is reached. Only then is the cause in sense III complete; and when it is complete it produces its effect, not afterwards (however soon afterwards) but then. Cause in sense III is simultaneous with effect.

Similarly, it is coincident with its effect in space. The cause of the explosion is where the explosion is. For suppose x causes y, and suppose that x is in a position p₁ and y in a position p₂, the distance from p₁ to p₂ being δ. If "cause" is used in sense II, δ may be any distance, so long as it is bridged by a series of events which are conditiones sine quibus non of x causing y. But if "cause" is used in sense III, δ must = zero. For if it did not, p₂ would be any position on the surface of a sphere whose centre was p₁ and whose radius would be δ; so the relation between p₁ and p₂ would be a one-many relation. But the relation between x and y, where x causes y in sense III, is a one-one relation. Therefore where δ does not = 0, x cannot cause y in sense III.

The denial of actio in distans, spatial or temporal, where the "agent" is a cause in sense III, is therefore logically involved in the definition of sense III.

(2) The main difficulty about sense III is to explain what is meant by saying that a cause "produces" or "necessitates" its effect. When similar language is used of senses I and II we know what it means: in sense I it means: in sense I it means that x affords somebody a motive for doing y, in sense II that x is somebody’s means of bringing y about. But what (since it cannot mean either of these) does it mean in sense III?

There are two well-known answers to this question, which may be called the rationalist and empiricist answers respectively.

(i) The rationalist answer runs: “necessitation means implication”. A cause, on this view, is a “ground” and its relation to its effect is the relation of ground to consequent, a logical relation. When someone says that x necessitates y he means on this view that x implies y, and is claiming the same kind of insight into y which one has (for example) into the length of one side of a triangle given the lengths of the other two sides and the included angle. Whatever view one takes as to the nature of implication, one must admit that in such a case the length of the third side can be ascertained without measuring it and even without seeing it, e.g., when it lies on the other side of a hill. The implication theory, therefore, implies that “if the cause is given the effect follows,” not only in the sense that if the cause exists the effect actually follows, but that if the cause is thought the effect follows logically. That is to say, anyone who wishes to discover the effect of a given thing x can discover the answer by simply thinking out the logical implications of x. Nothing in the nature of observation or experiment is needed.

This is in itself a tenable position in the sense that, if anyone wants to construct a system of science in which the search for causes means a search for grounds, there is nothing to prevent him from trying. This was in fact what Descartes tried to do. His projected “universal science” was to be a system of grounds and consequents. And if, as is sometimes said, modern physics represents a return in some degree to the Cartesian project, it would seem that the attempt is being made once more. But the rationalist theory of causation, however valuable it may be as the manifesto of a particular scientific enterprise, cannot be regarded as an “analysis” of the causal propositions asserted by existing science. If it were accepted, these propositions would have to be abandoned as untrue. For no one thinks that they can be established by sheer “thinking”, that is, by finding the so-called effects to be logically implied in the so-called causes; it is just because this is impossible that the questions what causes a given effect, and what effect a given cause produces, have to be answered by observation and experiment. Hence the result of establishing a science of the Cartesian type would be, not an analysis of propositions of the type “x causes y” into propositions of the type “x implies y”, but the disuse of causal propositions in that kind of science and the use of implicational propositions instead; while in the sciences of observation and experiment causal propositions not analysable into implicational propositions would still be used; the meaning of “necessity” in these causal propositions being still doubtful.

This situation would not be really illuminated by alleging that the sciences in which causal propositions occur are “backward” or “immature sciences”. Such a statement would imply that the idea of causation is a half-baked idea which when properly thought out will turn into the different idea of implication. This I take to be the Hegelian theory of the dialectic of concepts, and if anyone wishes to maintain it I do not want to prevent him; but I must observe that it does not excuse him from answering the question what the half-baked idea is “an sich,” that is, before its expected transformation had happened.
(ii) I turn to the empiricist answer: “necessitation means observed uniformity of conjunction.” Like the former answer, this one cannot be taken literally; for no one, I think, will pretend that the proposition “$x$ necessitates $y$” means merely “all the observed $x$’s have been observed to be conjoined with $y$’s, “ and does not also imply “$x$’s observed in the future will also be conjoined with $y$’s”. In fact the question (so urgent for e.g. Hume and Mill) how we proceed from the mere experience of conjunction to the assertion of causal connexion resolves itself into the question how we pass from the first of these two propositions to the second; so that the proposition “all the observed $x$’s have been observed to be conjoined with $y$’s” is not what we mean by saying “$x$ necessitates $y$”, but is only the empirical evidence on the strength of which we assert the very different proposition “$x$ necessitates $y$”. Thus, if anyone says “necessitation means observed uniformity of conjunction”, it must be supposed either that he is talking without thinking; or that he is carelessly expressing what, expressed more accurately, would run:—“necessitation is something we assert on the strength of observed uniformity of conjunction”, without telling us what he thinks necessitation to be; or thirdly, that he is expressing still more carelessly what should run:—“in order to assert a necessitation we must pass from the first of the above propositions to the second; now I cannot see how this is possible; therefore we ought never to assert necessitations, but on the occasions when we do assert them we ought to be asserting something quite different, namely observed conjunction”.

(iii) A third answer to our question has been given by Mr. Russell, in a paper\(^\ddagger\) of very great importance, to which I shall have to refer again; but I want here and now to express my great admiration for it and my great indebtedness to it. He says “necessary is a predicate of a propositional function meaning that it is true for all possible values of its argument or arguments.” This I will call the “functional” answer. In so far as it amounts to saying that causation in sense III implies a one-one relation between cause and effect, I entirely agree. But I find myself, very reluctantly, unable to accept all of what I take Mr. Russell to mean.

(α) How, on the functional theory, could anyone ever know a causal proposition to be true, or even know that the facts in his possession tended to justify a belief in it? Only, I submit, if there is a relation of implication between $x$ and $y$. For “all possible values” of $x$ may be an infinite number; and, even if they are not, it may not be practicable to examine them individually. If $a$, $b$, $c$, are the sides of any triangle, we know that $a + b - c$ will always be a positive quantity, because that is implied in the definition of a triangle. Thus the functional theory presupposes the rationalistic or implicational theory, which I have already given reasons for rejecting.

(β) I do not know whether Mr. Russell’s statement quoted above was intended to mean “necessity is, etc., and never anything else”. But if so, I deny it. Necessity has a second meaning, as when on receiving Mr. Hannay’s demand for a paper last summer I said “I can’t get out of it this time,” i.e., “I am necessitated or compelled to read a paper on this occasion”. If I say “it is necessary for me to read a paper,” the word necessary is not a predicate of a propositional function; it refers to a case of causation in sense I, and means that Mr. Hannay has compelled me so to act. This second sense of necessity, in which it refers to compulsion is (I shall try to show) the sense which is involved not only in sense I and sense II of the word cause but in sense III also.

(γ) The functional theory would imply that there can be no necessitation and therefore no causation of the individual. Anything that happened only once, like the origin of life on the earth (assuming that all organisms are derived from one original organism and that life exists nowhere else), would be “contingent,” not in the sense of being capable of alteration by human interference, but in the sense of being a causeless event in nature. No doubt, it would be impossible on Hume’s theory of knowledge, and also on Mill’s, to discover the cause of an event sui generis; but it seems to be generally agreed nowadays that every event has a cause, even though we cannot discover what its cause is; and if a theory is put forward to the effect that an event sui generis has no cause, it may or may not be metaphysically true, but it certainly cannot be a true account of “our idea” of causation; for it contradicts that idea.

(3) Most people think that when we use the word causation in sense III we mean to express by it something different from logical implication, and something more than uniformity of conjunction, whether observed only, or observed in the past and also expected in the future; and that this “something different” and “something more” is in the nature of compulsion. I think that this view is correct.

We have now to ask the same question which we asked when we found the same idea present in sense II; and we shall have to answer it in the same way. From what impression is this idea derived? It seems to be quite clear that it is derived from our experience of occasions on which we have compelled others to act in certain ways by placing them in situations (or calling their attention to the fact that they are in situations) of such a kind that only by so acting can they realize the intentions we know or rightly assume them to entertain: and conversely, occasions in which we have ourselves been thus compelled. Compulsion is an idea.
derived from our social experience, and applied in what is called a “metaphorical” way not only to our relations with things in nature (sense II of the word cause) but also to the relations which these things have among themselves (sense III). Causal propositions in sense III are descriptions of natural events in anthropomorphic terms.

The reason why we are in the habit of using these anthropomorphic terms is, of course, that they are traditional. Inquiry into the history of the tradition shows that it grew up in connexion with the same animistic theory of nature to which I referred in discussing sense II of the word cause, but that in this case the predominant factor was a theology of neo-Platonic inspiration.

If a man can be said to “cause” certain events in nature by adopting certain means to bringing them about, and if God is conceived anthropomorphically as having faculties like those of the human mind but greatly magnified, it will follow that God also will be regarded as bringing about certain things in nature by the adoption of certain means. Now comes a step in the argument which, if we tried to reconstruct it without historical knowledge, we should probably reconstruct quite wrongly. If $x$ is a thing in nature produced by God as a means of producing $y$, we might fancy $x$ to be a purely passive instrument in God’s hand, having no power of its own, but “inert” as Berkeley in the true spirit of post-Galilean physics insists that matter must be. And in that case God alone would possess that compulsive force which is expressed by the word cause; that word would not be given as a name to $x$, and God would be the “sole cause”. Actually, God is for mediæval thinkers not the “sole cause” but the “first cause”. This does not mean the first term in a series of efficient causes (a barbarous misinterpretation of the phrase), but a cause of a peculiar kind, as distinct from “secondary causes”. The Liber de Causis, a neo-Platonic Arabic work of the ninth century, whose influence on mediæval cosmology was at this point decisive, lays it down that God in creating certain instruments for the realization of certain ends confers upon these instruments a power in certain ways like his own, though inferior to it. Thus endowed with a kind of minor and derivative godhead, these instruments accordingly acquire the character of causes, and constitute that division of nature which, according to John the Scot, “both is created and creates”. Their causality is thus a special kind of causality existing wholly within nature, whereby one thing in nature produces or necessitates another thing in nature. The words “produces” and “necessitates” are here used literally and deliberately to convey a sense of volition and compulsion; for the anthropomorphic account of natural things is taken as literally true; the activity of these secondary causes is a scaled-down version of God’s and God’s is a scaled-up version of man’s.

This was the atmosphere in which our modern conception of nature took shape, and in which the categories appertaining to that conception were worked out. For in the 16th and 17th centuries, when the animistic conception of nature was replaced among scientists and philosophers by a mechanical one, the word cause was not a novelty; it was a long-established term, and its meaning was rooted in these neo-Platonic notions.

Thus, when we come to Newton, and read the Scholium appended to his first eight definitions, we find him using as a matter of course a whole vocabulary which, taken literally, ascribes to “causes” in nature a kind of power which properly belongs to one human being inducing another to act as he wishes him to act. Newton assumes that a cause is something capable of “impressing some force” upon that in which its effect is produced. For example, if what is produced is a movement of a certain body, Newton says that such movement “is neither generated nor altered, but by some force impressed upon the body moved”. Here, and throughout his treatment of the subject, it is perfectly clear that for him the idea of causation is the idea of force, compulsion, constraint, exercised by something powerful over another thing which if not under this constraint would behave differently; this hypothetical different behaviour being called by contrast “free” behaviour. This constraint of one thing in nature by another is simply the secondary causation of mediæval cosmology. Taken au pied de la lettre, Newton is implying that a billiard-ball struck by another and set in motion would have liked to be left in peace; it is reluctant to move, and this reluctance, which is called inertia, has to be overcome by an effort on the part of the ball that strikes it. This effort costs the striker something, namely part of its own momentum, which it pays over to the sluggard ball as an inducement to move. I am not suggesting that this reduction of physics to social psychology is the doctrine Newton set out to teach; all I say is that he expounded it, no doubt as a metaphor beneath which the truths of physics are concealed.

It is worth while to notice that in Newton there is no law of universal causation. He not only does not assert that every event must have a cause, he explicitly denies it; and this in two ways. (i) In the case of a body moving freely (even though its motion be what he calls “true” motion as distinct from relative motion), there is uncaused motion; for caused means constrained, and free means unconstrained. If a body moves freely from $p_1$ to $p_2$ and thence to $p_3$, the “event” which is its moving from $p_2$ to $p_3$ is in no sense caused by the preceding “event” of its moving from $p_1$ to $p_2$; for it is not caused at all. Newton’s doctrine is that any movement which happens according to the laws of motion is an uncaused event; the laws of motion are in fact the laws of free or causeless motion. (ii) He
asserts that there is such a thing as relative motion; but, as he puts it, “relative motion may be generated or altered without any force impressed upon the body.” If, therefore, it were possible to show, either that all motion is “free,” that is to say, takes place according to laws having the same logical character as the Newtonians laws of motion; or that all motion is “relative”; then on Newton’s own principles it would follow that no motion is caused, and the cat would be out of the bag. It would have become plain that there is no truth concealed beneath the animistic metaphor; and that “the idea of causation” is simply a relic of animism foisted upon a science to which it is irrelevant.

This, I take it, is what modern physics has done. Developing the Newtonian doctrine in the simplest and most logical way, it has eliminated the notion of cause altogether. In place of that notion, we get a new and highly complex development of the Newtonian “laws of motion”. Of the two Newtonian classes of events, (a) those that happen according to law (b) those that happen as the effects of causes, class (a) has expanded to such an extent as to swallow up (b). At the same time, the survival of the term cause in certain sciences other than physics, such as medicine, is not a symptom of their “backwardness,” because in them the word cause is not used in the same sense. They are practical sciences, aiming at results, and they accordingly use the word cause in sense II. Doubtless, the use of the word in that sense carries with it a flavour of magic; but this is not disliked by e.g. the medical profession. A dose of superstition may serve its purpose.

IV.

The situation in post-Newtonian philosophy has been very different. Kant, whose gigantic effort at a synthesis of all existing philosophies here overreached itself, swept into one bag the Baconian tradition, with its insistence on causes in sense II, the Cartesian identification of causes (in sense III) with grounds, the Leibnitian law of sufficient reason, and the Humean conception of the cause as an event prior in time to its effect; and, unhappily neglecting the one thing in Newton which modern physics has found most valuable, namely the doctrine that what happens according to a law does not need a cause, produced as the result a doctrine which has oppressed mankind ever since: the doctrine that (a) every event has a cause; (b) the cause of every event is a prior event; and (c) this is known to us not from experience but a priori.

(a) What could be meant by saying that every event has a cause? It would plainly be nonsense if “cause” were used in sense I. In sense II it would mean “there is nothing in nature that man is not able” (or, if we allow for looseness of expression, “may not hope to become able”) “to produce or prevent at will, “which is hardly what Kant intended, though a Bacon might have played with the idea in a rash moment. “Cause” must be used in sense III. But what warrant can there be for Kant’s statement? I can only suppose that he was assuming the identity of cause with ground (though he accepted Hume’s disproof of that identification) and accordingly thought that (a) was a mere restatement of the Law of Sufficient Reason.

(b) The cause of an event can be a prior event (see III, I) only when cause is used in sense II. If, in the proposition “x causes y,” “causes” means “logically necessitates,” x cannot be an event happening before y. An event may have implications, but its implications cannot be subsequent events. The birth of a second son logically necessitates the first son’s becoming a brother; these two events happen simultaneously; not successively, however close together. Thus the only assumption that can justify Kant’s first assertion is an assumption that is incompatible with his second. Assertion (a) is in fact a relic of his Leibnitian upbringing, (b) is a lesson from his later empiricist teachers. The combination of the two is an unsuccessful attempt at philosophical syncretism, marred by the fact (which Kant has failed to observe) that in the two component propositions the word “cause” is used in different senses. Their combination is therefore, to put it plainly, nonsense; a hybrid concept, deserving the description once given to the mule, as a creature having “neither pride of ancestry nor hope of posterity”.

Mill, unlike most of his philosophical critics and disciples, showed a certain understanding of the situation in which science had been left by Newton when he tried to reject sense III and get back to sense II; rejecting the notion of cause “which is not only followed by, but actually produces the effect” in favour of “such a notion of cause as can be gained from experience”. Consistently with this, he does away with the one-one relation of cause to effect, and insists on a real plurality of causes – a scandal to his critics, who have commonly assumed that the only possible sense of the word cause is sense III. But when he defines causation as “invariability of succession”, he goes back unaware from loose causation to tight causation, for “invariability” implies the impossibility of variation, i.e., the necessity of the conjunction. If he is using it loosely for uniformity in cases hitherto observed, his advocacy of sense II becomes consistent. And in any case, Mill’s pages on the subject stand out from those of almost all other writers as exceptionally clear-headed as to the sense in which the word cause is used.

Among more recent writers I will first refer to Mr. Russell, whose brilliant paper “on the notion of cause,” mentioned above, is worth everything else put together that has been written on the subject during the
present century. The neglect of this paper by the crowd of subsequent writers on the same subject is to my mind a very disquieting symptom of the state of English philosophy.

Mr. Russell has shown once for all that the “law of causation” commonly so called is valueless and meaningless, and that in theoretical science propositions about causes either have been or are being replaced by propositions about laws. I am glad to confess my obligations to him and to add that where I differ from him it may be only because I misunderstand him.

Even in Mr. Russell’s paper, however, I find a few – a very few – confusions. Speaking of the interval of time which elapses between cause and effect, he says: “however short we make the interval τ, something may happen during this interval which prevents the expected result”. Now if “cause” is here used in the tight sense, this proposition is nonsense; for it means “given everything that is required for a certain result, something may be lacking which is so required”. Therefore he must be using “cause” in the loose sense. But if so, there is nothing to worry about. If x is the cause, in the loose sense, of y, there are also conditions sine quibus non, such as a, b, c. If a is lacking, y is prevented; but that does not mean that x is not, in that sense, its cause. Hence the consideration “raises insuperable difficulties” only to a person who is slipping unawares from one sense to the other.

Again, when he criticizes the “vulgar prejudice” against actio in distans, and says that the maxim “a cause cannot operate except where it is” “rests upon the assumption that causes ‘operate’, i.e., that they are in some obscure way analogous to volitions, “I think he is similarly confused. I agree that such words as “operate” (and, I would add, “necessary,” though he does not allow this) imply that causes are in some way analogous to volitions; I would go further and say that this is true of the word “cause” by itself. But what makes actio in distans a stumbling-block is not this analogy: it is the one-one relation between cause and effect. I have explained this above.

The functional view has been adopted by other writers, e.g., Mr. A.J. Ayer (Language, Truth and Logic, 1936, p.57) where the confusion of sense II and sense III is very clear. “Every assertion of a particular causal connexion,” he writes, “involves the assertion of a causal law, and...every general proposition of the form ‘C causes E’ is equivalent to a proposition of the form ‘whenever C, then E,’ where the symbol ‘whenever’ must be taken to refer, not to a finite number of actual instances of C, but to the infinite number of possible instances.” Here the explanation of the word “whenever” shows that the word “cause” is being used in sense III, the tight sense. But the previous sentence shows that it is being used in sense II; for only in that sense is it true that in a proposition of the type x causes y, x and y are necessarily universals. Mr. Ayer is operating with a hybrid idea of causation in which one element is derived from the peculiar characteristics of sense II and another from those of sense III. It is not surprising, therefore, that even according to his own doctrine any causal proposition must be a nonsense proposition; for a proposition of the form “whenever C, then E,” understood as he expounds it, must be in principle unverifiable, and his own view is that a proposition which is in principle unverifiable is nonsense.

There is a school of thought today which maintains that there is no such thing as philosophy apart from “the special sciences”. One would expect of people professing such a doctrine that they would in fact philosophize quite freely, but uncritically and at second hand. Professor Frank of Prague, a member of this school, has lately written a book on The Principle of Causality and its Limits. The “principle” which is the subject of this book is the principle of predetermination, that is, the law that every event is necessitated by what has gone before. This is simply Kant’s mule.

Cook Wilson (Statement and Inference, ii, 516–7) accepts the same hybrid. “Causality”, for him, means “that the events belonging to an object, or to a system of objects, have a definite order, that is, therefore, a necessary order...WE apprehend this necessity as belonging to the order of events.” The last sentence quoted is Cook Wilson’s substitute for the Kantian a priori knowledge, namely “apprehension of necessity”.

Professor Prichard (Kant’s Theory of Knowledge, 1909, p.300) agrees that every event must have a cause and that this cause must be a priori event, but thinks that our knowledge of this “law” is analytic: “WE have only to reflect upon what WE really mean by a physical event” in order to know it. He points out that this is exactly the “dogmatic” epistemology that Kant was attacking.

Mr. J.M. Keynes (A Treatise on Probability, 1929, p.263) reconciles himself to Kant’s mule without enthusiasm. He will not allow that we “know” it, whether a priori, or on evidence, or as an analytic proposition, or as a “necessity” which we “apprehend”. All he will admit is that “WE believe” it.

Finally, I will quote Mr. John Wisdom (Problems of Mind and Matter, 1934, pp.110 seqq.), who protests his devotion to the animal so loudly that one feels sure something is wrong. He says that there is something called “the Law of Causation,” to the effect that “everything which happens is due to something else which caused it to happen,” or as he alternatively puts it “due to something with happened before”. He seems aware that Laodiceans like Mr. Keynes exist: but he shouts them down, exclaiming...
that we all of us know that there is such a law, though he admits that it cannot be demonstrated or otherwise justified. But, he maintains, such justification is not necessary. “I do not know how WE know that things are as they are because they were as they were. But WE do know it.”

The last five authors quoted are at one in asserting an alleged law of causation which turns out to be simply Kant’s mule. None of them has troubled to ask, any more than Kant asked, whether the two propositions of which this hybrid is composed are compatible. No wonder that opinions differ as to “how we know” such a piece of nonsense, or whether “we” know it at all.

The last four have agreed in using a locution to which I have ventured to call attention by printing the word WE in capitals. This “indeterminate we” is so common among philosophers that a grammarian might call it rhetoric, and Bacon might have classed it among the idola theatri. The word “we” refers to a group or society of persons among whom the speaker includes himself. It is not used by a man who is thinking clearly unless he is prepared to answer the question “what group is this of which you are speaking, and what are its limits?” Philosophers have got into the habit of using it when in fact they are quoting beliefs of their own sect, but when they imagine themselves to be quoting beliefs common to the entire human race, or at least to all such members of it as have the use of reason. Where such language is found, an alert reader will ask “who are YOU?” It would perhaps have surprised any of the four writers I have quoted, to learn that the answer is “Kantanians.” So recent is the “idea of causation” which modern philosophical dogmatism takes for granted. So necessary is it, before swallowing whole the traditions which this dogmatism would force down our throats, to inquire not only into their logic but also into their history.

Commentary: How norms make causes

María Kronfeldner

Bielefeld University, Abteilung Philosophie, Universitätsstrasse 25, 33615 Bielefeld, Germany.
E-mail: mkronfeldner@uni-bielefeld.de

Within the philosophy of science, Robin G. Collingwood’s paper on ‘The so-called idea of causation’, republished (slightly changed) as ‘Three senses of the word “cause”’ in his Essay on Metaphysics, is not only regarded as an early defence of a manipulationist account of causation, but also as a classic reference for a debate about causal selection. The former discusses what a cause is and the latter why and how we select a subset of the causes of a phenomenon to be included in the explanation of the respective phenomenon. With respect to causal selection, Collingwood has (at least since H.L.A. Hart and Tony Honoré’s seminal book Causation in the Law), been regarded as the defender of controllability as the principle that guides causal selection in contexts that Collingwood named ‘practical sciences’ (e.g. law or medicine).

This commentary discusses the relevance of Collingwood’s control principle in contemporary life sciences and defends the claim that it is not the ability to control, but the willingness to control that often biases us towards some rather than other causes of a phenomenon. Willingness to control is certainly only one principle that influences causal selection, but it is an important one. It shows how norms make causes.

The problem of causal selection

When we say, for instance, that ‘The cause of malaria is the bite of a mosquito’, an example Collingwood used, then we know that the bite of a mosquito is only one of the many causal factors involved in an incidence of malaria. In the once fashionable parlance of necessary and sufficient conditions, the mosquito bite is merely what Mackie called an INUS-condition, i.e. an insufficient but necessary part of an unnecessary but sufficient condition for malaria. Be it malaria or anything else in our world, there will always be more than one cause for a phenomenon. Why then can the bite of a mosquito be termed the cause, i.e. the one cause (out of the many) included in an explanation that is partial but explanatory nonetheless? The problem of causal selection is the problem of understanding how