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Mental causation is no different from any other kind[1]

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ABSTRACT *Mental causation, as the term is used here, is the relation between an individual's beliefs, desires and intentions on the one hand and the behaviour they motivate on the other. Until it was challenged by Donald Davidson (1963/1980), the accepted view amongst philosophers was that mental causation in this sense is not a causal relation ("reasons are not causes"). Now most subscribe to Davidson's view that it* is *a causal relation, but an anomalous one. I argue that it is a standard causal relationship which differs in no way from other non-mental cases of causation.*

I

For the purposes of this paper I shall use the term 'mental causation' in the sense in which it is used in the recent philosophical literature where refers to the relation between an individual's beliefs, desires and intentions on the one hand and the behaviour they motivate on the other.

Until it was challenged by Donald Davidson (1963), the accepted view amongst philosophers was that mental causation in this sense is not a causal relation ("reasons are not causes"). Now most subscribe to Davidson's view that it *is* a causal relation, but an anomalous one. I argue that it is a standard causal relationship which differs in no way from other non-mental cases of causation.

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My contention is that both these views, the view that mental causation is not a true causal relation and the view that it is anomalous, rest on a mistaken conception of the causal relation. This misconception comprises six false propositions:

F1. Causation is a relation that holds only between events.

F2. For each effect there is only one immediate cause.

F3. Every cause consists in some kind of purely 'categorical' (here-and-now-existing) conjunction or juxtaposition between two or more concrete particulars.

F4. All causation involves a conjunction between events or states of the cause type and events or states of the effect type which is constant in the sense that every instance of the one follows or coincides with the other.

F5. Every causal relation involves a causal law which is 'strict' in the sense that it applies to all tokens of a given type.

F6. The way beliefs and desires interact to motivate behaviour is has no parallel in cases of 'physical' causation.

I shall argue on the contrary that following six propositions are true:

T1. Causal relations hold not just between events, but between situations which include states of affairs as well as events.

T2. The immediate causes of the initiation and persistence of a state or process, i.e., those which operative at the time the event occurs or so long as the state of affairs persists, are always multiple. A complete set of such causes is jointly sufficient for the persistence or occurrence of the effect. The absence of any one is sufficient for its cessation or failure to occur.

T3. The dispositional properties of the interacting concrete particulars which project beyond what exists here-and-now towards a range of future possibilities are an essential component of every causal relation. Their existence constitutes the truthmaker for a causal law statement which may be restricted in its scope to the individual property bearer and which sustains the causal counterfactual specifying what would have happened or been the case if, *ceteris paribus*, the cause in question been absent or present, as the case may be.

T4. Constant conjunction between individual causes and their effects occurs only when all other relevant causes are held constant. Hence the *ceteris paribus* clause to which all causal law statements are subject.

T5. The only kind of causal law we need to postulate in order to account for a causal relation is one whose scope is restricted to the behaviour of a single individual, in other words, the dispositional properties of the individuals involved in the interaction.

T6. The way beliefs and desires combine to determine the way the individual behaves has counterparts in the case of non-mental systems.

II

The arguments for these propositions are as follows:

T1 Causal relations hold not just between events, but between situations which include states of affairs as well as events.

We owe the concept of 'a situation' to Barwise and Perry (1983). A situation in their sense is category of existent or kind of thing of which it makes sense to say that it exists. It is an existent which includes both *states of affairs* whereby the properties of a particular or the relations between two or more particulars *remain constant* over a period of time and *events* whereby they *change* either at a moment of time (*instantaneous events*) or over a period time (*processes*). This threefold classification of situations into states of affairs, instantaneous events and processes is arrived at in two different ways, depending on whether the first cut is made on the basis of persistence *versus* change (Figure 1) or on the basis of the temporally unextended (instantaneous events) *versus* the temporally extended (states of affairs and processes) (Figure 2).

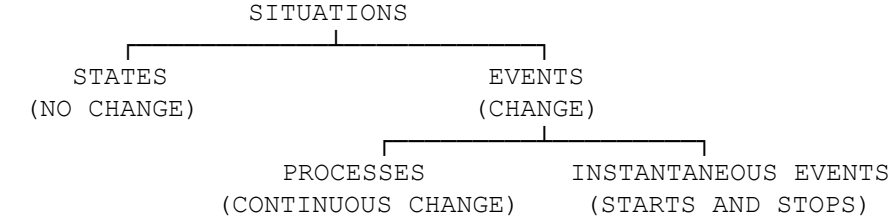

FIGURE 1. SITUATIONS CLASSIFIED ON PERSISTENCE *v.* CHANGE

For the purposes of the analysis of causation the important distinction is that between the temporally unextended and the temporally extended. This is because instantaneous events form the beginning and end of every process and state of affairs, as well as the interface or intersection between one temporally extended state or process and another. Take, for example, the case where a stone strikes a pane of glass and it shatters,

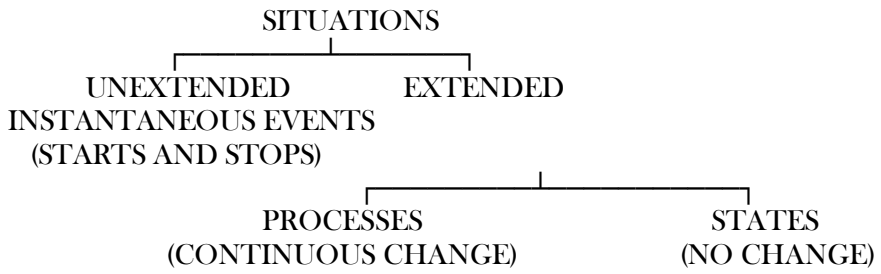

FIGURE 2. SITUATIONS CLASSIFIED ON TEMPORAL EXTENSION

Here two temporally extended states, the process whereby the stone moves through the air towards the pane, and the unchanging state whereby the pane is intact come to an end are replaced by the process whereby the pane shatters which ends at the point when all the cracking is complete and the fragments have been dislodged and is replaced, once the fragments have fallen to the ground, by the fragmented state of the shattered pane. Consideration of cases such as this shows us that for each temporally extended state or process there are three causal stories to be told:

(a) the multiple causes of the instantaneous *initiating event* whereby the state or process begins to exist, its *initiating causes*,

(b) the multiple causes of its persistence once begun, its *maintaining causes*,

(c) the single cause of the instantaneous *terminating event* whereby the state or process finally ceases to exist, its *terminating cause*.

The initiating causes which instantaneously bring a temporally extended state or process into existence are of three kinds:

(i) positive standing conditions, temporally extended states of affairs which must already be in position before and continue up to the occurrence of effect event

(ii) negative standing conditions, states of affairs which must be absent for the effect event to occur, since if present they would prevent its occurrence, and

(iii) a single triggering event which, when combined with the standing conditions both positive and negative, completes the set of causal conditions which are jointly sufficient for the occurrence of the initiating event.

The maintaining causes of a temporarily extended state or process are themselves either temporally extended states or processes all of which must persist so long as the state they maintain exists or the absence of some event or state whose coming existence would end the state or, if it already existed, have prevented its existence in the first place. Usually, if not invariably, these temporally extended states which maintain another state in existence will coincide with the standing conditions both positive and negative which combine with the triggering event to initiate the state in the first instance. Accordingly we may distinguish between the *positive maintaining causes* of a temporarily extended state or process which must be present, if it is to persist, and its *negative maintaining causes* which must be absent.

The single terminating cause of the event whereby a temporally extended state is brought to an end is either the disappearance of one of the positive conditions required for its persistence or the occurrence of an event whose absence is a negative condition of its persistence. Although only one such event is required to terminate the state, the termination of any of the conditions maintaining its persistence will have that effect. If it didn't, it would not be a causally effective condition of the state's persistence.

Ever since the point was first made by Ryle (1949), it has been accepted by philosophers that psychological verbs such as `believe', `want' and `intend' along with verbs such as `know' and `expect' and many but not all uses of verbs such as `think', `remember' and `recognize' stand for dispositional states of the individual concerned. Ryle's hypothetical analysis of dispositional statements has been challenged by Geach (1957) and Armstrong (1968). Geach (*op.cit*) has also challenged the claim that they are straightforward dispositions to behave in a particular way. But the claim that they are temporally extended dispositional states, rather than instantaneous events or on-going activities remains unchallenged. Since they

are not instantaneous events, they cannot constitute the triggering event which combines with the standing conditions already in position to initiate a state or process. What their presence or absence can do and does do is act as standing conditions relative to the triggering event which initiates an action and as maintaining causes of its persistence, such that their disappearance or appearance will rapidly result in its abandonment, if it is not yet complete.

III

T2 *The immediate causes of the initiation and persistence of a state or process, i.e., those which operative at the time the event occurs or so long as the stale of affairs persists, are always multiple. A complete set of such causes is jointly sufficient for the persistence or occurrence of the effect. The absence of any one is sufficient for its cessation or failure to occur.*

As will be apparent from this analysis, there are only two exceptions to the rule that the immediate causes of an effect are invariably multiple. The two exceptions are

(1) that among the initiating causes that bring a temporally extended state or process into existence, there is only one triggering event which completes the set of conditions jointly sufficient for the coming about of the effect, and

(2) that the terminating cause which ends a temporally extended state or process consists either in the disappearance of one, but only one, of its positive maintaining causes or in the appearance of one, but only one, of the situations whose absence constitutes its negative maintaining causes.

Since, as we have seen, beliefs, desires and intentions are dispositional states rather than events and cannot, therefore, function as the single triggering event which completes the set of conditions jointly sufficient for the initiation of a course of action, they constitute the sole cause of a behavioural effect only when their onset or offset acts as the terminating cause which brings a course of action to a premature end.

IV

T3 *The dispositional properties of the interacting concrete particulars which project beyond what exists here-and-now towards a range of future possibilities are an essential component of every causal relation.*

Spatio-temporal juxtaposition alone is not causally effective unless it is potentiated by the dispositional properties of the concrete particulars which are juxtaposed. Placing a small metal object close to another larger metal object will not result in the attraction of the smaller to the larger unless the larger has the dispositional property of being magnetized and the smaller has the dispositional property of being susceptible to magnetic attraction. The dispositional properties of the concrete particulars involved are reciprocally related in the sense that both must be present for the effect to occur and its occurrence is a simultaneous manifestation of both of them. The possession by the concrete particulars of these dispositional properties (Locke calls them "powers" - Nancy Cartwright, 1989, calls them "capacities") is as much a cause of the effect, just as essential to its existence, as is their spatio-temporal juxtaposition. It is this that justifies C. B. Martin's (Armstrong, Martin and Place 1996) claim that every causal interaction is the manifestation of as many reciprocally related dispositions as there are entities involved in the interaction.

The distinction between the spatio-temporal juxtaposition of concrete particulars and their dispositional properties is related in a complex way to that between the triggering event and standing conditions in the causation of initiating events. In the typical case such as the stone's hitting the pane of glass and breaking it, the triggering event is the momentary contact between the stone and the pane whereas their reciprocally related dispositions, the mass, hardness and kinetic energy of the stone and the brittleness of the glass are among the standing conditions already in place prior to the impact. But in other cases spatio-temporal juxtaposition is a standing condition and the triggering event is the onset of a disposition. Take the case of an electromagnet which is placed in close juxtaposition to a small iron object. No attraction occurs until the current is switched on and the magnet acquires its magnetic properties. Admittedly the magnet's acquiring its magnetic properties depends on the closing of the contacts of a switch (spatio-temporal juxtaposition) and the existence of a potential difference between the two poles of the circuit thus formed (dispositional property). But these are the causes of the coming into existence of the magnetic property. It

is the coming into existence of the magnetic property that is the immediate cause of the attraction of the iron object towards the electromagnet.

Since they are dispositions, beliefs, desires and intentions contribute to the initiation and maintenance of ongoing behaviour by both determining the effect of the spatio-temporal juxtaposition between the agent and the external or internal stimuli which prompt her to act as she does and by maintaining the resulting activity until its objectives are secured.

V

T4 *Constant conjunction between individual causes and their effects occurs only when all other relevant causes are held constant. Hence the* ceteris paribus *clause to which all causal law statements are subject.*

The constant conjunction between cause and effect which Hume speaks of applies

(a) to cases when all the relevant initiating causes for the occurrence of a particular type of initiating event are in place,

(b) to the persistence of a temporally extended state or process so long as its maintaining causes persist,

(c) to cases where the same terminating cause results in the abrupt termination of the same kind of state or the beginning of a gradual winding down of the same kind of on-going process, and

(d) to the relation between initiating and maintaining causes and their effect, but only in so far as all other relevant causes are held constant, as in a controlled experiment or a machine.

The causal law statements of science deal with individual initiating and maintaining causes. That is why they are invariably subject to a *ceteris paribus* or other-things-being-equal clause which allows for other relevant causes, both positive and negative, which contribute to the same effect. Although this is seldom done systematically, such *ceteris paribus* clauses can always in principle be spelled out by specifying all the immediate causes of the effect type in question. But this can only be done in the light of a program of experimental research involving a systematic application of Mill's (1843) method of concomitant variation in which the effect of each cause is separately evaluated by varying that cause while holding all the others constant.

Since the same belief can combine with a different desire and the same desire with a different belief to motivate quite different behaviour, and since beliefs and desires are typically evanescent, beliefs, unless accompanied by the same desire, and desires, unless accompanied by the same belief, are seldom conjoined with the same behaviour. But since constant conjunction in causal relations is found only when all other factors are controlled and since that kind of control is hardly feasible in the case of the kind of behaviour that is caused by beliefs and desires, this does not count against beliefs and desires being dispositional causes of behaviour.

VI

T5 *The only kind of causal law we need to postulate in order to account for a causal relation is one whose scope is restricted to the behaviour of a single individual, in other words, the dispositional properties of the individuals involved in the interaction.*

It has long been recognized that to say that one situation stands as cause to another as effect is to say that the conjunction between the two instantiates a causal law which holds between situations of that type. In *Fact, Fiction and Forecast*, Nelson Goodman (1955/1965) makes three points about causal law statements and, hence by implication, about the causal laws that underlie them. The first point (*op.cit.* pp. 17-18) is that the effect of a *positive causal counterfactual* of the form

> 'If a situation of the cause type had existed on a particular occasion, a situation of the effect type would have existed',

as in the example

> "If the matched had been scratched, it would have lighted",

is to subsume what *actually* existed or did not exist on that occasion under a "general principle" or causal law statement of the form

> 'If at any time a situation of the cause type were to exist, a situation of the effect type would exist',

in this case the principle

> "Every match that is scratched, well made, dry enough, in enough oxygen, etc., lights"

which is said to "sustain" the counterfactual.

Although he does not specifically address the point, it is presumably an implication of his view that the same is true of a *negative causal counterfactual* of the form

'If the cause situation had not existed, the effect situation would not have existed',

as in

'If the match had not been scratched as and when it was, it would not have lighted as it did',

which is 'sustained' by a causal law statement of the form

'If at any time a situation of the cause type were not to exist, a situation of the effect type would not exist',

in this case the principle

'If a match that is well made, dry enough, in enough oxygen, etc., is not scratched, it will not light.'

Hence, in order to 'sustain' both counterfactuals, we need a causal law statement of the form

'If at any time a situation of the cause type were to exist, a situation of the effect type would exist, such that if the situation of the cause type were not to exist, the situation of the effect type would not exist',

in this case the principle

'Every match that is scratched, well made, dry enough, in enough oxygen, etc., lights, but if any of these conditions are not satisfied, it will not do so.'

The second point which I extract from Goodman's book[2] (*op.cit.* pp. 18-25) is that the difference between an accidental generalization such as

"All coins in my pocket are silver"

and a causal law statement such as

"All butter melts at 150° F"

is that the latter "sustains" the causal counterfactual

'If this butter had been heated to 150° F, it would have melted';

whereas the former does not "sustain" the counterfactual

[2] Although the idea and the examples are Goodman's, the terms 'accidental generalization' and 'causal law' are from Mackie (1962).

'If this coin were in my pocket, it would be silver'.

Goodman's third point (*op.cit.* pp. 39-40) is that you don't need a causal law which is universally quantified over entities of a kind in order to sustain a causal counterfactual conditional. A dispositional statement restricted in its scope to a particular individual will do just as well. To quote Goodman's example,

"Suppose that *w* is a piece of dry wood during a given brief period of time",

the dispositional statement

"*w* is inflammable"

sustains, subject to an appropriate *ceteris paribus* clause, the counterfactual conditional

"If *w* had been heated enough, it would have burned."

What this third point tells us is that although such dispositional statements are restricted to the behaviour of a single individual and apply only so long as that individual retains that dispositional property, they are nevertheless causal law statements, universally quantified over time so long as the dispositional property obtains.[3] Such statements describe laws, not of nature in general, but of the nature of the individuals to which they apply. In other words, they are dispositional statements, statements which describe the dispositional properties of those individuals. Moreover, if Nancy Cartwright (1989) is to be believed, it is only the existence of the dispositional properties (or "capacities" as she calls them) of individual entities which we need to postulate in order to account for such truth as is to be ascribed to the universal law statements of science.

Since beliefs, desires and intentions are dispositional properties of the individual believer, wanter or intender, it follows that the dispositional statements that ascribe them to their owner are causal law statements. Though restricted in scope to the individual concerned, they are universally quantified over time so long as the disposition applies. As such, they are perfectly able to sustain the kind of negative causal counterfactual which is the hallmark of a causal relation and they do this without any law statement which is universally quantified over the kind of dispositional property bearer. There is no call to invoke, as Davidson does, an identity relation between beliefs and desires on the one hand and some state of the brain

[3] The notion that what is distinctive of causal law statements is universal quantification over a limited period of time (so long as the disposition lasts) is developed in Place (1987).

microstructure on the other in order to have something to which a causal law statement universally quantified over things of kind, can apply.

VII

T6 *The way beliefs and desires combine to determine the way the individual behaves has counterparts in the case of non-mental systems.*

Ever since Peter Geach (1957, Chapter 4) countered Ryle's (1949 p. 175) suggestion that the gardener's expecting rain consists in his keeping "his coat handy and his watering-can in the shed" with the example of Dr. Johnson standing in the rain in Uttoxeter market place in order to do penance, it has been known that you can only predict what behaviour the acquisition of a belief will motivate, if you know what the individual in question wants to achieve or avoid and that you can only predict what having the desire to achieve or avoid something will motivate, if you know what the individual believes will secure that objective. It is often suggested that this combining of two dispositional causes so as to determine what happens is a feature which is unique to mental causation. That there are many non-mental examples of two dispositional properties combining to determine the outcome in a way that neither on their own can do can be illustrated by the example of Ohm's Law. Here we have two dispositional properties, the resistance of conductor and the potential difference between its two ends, which combine to determine the magnitude of the current that flows along it. There is of course, a disanalogy between this case and the belief-desire-behaviour case in that in Ohm's Law the three variables vary along one dimension only; whereas beliefs vary not just in strength of conviction, but in what is believed; desires vary not just in strength but in what is desired. In line with this greater complexity, the way in which the two factors interact is also much more complex.

The first point to make is that the only beliefs which *directly* motivate behaviour are means-end beliefs or to be more precise, contingency beliefs, beliefs that acting in a certain way under certain antecedent conditions will have a certain consequence. Other beliefs can influence behaviour only indirectly by acting as premises from which in combination with other beliefs, a means-end belief or other contingency belief can eventually be inferred. Desires impinge on such beliefs so as to motivate behaviour by determining whether the anticipated consequence of acting in one way rather than another is attractive or repulsive and

how attractive or repulsive it is. This combines with the strength of the agent's conviction that the behaviour in question will produce that outcome to determine the strength of the agent's desire to act or not to act in a way which she believes will have that consequence. This in turn will interact with her desire to act or not act in ways she believes will have other consequences, where either the behaviour or its consequences are incompatible with the original proposal.

That there is no counterpart for this kind of causal complexity outside the domain of mental causation must be conceded. But while the degree of complexity is doubtless unique to mental causation, in outline it follows a pattern which is to be found in many of the more complex biological systems that have evolved in accordance with the Darwinian principle of variation and natural selection. Thus the principle whereby the same contingency belief can have different behavioural effects, given different motivational attitudes to the consequences of the behaviour, has its counterpart in the two different functions that are served by the urethra in the mammalian male, that of a channel for the passage of urine from the bladder and that of a channel for the expulsion of semen in ejaculation. Likewise the principle whereby behaviour changes as a consequence of acquiring new beliefs has a counterpart in the antibodies which the immune system develops in response to a new type of infection.

VIII

Conclusion

In arguing, as I have done, that beliefs, desires and intentions are typical dispositional causes of the behaviour they motivate, I am not denying that there are serious objections to the use of such concepts in explaining behaviour for scientific purposes. But the objection is not to the nature of the causal relation, but to the way these dispositional causes, particularly the cognitive ones, are characterized in terms of their typical linguistic manifestations.[4] Not only does this create a scientifically unacceptable fiction when applied to the behaviour of pre-linguistic organisms, it creates a biologically unacceptable gulf between the dispositional causes of the behaviour of linguistically competent humans and their pre-linguistic counterparts.

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[4] This objection to 'mentalistic' or 'folk-psychological' explanations of behaviour is elaborated in Place (1988; 1996).

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