NATURAL KINDS AND PSYCHOPHYSICAL LAWS: COMMENTS ON THE McGINN-HOPKINS SYMPOSIUM (*PAS* 1978)

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Colin McGinn's opening contribution to the symposium on 'Mental states, natural kinds and psycho-physical laws'[i] takes as its starting point the putative *a priori* proof of what has become known as "token-identity physicalism" presented by Donald Davidson in his well known paper 'Mental events'.[ii] The doctrine of token-identity physicalism holds that every particular mental event is identical with some particular physical event, presumably, though this is not entailed by the premisees of the argument, some particular brain event; but since one of the premisees from which this conclusion is deduced holds that there are no psycho-physical bridge laws, it is an implication of this form of physicalism that there is no kind or type of brain event or any other kind of physical event which is identical either with mental events as a whole or with any sub-variety of mental events.

> The argument from which this principle is deduced is stated by McGinn as follows:
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> > Suppose (i) that there are causal relations between mental and physical events, (ii) that where there is causality a covering law exists which subsumes the events under some of their descriptions, and (iii) that there are no psycho-physical laws, known or unknown. Then, Davidson argues, physicalism with respect to particular mental events may be deduced.

McGinn believes that

> > the case for (iii) can be substantially strengthened and my [McGinn's] aim in this paper is to show why the claim should be accepted. (op.cit. p.195).

McGinn's defence of the thesis that there are no psycho-physical laws, known or unknown, begins with an argument which he attributes to Saul Kripke[iii] according to which type-identity statements, like "Water is H_2O" or "Heat is molecular motion" whose truth is established by empirical scientific research, can only occur in the case of natural kind concepts like "water" and "heat" whose empirically discovered real essence is stated by the type-identity statements in question. Before the discovery of their real essences such natural kind concepts are what Kripke calls "rigid designators." A rigid designator is something like a proper name, an arbitrary label which comes to denote or refer to the abstract object constituted by a natural kind by a naming ceremony analogous to baptism. At this stage, no rules or criteria can be specified for deciding whether or not a particular instance does or does not fall under the concept. According to McGinn, Kripke goes on to argue that the proposed identity statement linking mental events to brain events, the hypothesis

that pain is identical with C-fibre stimulation, cannot be an instance of an identity statement expressing the real essence of pain. For if C-fibre firing were the real essence of pain, as H_2O is the real essence of water, it would be inconceivable, as clearly it is not, that pain should occur without C-fibre firing or that C-fibre firing should occur without pain, in the way that is clearly is inconceivable that something should be water without also being H_2O or be H_2O without also being water.

McGinn recognizes that this argument, depending as it does on our intuitions as to what is and is not conceivable, is less than decisive, and seeks to strengthen the contention that mental concepts are not natural kind concepts and that, therefore, there can be no type-identity statement expressing their real essence, by invoking an argument which he attributes to Hilary Putnam[iv] in which Putnam points out that kinds of thing which are defined in terms of the performance of a particular function, such as telling the time in the case of a clock, have a nominal essence which consists in the relevant functional specification and cannot therefore have an empirically discoverable real essence because there is always an indefinite number of alternative ways in which such a functional specification can be realised, such that there need be nothing in common between any two such realisations apart from the common function they perform. Thus apart from a few external similarities, there is virtually nothing in common except for the function it performs, between an electronic digital watch and the more traditional type of watch with its hands, dial and clockwork mechanism. Clearly what makes these very different mechanisms fall under the concept "watch" is not some empirically discoverable feature of their internal microstructure. It is only in the case of natural kinds like "water" and "heat", which have no functionally defined nominal essence, and where consequently there is no room for alternative realisations, that it makes sense to look to the microstructure in order to discover the real essence of the kind in question.

Although it is not part of McGinn's thesis that all mental concepts denote kinds of entity which have nominal essences specified in functional terms, he does maintain that mental concepts are more like functionally-specified nominal essence concepts than they are like natural kind concepts. In particular he holds that they share with functionally specified nominal essence concepts the possibility of there being an indefinite number of possible physical realisations of such concepts, and that because of this feature they cannot be supposed to have any empirically discoverable real essences.

Now if it is true that there is an indefinite number of possible ways in which any mental concept can be physically realised in the way that there is an indefinite number of possible ways in which the concept of a watch or clock can be physically realised, it necessarily follows that there cannot be any general laws connecting mental states, processes, and events to their physical realisations, any more than there can be general laws relating the various time indications given by watches and clocks in general and particular states of their physical realisations.

Although there is much more than this in McGinn's paper, I can find nothing beyond the argument I have stated which adds anything further in support of the third premise of Davidson's argument, the contention that there are no psycho-physical bridge laws, known or unknown. It is therefore to these arguments that my remarks are addressed.

The sources of my resistance to McGinn's argument, as I have stated it, are twofold. On the one hand, I have long been committed to defending a type-identity as opposed to a Davidsonian token-identity theory of what McGinn calls "physicalism." Stated in terms of Kripke's resuscitation of Aristotle's[v] doctrine of real essence, this view holds that certain mental concepts, namely mental process concepts, as they are instantiated in the case of human beings, have empirically discoverable real essences which will almost certainly turn out in the light of future empirical research to be some kind of process in the brain of the individual concerned. This view clearly conflicts with what I take to be the central thesis of McGinn's paper, namely that mental states and processes are not natural kinds and therefore cannot have an empirically discoverable real essence. But since I also hold that the form of physicalism or materialism to which I subscribe is a scientific hypothesis whose truth or falsity will be determined by subsequent empirical research, rather than by *a priori* argument, my view is incompatible not only with the alleged *a priori* proof that my kind of physicalism is false, which McGinn attributes to Kripke and expounds on p. 196, but equally with the alleged *a priori* proof of the truth of physicalism presented by Davidson which McGinn quotes at the beginning of his paper and from which his subsequent discussion arises.

These, then, are the three central theses which McGinn expounds and endorses in his paper, in the order in which I shall try to rebut them, beginning with McGinn's contention that mental states and processes are not natural kinds and therefore cannot be supposed to have an empirically discoverable real essence in

the brain or anywhere else. As we have seen, McGinn's argument for this thesis is that mental concepts are more like functionally defined nominal essence concepts like the concept of a clock or watch than they are like natural kind concepts, such as "heat" or "water" in that mental concepts, unlike natural kind concepts, can and presumably do have alternative physical realisations. Now while there may be some mental concepts for which it is difficult to envisage any physical realisation other than that which we encounter in the case of human beings, I personally have no hesitation in conceding that there are some mental concepts such as "reading" and "calculating" which not only can, but do already have alternative non-human and non-biological realisations in the case of computers. But does it follow that, in conceding the possibility and in some cases the actuality of alternative realisations of mental concepts, I am forced to concede that mental concepts do not have empirically discoverable real essences such that their real essence could conceivably turn out to be some as yet unidentified neurological process?

Now on p. 227 of his remarkably conciliatory reply to McGinn's paper in the same symposium James Hopkins gives us an argument which seems to me, though not apparently to Hopkins himself, to show conclusively that this conclusion does not follow. As I interpret it, what Hopkins is arguing here is that in the case where a functionally defined concept has what he calls "a natural realisation", that is to say where an organ or organic system subserving a particular function has evolved naturally as an inherited characteristic of a biological species, that particular natural realisation of the concept in question does have an empirically discoverable real essence, despite the fact that the concept itself - since it is capable of a number of alternative realisations - does not.

The example that Hopkins gives in this connection is the case of a circulatory system and its natural realisation in the form of a heart, lungs and blood vessels. Other examples are the gene and its natural realisation in all biological systems on this planet in terms of DNA, and the wing and its various different natural realisations in the case of the fly, the bird, the bat and the pterodactyl.

Why can't we say in these cases, and in the comparable case of the distinctively human instantiations of mental concepts, that although genes, circulatory systems, wings and mental processes in general do not have empirically discoverable real essences because of the possibility, and in some cases the actuality, of alternative realisations, the particular naturally occurring realisations of these concepts, which are

characteristic of particular varieties of living organisms, do have an empirically-discoverable real essence and that the real essence of human mental processes, as opposed to mental processes in general, will probably turn out to be some, as yet unidentified, process in the brain?

Given that what we are concerned with are mental states and processes as they occur in the case of human beings this argument of Hopkins's seems to me to provide a decisive refutation of McGinn's argument that such states and processes do not and cannot have an empirically discoverable real essence. We can therefore proceed to a discussion of the second argument endorsed by McGinn to which I wish to object, the alleged *a priori* proof of the impossibility of type-identity physicalism which McGinn attributes to Kripke. As stated by McGinn on p. 196, Kripke's argument takes as its starting point the observation that in cases such as "Water is H_2O" or "Heat is molecular motion", where type-identities have been established by empirical scientific research through the discovery of the real essences of the natural kinds in question, it is inconceivable that something should have the chemical composition H_2O without being water, or that molecular motion within a body should increase or decrease without a corresponding increase or decrease in temperature and *vice versa*. But in the hypothetical case where a type-identity of this kind is postulated between pain and the firing of C-fibres, it is readily conceivable that pain should occur without the firing of C-fibres or that the firing of C-fibres should occur without an experience of pain. This shows, according to McGinn, that there is a disanalogy between the pain/C-fibre-firing case and the paradigm cases of type-identities involving natural kinds which rules out the possibility of type-identity in the pain/C-fibre-firing case.

McGinn recognises, quite correctly, that this argument depends on an intuitive judgment of what is and is not conceivable. But he seems to think that the intuitive judgment which we all share that the occurrence of pain without C-fibre firing and *vice versa* is conceivable, issues "from nothing other than our ordinary grasp of psychological concepts." This is surely a mistake. What the intuition depends on is not our ordinary grasp of psychological concepts, but the fact that "the firing of C-fibres" is an empty phrase invented by philosophers without any foundation in neurology, to which no determinate sense has yet been given and on which consequently there are no constraints operating which would prevent us from conceiving of the occurrence or non-occurrence of C-fibre firing under any conditions whatsoever.

In this respect, "C-fibre firing" is quite different from such concepts as "H_2O" and "molecular motion" in that the latter concepts have determinate senses deriving from their position in a well-articulated scientific theory which is firmly anchored to the empirical data through a wide variety of measurement procedures and experimental observations. As I see it, the reason why it is inconceivable that anything should be water that is not H_2O, or that any change in temperature should occur without a corresponding change in molecular motion is that, given the respective chemical and physical theories, anything that has the chemical composition H_2O necessarily has the same causal antecedents and effects as water, and any increase or decrease in molecular motion necessarily has the same causal antecedents and effects as does a corresponding change in temperature.[vi]

Now in his paper on 'The Individuation of Events'[vii], which in my view is his most valuable and important contribution to this topic, Davidson has argued that the identity of an event consists in its unique position in a causal nexus from which it follows that two descriptions which attribute precisely the same causal antecedents and the same effects to an event must necessarily be alternative descriptions of one and the same event. This principle which appears to my intuitions to be self-evidently true explains why, given the relevant chemical and physical theories, anything that is water must necessarily be H_2O and *vice versa* why any increase or decrease in temperature must necessarily be the same event as a change in molecular motion and *vice versa*. It also leads to a prediction that, in the unlikely event of the empty phrase "C-fibre firing" acquiring a determinate sense in the context of a well articulated and empirically anchored theory from which it followed that C-fibre firing has the same causal antecedents and the same effects as human pain, it would be just as inconceivable as it is in the heat and water cases that human pain should occur without C-fibre firing, or that C-fibre firing should occur without pain.

So much for Kripke's *a priori* refutation of type-identity physicalism. Now for Davidson's alleged *a priori* proof of token-identity physicalism, as stated and endorsed by McGinn at the beginning of his paper, around which the whole of the present discussion revolves.

The argument has three premisees. McGinn assumes that the first two of these premisees can be accepted without serious discussion and focusses his argument on the third premise, which denies the existence of psycho-physical bridge laws. But as I see the matter, it is the first two premisees that need to be

examined. For it is only in so far as the first two premisees go through and are understood in the sense required to yield the intended conclusion that the crucial third premise acquires its significance.

The first premise of Davidson's argument, as stated by McGinn, holds "that there are causal relations between mental and physical events." My difficulty with this proposition is that I don't know how to apply the distinction which is drawn here between mental events and physical events. Take for example events such as reading and writing. Are they mental events or physical events, or are they a bit of both? But if, as most of us would be inclined to say, they are partly mental and partly physical, where do their physical parts end and their mental parts begin? It seems to me that no clear answer has been, or indeed can be, given to that question. And if no clear answer can be given to it, how can we possibly hope to decide whether or not there are causal relationships between two classes of event that are not clearly distinguishable from one another?

However, from his discussion of this issue in 'Mental Events', it would appear that what Davidson chiefly has in mind when he asserts that mental events and physical events are causally related, is that the relationship between what someone believes, wants and intends, and the action he performs in the light of those beliefs, desires and intentions, is a causal relationship. If that is what he means, then I for one have no hesitation in agreeing with him. But partly because this is a view which many philosophers would dispute, and partly because it affects the interpretation that is placed on the other premisees of Davidson's argument, it will be helpful if I can explain my reasons for endorsing Davidson's first premise when interpreted in this way.

My reason for accepting the view that mental states like believing, wanting and intending, are causes of the actions to which they lead, is that I subscribe to the view according to which when we say that *A* is a cause of *B*, we are saying that *A* is an event or state of affairs which could conceivably have existed or occurred without *B*s existing or occurring, but which is such that *ceteris paribus* if *A* had not occurred or been the case, *B* would not have occurred or been the case.[viii] Now in any particular case it is always conceivable that the individual in question should have believed that performing a certain action would have a certain result, should have desired that result and should have intended to perform the action in question and yet not have performed that action. Nevertheless, where the action is performed, it may be, and often

is, true that if the agent had not believed that his action would lead to the end in question, had not desired that end or intended to perform the action in question, he would not have done what he did. This therefore is a case which clearly satisfies the criteria I have suggested for one event or state of affairs being a cause of another event or state of affairs.

For our present purposes the important feature of this account of what is involved in a causal judgment is, of course, the counterfactual claim that it makes about what would have happened or been the case if things had been different, and it is this feature which gives substance to the contention that is enshrined in Davidson's second premise, as stated by McGinn, which holds that "where there is causality a covering law exists which subsumes the events under some of their descriptions." For the only way in which the truth of a counterfactual conditional can be established is by deducing it from some kind of universal law or lawlike generalisation for whose truth we have independent evidence. But where I part company with Davidson and McGinn, and here again I can appeal to Mr. Hopkins' paper in my support, is over the question of the kind of covering law that is required in order to yield the appropriate counterfactual and thus provide the necessary underpinning for a causal judgment.

As Davidson and McGinn construe the matter, the kind of covering law which is required in order to justify a causal judgment is the kind of natural law which is to be found in sciences like chemistry and physics, which has universal application anywhere in the universe and at any time throughout the history of the universe. Hopkins, on the other hand, argues for the relevance of law-like generalisations of much narrower scope than this. On p. 227 he says,

> A correlation can be regarded as lawlike if exception to it is inconsistent with natural law, and this may be so even if its terms neither figure in basic explanatory laws nor are reducible to those that do.

I would want to go rather further than this and recognise with Nelson Goodman[ix] that the covering laws or lawlike generalisations which underpin causal judgments can be, and often are, generalisations whose scope is restricted to the behaviour of a single individual over a limited span of time, which is frequently less than, and in some cases very much less than, the lifetime of the individual in question.

The example I have in mind here is drawn, not altogether surprisingly, from the field of medicine. It is an example which I owe to a former President of the Royal College of Psychiatry, Professor Linford

Rees. It concerns the causes of asthma. According to Professor Rees[x], asthma has three main causes, respiratory infection, the inhalation of an allergen (such as a variety of pollen), and psychological stress. But apart from saying that all these three factors or groups of factors constitute a reservoir of potential causes from which the actual causes operating in the individual case are drawn, there is no law which governs the relationship between these factors and the occurrence of an asthmatic attack which has application to all cases of asthma. Each individual case is different and obeys its own individual laws. Every permutation and combination of the three basic factors I have mentioned is found from the case where one of the three factors, say the presence of an allergen, is both a necessary and a sufficient condition for the occurrence of an asthmatic attack in the sense that the attack occurs whenever and only when the allergen is present, to the case where no one factor is necessary and any combination of two such factors, infection plus allergen, allergen plus stress, or stress plus infection, are jointly sufficient for the occurrence of an attack.

It can, of course, be argued, as Davidson no doubt would wish to do, that these laws or lawlike generalisations, which are restricted in their application to the individual case, are only to be found at a crude macroscopic level of causal analysis and that when we know more than we do at present about the processes involved in the causation of asthma at the microscopic level, we shall find that the individual laws that apply at the macroscopic level can be reduced to, or explained in terms of, particular initial conditions combined with universal laws of nature drawn from chemistry and physics. Moreover, it is precisely in these cases, when we are faced with the problem of explaining or reducing regularities at the macroscopic level to the universal laws of nature operating at the microscopic level, that we need, according to the view to which Davidson and McGinn subscribe, the so-called "bridge laws" connecting the phenomena at these different levels which, according to the third premise of Davidson's argument, do not exist in the case of any psycho-physical reduction that might be proposed.

In response to this argument, I would certainly want to agree that all our scientific experience in similar cases would lead us to expect that wherever there is a causal law at the macroscopic level whose scope is restricted to the individual case, subsequent microscopic analysis will show it to be a special case of the operation of more general and universal principles. But I cannot see why we should suppose, as Davidson apparently does, that the existence and operation of such universal laws of nature is presupposed by the

individual causal judgments that we make at the macroscopic level, except, as Hopkins points out, in so far as the universal laws of nature provide a framework within which these more restricted generalisations at the macroscopic level, must operate.

Consequently I see no convincing reason to accept Davidson's second premise in the sense in which it has to be interpreted in order to yield the required conclusion. Furthermore, in relation to Davidson's third premise, as stated by McGinn, it is far from evident to me that the process whereby we explain individual causal regularities at the macroscopic level in terms of universal laws at the microscopic level, requires anything in the nature of the so-called bridge laws to connect the two levels, even in cases which do not involve any crossing of what I can only regard as the mythical boundary erected by Descartes, and perpetuated by subsequent philosophers, between the mental and the physical.

But even if it can be shown that some such bridge laws are an essential ingredient of any reductive explanation of the macroscopic in terms of the microscopic, neither Davidson nor McGinn has produced any convincing arguments for singling out the case of so-called psycho-physical reduction as one where no such bridge laws can be supposed to exist. Davidson, on his own admission, provides no convincing argument for his third premise. McGinn's attempt to rectify this omission fails, as I see it, because it depends on a denial of the possibility of laws at the macroscopic psychological level, which in its turn depends on his denial that mental states and processes are natural kinds with empirically discoverable real essences. Yet it is clear that the only kind of psychological law which would arguably be ruled out by the fact, if it is a fact, that mental states have no real essences, is a law involving mental states in general. The possibility of lawlike generalisations whose application is restricted to the individual case is in no way affected by such an argument; but then any argument which purported to show that lawlike generalisations restricted to the individual case are impossible in the case of mental states, would run up against the fact that all mental state predictions (as opposed to mental process or mental event predictions) involve just such an individually restricted lawlike generalisation about the behaviour of the individual concerned. That, after all, is what is meant by describing mental state concepts as dispositional, a view which, despite a lot of subsequent disagreement about the nature of dispositional concepts in general, has not been seriously disputed since it was first put forward thirty years ago by Gilbert Ryle.[xi]

I conclude therefore that McGinn has failed to provide any convincing arguments which would compel someone like myself to abandon the theory of type-identity physicalism conceived as an empirically testable scientific hypothesis, concerning the real essence of human mental processes.

NOTES

i. McGinn, C., & Hopkins, J., 'Mental States, Natural Kinds and Psychophysical Laws.' *Proceedings of the Aristotelian Society, Supplementary Volumes*, 52, 195-236, 1978

ii. Davidson, D., 'Mental Events' in Foster, L. and Swanson, J. (eds.), *Experience and Theory*, London, Duckworth, 1970.

iii. S. Kripke, Naming and necessity. In G.Harman and D.Davidson (eds.) *Semantics of Natural Language*. Dordrecht: Reidel, 1972.

iv. H. Putnam, *Mind, Language and Reality*: *Philosophical papers vol. 2*, London: Cambridge University Press, 1975, *passim*.

v. *Posterior Analytics*, II, 8-10.

vi. Strictly speaking, a mass term like "water" or "H_2O" does not denote an event or a state of affairs and is consequently not the kind of word which can appropriately be used to describe the cause or effect of anything. However the existence of a certain quantity of water or H_2O at a given time and place is a state of affairs which does have both causal antecedents and effects which are arguably the same for a given quantity of water as for a quantity of H_2O.

vii. D. Davidson, 'Individuating events.' In N.Rescher (ed.) *Essays in Honor of Carl G. Hempel*, Dordrecht, Reidel, 1969, pp. 216-234..

viii. Following Hume, D., *Enquiry concerning the Human Understanding*, VII, II, 60.

ix. N. Goodman, *Fact, Fiction and Forecast*, 2nd Ed., Indianapolis, Bobbs-Merrill, 1965.

x. W. Linford Rees, 'Stress, Distress and Disease' (The Presidential Address at the Annual Meeting of the Royal College of Psychiatrists, held in London, 9 July, 1975), printed in *The British Journal of Psychiatry*, Vol. 128, January 1976.

xi. Ryle, G. *The Concept of Mind*, London, Hutchinson, 1949.