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*Thirty years on - Is consciousness still a brain process?*<sup>?</sup>

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Thirty years ago a paper of mine entitled 'Is consciousness a brain process?' was published in the *British Journal of Psychology* for February 1956<sup>1</sup>. This paper together with Herbert Feigl's paper 'The "Mental" and the "Physical"' which appeared in Volume II of the Minnesota Studies in the Philosophy of Science<sup>2</sup> and Jack Smart's paper 'Sensations and Brain Processes' which appeared in *Philosophical Review* in 1959<sup>3</sup> are generally held to be the three primary sources in recent philosophical literature for the materialist or identity view of the mind-brain relationship. There is therefore some justice in the claim that these three and my own, as the first to be published in particular, may be regarded as ancestral to the materialism that has become a widely accepted establishment view in contemporary philosophy, particularly in the United States. These days whenever the broadcasting media in the United Kingdom do a feature on the mind-body problem it is a virtual certainty that it will be a philosopher, such as Dan Dennett or John Searle, who presents the materialist position. The only thoroughgoing dualist they seem to be able to find is the brain physiologist Sir John Eccles, with the psychologist, if there is one, sitting as usual on the fence. Truly a remarkable transformation from the situation that existed thirty years ago, when every philosopher you met was quite convinced that whatever answer to the mind-body problem, if there is one, is true, materialism must be false.

Contemporary philosophical materialism, however, is a horse of a very different colour from the thesis I was arguing for in my 1956 paper. Two striking differences stand out. In the first place, the thesis I was arguing for was restricted in its application to mental events, to sensations, mental images and thought occurrences and the associated activities of thinking, imagining and paying attention in as far as they are covert or hidden from the view or hearing of another person. Mental states, I assumed following Ryle<sup>4</sup>, are dispositions, either capacities analogous to a car's horse power or tendencies like the car's tendency to understeer which are causally dependent on features of the car's internal structure, but which are not the same thing as those internal features in the way that the explosion in the car's exhaust pipe is the same event as that which we hear when it backfires. Contemporary materialists by contrast have followed David Armstrong in his 1968 book *A Materialist Theory of the Mind*<sup>5</sup> in holding that mental states in general and propositional attitudes in particular are identical with the unknown features of the brain microstructure on which, on my view, they are causally dependent. The only exception here is John Searle, who both in his 1983 book<sup>6</sup> and in his 1985 Reith Lectures<sup>7</sup> claims to hold both of these, in my view, incompatible theories simultaneously. According to Searle, mental states are both identical with and causally dependent upon the corresponding states of the brain. I say you can't have your cake and eat it. Either mental states are identical with brain states or one is causally dependent on the other. They can't be both.

One of the consequences of extending the identity theory from its original restriction to mental events so as to cover mental states, is that whereas it is not too difficult to suggest what sort of a brain event something like a sensation or a mental image might be supposed to consist in, if you try to imagine what sort of a brain state something like my belief that it's going to rain tomorrow might be supposed to consist in, the mind quickly begins to boggle. We are confronted with the apparently insoluble philosophical problem of how the intentionality which is a prominent feature of mental states can possibly be construed as a property of the brain microstructure. As I see it, this problem is neatly side-stepped on the view that I hold by showing (1) that there are a number of mental event verbs, like "paying attention to", "watching", "looking at", "listening to", "savouring", etc. which do not display this feature, and (2) that whenever the grammatical object of a mental event verb *is* intentional, it turns out

that the intentionality is invariably attributable to a mental state or disposition which is involved in the mental event rather than to the mental event as such. Thus wherever a mental event characterised by reference to an intentional object, the intentional object turns out to be either -

- (a) a simile used to indicate the way the individual is inclined to characterise an experience, as in the case where a pain is characterised by reference to the part of the body from which it appears to emanate,
- (b) the objective of a disposition with which a mental activity is performed, as in the case of "looking for something",
- (c) an embedded sentence which characterises the belief, intention or other disposition which is brought into being by a mental event, as when a decision is characterised by reference to the intention to do something in which it results.

If to this is added the demonstration by John Burnheim<sup>8</sup> and more recently by C.B. Martin and K. Pfeifer<sup>9</sup> that physical dispositions and their descriptions bear all the marks of intentionality mentioned by such philosophers as Elizabeth Anscombe<sup>10</sup>, Roderick Chisholm<sup>11</sup> and Bill Lycan<sup>12</sup>, and we reach the conclusion that intentionality is the mark, not, as Brentano thought, of the mental, but of the dispositional<sup>13</sup>. Combine this with Ryle's thesis that dispositional statements are concealed hypotheticals which I still think, despite the criticisms of Peter Geach in *Mental Acts*<sup>14</sup> and Armstrong in his 1968 book, is a tenable view and the vexed problem of intentionality becomes a problem about the role of dispositional statements in causal judgments, not in any way specific to the mind-body problem.

I do not expect this way of side-stepping the problem of intentionality to recommend itself to philosophers any more than my contention that the thesis that consciousness is a brain process is an empirical scientific hypothesis recommended itself to philosophers in the nineteen fifties and sixties, even those like Smart who were in general well disposed towards the materialist position. The reason for this is that my objectives in putting forward the thesis in the first place was and is diametrically opposed to the interests of philosophers in this matter. For what I was trying to do was to clear away the tangle of philosophical objections which, as I saw it, were impeding empirical research in neurophysiology and physiological psychology aimed at discovering the physical nature of consciousness and its location within the brain. This objective requires the effective liquidation of the mind/body problem as a philosophical issue so that it can be handed over as an empirical issue to be resolved by the neuro-scientist. Needless to say, philosophers have a vested interest in precisely the opposite objective of keeping the mind-body problem as a live philosophical issue.

It is this need to retain the mind/body problem as a live philosophical issue and to preserve the status of the philosopher as the relevant expert in such matters which, in my view, explains the remarkable turn around in philosophical attitudes to materialism which can be dated rather precisely to the publication of Armstrong's book in 1968. Before 1968, virtually all the philosophical literature on the identity theory was hostile; after 1968 more and more philosophers began to climb on to the materialist bandwagon. For once the identity thesis is extended from the identity of mental events with brain events to the identity of mental states with brain states, the insoluble philosophical problem of explaining how a propositional attitude could possibly be construed as a state of the brain allows the philosopher to adopt the materialist position without losing his status as the relevant expert in matters of intentionality and its representation in the brain. It is in this light that I read such bizarre theories as Davidson's Anomalous Monism<sup>15</sup>, Dennett's account of brain functioning in terms of the combined effects of the decisions of a committee of homunculi<sup>16</sup> and Fodor's innately pre-programmed language of thought<sup>17</sup>.

But the aspect of this revolution in philosophical attitudes which I want to focus upon relates to the other major respect in which contemporary philosophical materialism differs from the materialism I was advocating in 1956. As I have already mentioned, in the 1956 paper and my 1960 reply to Jack Smart's paper my contention was that materialism as applied to mental events is a reasonable scientific hypothesis which cannot be ruled out of court by *a priori* philosophical argument. Not only was that the only part of the thesis of my 1956 paper which Smart criticised in his 1959 paper, it is also one of the features of the original thesis which is conspicuously missing from contemporary philosophical versions of materialism. Contemporary philosophical materialists are inclined to treat the empirical evidence of mental/cerebral correlation as irrelevant to the issues with which they are concerned and seek to demonstrate the truth of materialism by means of a purely *a priori* argument of which Davidson's argument for his principle of anomalous monism is a prime example.

Although its *a priori* character and the effect of its conclusion, the conclusion that there are no psycho-physical bridge laws, in nullifying any empirical evidence of psycho-physical correlation is clear enough, the argument itself is notoriously difficult to state. As I read it, it divides into two parts of which only the second is at all explicitly stated.

Part 1, goes roughly as follows:-

1. Every human action has one or more propositional attitudes as its immediate cause.
2. Every human action has a brain state as its immediate cause.
3. Events cannot have more than one immediate cause.

ERGO 4. The set of propositional attitudes which constitute the immediate cause of a particular human action are identical with the brain state which constitutes the immediate cause of that action.

Part 2 then proceeds as follows:-

5. All causation presupposes a universally quantified causal law relating events or states of the cause type to states or events of the effect type.
6. No such universally quantified causal law can be stated relating propositional attitudes to the action types they cause.
7. Universally quantified causal laws can, however, be stated relating brain states and events to the action types they cause.

ERGO 8. No universally quantified law statement can be true which relates particular brain states with which they are (by 4 above) identical. In other words there are no psycho-physical bridge laws.

I accept that both these arguments are valid. I am also myself committed, as I shall explain later, to a version of the argument in Part 1, though with mental events rather than propositional attitudes or mental states as its subject matter. However I reject both conclusions, in each case because I reject one of the premises from which it is deduced. In the case of Part 1 I reject conclusion 4 because I reject premise 3; and I reject premise 3 because, on my view, the brain state which causes an action is an indirect rather than an immediate cause of the action it leads to. The immediate cause is the propositional attitude or mental state and that state is causally dependent on, not identical with the state of the brain the microstructure.

In the case of Part 2, I reject the conclusion 8. partly because I reject the prior conclusion 4 which asserts the identity of the propositional attitude and the brain state on which, in my view, it depends, but partly also because I reject proposition 6. The reason for this is that I hold that a propositional attitude statement or indeed *any* dispositional statement is itself a universally quantified

causal law in the sense that is required for the truth of proposition 5. All that a causal judgment requires, in my view, is a statement which is universally quantified over events or states of the types to which the causal judgment relates. It matters not if the events in question are restricted to the behaviour of a particular individual or to the limited window of the time constituted by the duration of the particular disposition in question.

In other words dispositional statements of which propositional attitude statements are a sub-variety are statements of the form "If at any time between  $t_1$  and  $t_2$  causal condition  $c_1$  combines with causal conditions  $c_2...c_n$ , an event of the  $e$  type will occur." A statement of this form is all that is required to deduce the counterfactual "if at any time between  $t_1$  and  $t_2$  the causal conditions  $c_1...c_n$  had been fulfilled, an event of the  $e$  type would have occurred" which following John Mackie<sup>18</sup>, I take to be what is meant by saying that the conditions  $c_1...c_n$  are causally effective relative to events of the  $e$  type.

I want to emphasise this analysis of causal judgments not only because of its relevance for my rejection of Davidson's *a priori* argument for anomalous monism, but also because, as we shall see, it plays a crucial role in the argument to which I propose to devote the remainder of this paper. This argument is in effect my third and I hope finally successful attempt to rebut the objection that Jack Smart raised in his 1959 paper to my contention that materialism is an empirical scientific hypothesis whose truth or falsity will ultimately be demonstrated one way or the other by the empirical evidence of neurological and psycho-physiological research.

As those who have read Smart's paper will remember<sup>19</sup>, the argument runs roughly as follows. Smart begins by conceding that the issue as to whether consciousness is to be located in the heart, the liver, the brain or in some other organ of the body is an empirical issue. That issue he takes to have already been conclusively decided in favour of the brain. But the real issue is not the issue between the liver thesis, the heart thesis and the brain thesis; it is the issue between the view that mental events are identical with some, as yet unspecified physical events whether in the brain, heart, liver or elsewhere and the view that they are mere epiphenomena or causally ineffective by-products of the physical events with which they are correlated. With respect to *that* issue, he maintains, any evidence which is consistent with the identity thesis will also be consistent with epiphenomenalism. No crucial experiment is conceivable which would enable us to decide the issue between the two theories. The situation is compared with the issue between the explanation of the fossil record in terms of the theory of evolution and the explanation of the fossil record in terms of Gosse's theory according to which the fossil record was laid down by the Creator at the Creation of the Universe in 4004 BC in order to test the faith of 19th century Christians. In such cases, Smart maintains, there is and can be no decisive empirical evidence either way. The only thing we can do is to appeal to the principle of Ockham's razor to eliminate the more complex and ontologically less economical hypothesis in favour of the simpler and ontologically more economical one.

When I replied to this objection in my 1960 paper "Materialism as a scientific hypothesis"<sup>20</sup>, I conceded that the crucial issue with respect to the truth of the mind-brain identity thesis is whether or not the thesis makes sense, not whether or not it will be supported by the empirical evidence. To concede this, I now think, was to concede the substance of Smart's objection and thus allow the focus of discussion to be steered away from the empirical evidence and towards the purely philosophical issues. Over the years, as the debate has developed, I have come increasingly to think that this was a false move; and it was in this spirit that I returned to the issue in a paper entitled "Twenty years on - is consciousness still a brain process?" which I read at University College, London and at the University of Glasgow during

the course of 1976 and which was eventually published in a journal, now, I believe, defunct, called *Open Mind*, published by the Open University<sup>21</sup>.

Perhaps the best way to give you the flavour of this second attempt to reply to Smart's objection is to quote the opening paragraph's of the paper as it was published in 1977:

Since the discovery of the electroencephalogram by Hans Berger in 1929 we now know beyond all reasonable doubt what had long been suspected, namely: that whenever a human being engages in some kind of mental activity such as performing an arithmetical calculation in his head, or simply paying attention to sensory stimulation in one or other of the sensory modalities, there is a corresponding change in the pattern of neural activity in his brain. And although we are still a long way from the stage of being able to read a man's private thoughts from a study of the electrical activity in his brain, the complexity and variety of the patterns of electrical activity revealed by the electroencephalogram are more than sufficient to justify the belief that all the complexity and variety of the thought processes and conscious experiences of an individual human being are exactly and completely reflected in the complexity and variety of the concurrent brain activity. More recently, the development of computer technology and the theory of artificial intelligence has made it possible to explain how the brain might be supposed to carry out virtually all those operations traditionally attributed to the mind. At the same time neurological evidence of the way in which behaviour and intellectual performance depend on the integrity and proper functioning of the brain as a whole and its constituent parts has shown beyond all reasonable doubt that intellectual performance and behaviour are generated and controlled by the brain not merely, as Descartes supposed, at the level of tactical execution, but at the level of strategic decision also.

Faced with evidence such as this, it is no longer possible to hold with Descartes that when a man thinks, there are two quite distinct processes taking place, namely, a mental process which strictly speaking has no extension or position in physical space and which constitutes the thought process as it appears in the consciousness of the individual in question, and a concomitant physical process located in his brain whose function is merely to provide the separate mental process with information from the sense organs about the current state of the environment and organise the execution of the appropriate movements of the body when the mental process has reached the point of deciding what to do. (Place 1977 p. 3)

Considered as a reply to Smart's objection this argument is suggesting that while the issue between the identity theory and epiphenomenalism may be empirically undecidable, as Smart claims, there is another issue namely the issue between the identity theory and Cartesian dualist interactionism which *is* empirically decidable and is in process of being decided in favour of the identity view. What the evidence shows is that whenever a mental process occurs there occurs a corresponding brain process which has the same degree of complexity as the mental process reported by the subject, has all the causal properties required to generate the behaviour which the mental process is supposed to generate and whose occurrence is a causally necessary condition for the occurrence of that behaviour.

However, this evidence can only be used to demonstrate the falsity of dualist interactionism, if there is an *a priori* principle which can be invoked in order to exclude the possibility of two simultaneous parallel processes, one a mental process, the other a brain process, both contributing to the causation of the ultimate behavioural output. Intuitively this seems right; and certainly the adoption of psycho-parallelism and epiphenomenalism, both of which seek to protect dualism by denying the existence of a causal connection between mental events and their apparent behavioural outcome, seems to suggest that this intuition is widely shared by philosophers who have thought about this matter since the days of Descartes. Nevertheless intuition, however widely shared is no substitute for solid argument. In my 1977 paper I tried to deal with the problem by invoking Davidson's principle<sup>22</sup> whereby an event is individuated by the unique position it occupies relative to its causes on the one hand and its effects on the other. As I pointed out in that paper:

It follows from this principle that you cannot have two events or processes with the same causal antecedents and the same consequences or effects. Now as we have seen, the empirical evidence shows that whenever a mental process occurs there also occurs a brain process which has exactly the same causal antecedents and the same consequences or effects as the mental process appears to have. But since by Davidson's principle only one process can have *that* particular set of causal antecedents and consequences, we are compelled to conclude either that the mental process and the brain process are one and the same process or if, as most philosophers have held, they are two different processes, then one of these processes cannot in fact have the causal antecedents and consequences that it appears to have. (Place 1977 p. 3)

Unfortunately, as my colleague Roger White<sup>23</sup> has since convinced me, this principle's of Davidson's cannot be sustained. Roger's objection is essentially Hume's point<sup>24</sup> that the causal relation is a relation between two discrete events or states such that whatever happens in practice it must always be conceivable that the cause event or state might occur or be the case without the effects event or state being the case. It follows that events or states which are causally related must be individuated by something other than the causal relation into which they enter.

There is, however, another argument which can, I believe, be used to show that the causes of an event cannot include more than one event. Every event comes about, every state of affairs is maintained by a number of causal factors. The set of causal factors which contribute to the coming about of an event or to the maintenance of a state of affairs in a particular case are said to be *sufficient* for the occurrence of that event or the maintenance of that state of affairs. This means that, whenever all the causal factors in question are present, an event of the same type will occur or a state of affairs of the same type will persist, whereas if any one of those factors is missing the event will not occur, the state of affairs will not be maintained. In a case where the effect is a state of affairs all the causal factors which maintain that state of affairs will themselves be states of affairs. Moreover, in a case where the effect is an event, all the causal factors except one will likewise be states of affairs which are in position, as it were, for a longer or shorter period of time prior to the coming about of the effect. There will be one and only one triggering event which completes the set of causal factors which are jointly sufficient for the coming about of the effect which will begin *immediately* the triggering event occurs.

Now if this is correct, it follows in the case we are considering that when a human agent does something or says something as an apparent end result of a mental process, if, as we have good empirical evidence for thinking it is, every mental process is invariably accompanied by a causally effective brain process, it cannot be the case that the conclusion of *both* of the two distinct processes assumed to be operating here, acts as a triggering event with respect to the initiation of the agent's action or utterance. And given the empirical evidence for the causal efficacy of the brain process in such case, we have to conclude, I suggest, that either the two processes are one and the same or that the mental process is causally impotent and, hence, epiphenomenal with respect to the agent's action or utterance.

It is true that there are two counter examples which have been suggested to me in which two events can be said to jointly trigger a single effect, though neither of them, it seems to me, offer a viable way out of the dilemma I have just described. The first is the case where two events which act in opposite directions on the same object or substance occur simultaneously. For example<sup>25</sup> suppose you have a balance with the weight equally distributed between the two arms and two weights, which may be equal or different, fall simultaneously on to the two arms. The net effect will clearly be different from what it would have been if only one of the two weights had fallen on to one of the two arms. Here, it may be argued, we have an example of an event which is brought about by two separate triggering events.

Now you might say that since the two events have to be simultaneous, this is not really two discrete triggering events, but a single triggering event which is clearly different from the triggering events constituted by the two weights falling separately. But, be that as it may, this example is evidently not going to provide a useful analogy for the case of mental processes and brain processes, since in the case of the balance the simultaneity of the falling of the two weights is purely fortuitous; whereas it could hardly be maintained that the coincidence of the conclusion of the mental process with that of the corresponding brain process is a matter of coincidence.

A much better analogy for what is envisaged by the dualist interactionist is provided by the backup computer or computers which are installed in spacecraft and, I believe, in some aircraft these days which perform the same calculations as the main computer and which are used both as a check on the calculations of the main computer and as a substitute in the event of the main computer breaking down. The case in which the ultimate output of the system is determined on the basis of the outputs of both computers in the case where there are only two would then be the analogy for the version of dualist interactionism in which both the mental process and the correlated brain process contribute to the ultimate effect.

This conception of the mental process as a kind of backup computer providing a check on the calculations made by the main computer in the brain is not a view which is likely to satisfy either the dualist or the biologist. For the dualist it fails to give the mental process its unique and indispensable role in the control of behaviour; for the biologist it is difficult to see why we should be required to postulate an extra-physical mental process simply to act as a backup to the brain activity, especially when we know that there is ample spare capacity in the human brain, if such backup computational facilities were needed.

But on this model, even if we grant that the mental process makes a causal contribution to the final outcome which is distinguishable from that made by a parallel brain process, in the case where the two calculations disagree, the final decision as to which of the two is to determine what the individual finally says or does has to be made by the brain. For, as we have seen, the empirical evidence rehearsed above shows that the brain process is both sufficient and necessary for the production of the verbal or behavioural output. Consequently, in a case where there can be only one event occupying a particular position in a causal chain, the empirical evidence points fairly decisively to that position being occupied by an event in the brain. But if the final decision as to what to say or do is taken in the brain, it must be the case that, if dualism is true, the sense we have that our thoughts and feelings determine what we say and do has to be an illusion. Even if we interpret our thought processes as playing an essential backup role in relation to the main computer in the brain, *qua* mental process, the final decision on what to say and do has to be epiphenomenal; and this, it may be thought, brings us right back to Smart's contention in his 1959 paper to the effect that, whatever may be true of the issue between interactionism and the identity theory, the issue between the identity theory and epiphenomenalism is not empirically decidable.

In my 1977 paper I tried to dismiss both epiphenomenalism and psycho-physical parallelism by means of the following argument:

Not only do both these theories conflict with the intuitions of commonsense, in that they both deny that our thought processes and sensations have any effect on the way we behave; they also have the character of those gratuitous *ad hoc* assumptions calculated to protect a theory from any possible falsification by the empirical evidence which, as Karl Popper has repeatedly argued, are unacceptable in a genuine scientific theory. (Place 1977 p.4)

While I would not want to retract any part of that argument now, there is, so it seems to me, another and more decisive argument against psycho-physical parallelism and epiphenomenalism as tenable versions of dualism. This is the argument that, if either of these theories were true, there can be no causal connection between a mental event and the description that is purportedly given of that mental event in the subject's introspective report. But if the occurrence of an event is not a causal factor in the giving of the description that purports to be given of that event, it cannot be a genuine description of the event in question. Consequently there is no way, consistent with either epiphenomenalism or psycho-physical parallelism, whereby we can use the introspective reports of other people as evidence of the nature of their mental processes or have any reason for believing in the existence of such processes in the case of others. While there are some, no doubt, who think that solipsism is the only consistent form of mentalism, it is hardly a strong position from which to argue for any thesis with the object of convincing another mind of its truth. I conclude, therefore, as I concluded in the 1977 paper:

that the hypothesis that mental processes are the same processes as the brain processes concurrent with them is the only hypothesis which is consistent with the empirical evidence, with our commonsense belief that how and what we think and feel affects what we say and do and with the proprieties of scientific method. (Place 1977 p.4)

It will be noted that, in so far as these arguments depend on the principle that there can only be one triggering event relative to another event as effect, they only have application to a mind-brain identity thesis that is restricted to the relation between mental events and brain events. But, since that is precisely the version of the thesis to which I have consistently subscribed for the past thirty two years, this is no skin of my nose. However, there is, I suspect, an alternative replacement for the Davidsonian principle whereby events are individuated by the unique position they occupy in a causal nexus which would enable an Armstrongian to benefit from this line of argument. For it appears to be a plausible metaphysical principle that the only properties that are predicable of events and states of affairs are properties of a causal and temporal kind. The suggestion would be that any spatial properties are predicable only of the substances involved in the event or state of affairs, as illustrated by the example of the telephone conversation between the U.K. and Australia which cannot be plausibly located in either place or anywhere in between<sup>36</sup>. If this is correct, we could then go on to argue that if two states or events involve the same individual substances, have the same onset and duration in time and have the same causes and effects, since there are no other respects in which they can differ, they must, by Leibniz's principle of the identity of indiscernibles, be one and the same state or event as the case may be.

If I am not mistaken, what this line of argument shows is that the doctrine of the impotence of consciousness to which both epiphenomenalism and psycho-physical parallelism are committed is not just contrary to the intuitions of common sense and to the requirement that a scientific theory be in principle susceptible to falsification, it renders both theories totally incoherent by depriving them of any explanation of how there could be such a thing as an individual's self-report of his or her own mental processes or mental states. But if psycho-physical parallelism and epiphenomenalism are incoherent and if, as I am inclined to think, the dual-aspect theory collapses into the identity theory, we are left, assuming that idealism is not a viable option for scientific purposes, with the choice between dualist interactionism and the identity theory; and *that*, if I am right, is an empirical issue which is in process of being decided by an increasingly formidable body of empirical evidence in favour of the identity theory.

## NOTES

1. U.T. Place, '[Is consciousness a brain process?](#)' *British Journal of Psychology*, 1956, XLVII, 44-50.
2. H. Feigl, 'The "mental" and the "physical".' In H. Feigl, M. Scriven and G. Maxwell (eds.), *Minnesota Studies in the Philosophy of Science* Vol. II, Minneapolis, University of Minnesota Press, 1958, pp. 370-497.
3. J. J. C. Smart, 'Sensations and brain processes.' *Philosophical Review*, 1959, LXVIII, 141-156.
4. G. Ryle, *The Concept of Mind*, London, Hutchinson, 1949.
5. D. M. Armstrong, *A Materialist Theory of the Mind*, London, Routledge and Kegan Paul, 1968.
6. J. R. Searle, *Intentionality: An Essay in the Philosophy of Mind*, Cambridge, Cambridge University Press, 1983, pp. 264-271.



7. J. R. Searle, *Minds, Brains and Science: the 1984 Reith Lectures*, London, B.B.C. Publications, 1984, pp. 20-23.
8. In an unpublished paper entitled 'Intentionality and Materialism' presented to the Department of Philosophy at the University of Sydney c. 1969.
9. In their paper 'Intentionality and the non-psychological', *Philosophy and Phenomenological Research*, 1986, XLVI, 531-554.
10. G. E. M. Anscombe, 'The intentionality of sensations.' In R.J. Butler (ed.) *Analytical Philosophy*, Second Series, Oxford, Blackwell, 1965, pp. 158-180 (used by Burnheim).
11. R. Chisholm, *Perceiving: a Philosophical Study*. Ithaca, Cornell University Press, 1957 (used by Martin and Pfeifer).
12. W. G. Lycan, 'On "intentionality" and the psychological.' *American Philosophical Quarterly*, 1969, 6, 305-311 (used by Martin and Pfeifer).
13. In the light of an argument developed by Richard Garrett in his paper 'Elbow room in a functional analysis: freedom and dignity regained' (*Behaviorism*, 1985, 13, 21-36) which in turn derives from an argument developed by Donald Davidson in his 'Rational animals' (*Dialectica*, 1982, 36, 317-327), I am now inclined to think that it is only what Searle (*Mind*, 1979, LXXXVIII, 74-92) calls "intentionality-with-a-t" which is invariably the mark of the dispositional. I would, however, want to argue that any open ended predicates which are intensional-with-an-s (Searle), referentially opaque (Quine) or non-Shakespearean (Geach) by the criterion of failure of substitutability *salva veritate* are being used non-referentially as a linguistic device for characterising the scope of a disposition. But, in the case of proper names and definite descriptions used to characterise a particular individual towards whom or which behaviour is directed, it appears, in the light of the Davidson-Garrett argument, that a different explanation of the failure of substitutability *salva veritate* is required. The suggestion is that in these cases failure of substitutability is evidence that the name or description in question is being used as an indirect quotation of the name or description by which the individual is known to the agent whose behavioural dispositions are being described. On this account the "transparency" of the names and definite descriptions used in characterisations of the behavioural dispositions of animals, to which Davidson and Garrett draw attention, is explained by the fact that where, as in the case of animals, there is *no* name or description by which a particular individual is known to the agent, there is no reason for singling out *any* one name or description as the "correct" way to characterise the agent's behavioural orientation towards that individual.
14. P. T. Geach, *Mental Acts*, London, Routledge and Kegan Paul, 1957.
15. D. Davidson, 'Mental events.' In L. Foster and J.W. Swanson (eds.) *Experience and Theory*, London, Duckworth, 1970. Reprinted in D. Davidson, *Essays on Actions and Events*, Oxford, O.U.P., 1980, pp. 207-227.
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19. Smart, *op.cit.* pp. 155-156.
20. U.T. Place, '[Materialism as a scientific hypothesis.](#)' *Philosophical Review*, 1960, LXIX, 101-104.
21. U.T. Place, '[Twenty years on - is consciousness still a brain process?](#)' *Open Mind*, 1977, 6, 3-10.
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25. I am indebted to my colleague Dr. Tony Galton for this example.
26. I am indebted to my colleague Dr. Harry Lewis for this example.