

Physiological Psychology and the Mind Body Problem 3Presumptive criteria of Identity and Central State Materialism

We saw in [the last Lecture](#) that Leibniz's Principle of the Identity of Indiscernibles (5) fails us as a positive criterion identity in the case of the mind-brain identity hypothesis because these are bound to be predicates that apply to brain processes whose application to experiences can only be demonstrated by showing that experiences and brain processes are one and the same thing; which is precisely what we are trying to prove by showing that the one has all the properties that the other has. The most we can hope to show by applying Leibniz's principle is (a) that there are processes in the brain which have or can reasonably be supposed to have all the properties we ordinarily attribute to the corresponding experiences (b) that although these brain processes also have properties which we would not otherwise suspect the experiences of having, there are no conclusive a priori objections to supposing that the experiences do not in fact have those properties of the corresponding brain processes which they are not otherwise known to have.

Such a conclusion however, if it were firmly established, would still fall appreciably short of a conclusive empirical demonstration that experiences are one and the same thing as the relevant brain processes. Furthermore the suggestion that we should look for brain processes which have all the properties that experiences have is not in itself very illuminating as a guide in searching for the particular brain processes which may be supposed to be identical with experiences. For until we are able to specify the precise brain process in which experiences may be supposed to consist, the mind-brain identity thesis remains a mere outline programme for the constitution of a hypothesis rather than a specific hypothesis that can be subjected to empirical test. What we need therefore is to isolate properties which if they were to be found in both descriptions would at least create a strong presumption that what we are dealing with here are not two different things but one and the same thing.

In searching for and assessing such presumptive criteria of identity we need, I suggest to examine examples of similar cases to that of experiences and brain processes and contrast cases where we are forced to conclude that we are dealing with two sets of observations and two consequent sets of descriptions of one and the same process with other otherwise similar cases where we are compelled to recognise the existence of two separate and causally related processes, or of two separate and causally independent processes.

Spatio-temporal location as a criterion of identity

As far as I am aware only two such presumptive criteria of identity have been suggested in the literature. The first of these is that suggested by Boring (2, p. 6) when he says: "To the author a perfect correlation is identity. Two events that always occur together at the same place, without spatial differentiation at all are not two events but the same event". I put forward a similar view myself in 1960 when I gave as an additional criterion to the one I had given in my 1956 paper (6b) the criterion "that the two sets of observations must refer to the same point in space and time, allowing for such things as the time taken by the transmission of light and sound, distortions in the transmitting media, the personal equation of the observer and differences in the precision with which location is specified in the two sets of observations". (6c, p. 100)

Two questions arise in connection with this criterion of identical spatio-temporal location. The first is whether it is logically possible for two different things to occupy the same area of space at the same time and the second is whether, given that they cannot, this criterion has any application in the case of experiences and brain processes. In connection with the first of these questions we need to consider examples of cases where we can say of two different things that they occupy exactly the same area of space at one and the same time. Two examples come to mind here. The first is the case in which physicists, so I understand, speak of two electrons occupying exactly the same spatio-temporal location. In this case the only reason for saying that there are two electrons here rather than one is that electrons are distinguished from one another by their direction of spin or rotation, and in the kind of case we are considering the two electrons are

distinguished by the fact that they spin in opposite directions. As I see it there is no obvious parallel here with the case of experiences and brain processes, since this is a case of two theoretical entities whose existence and nature is determined by exactly the same procedure in both cases and which are clearly distinguished from one another by the one having a property which is the exact opposite of that of the other. The second case which comes much nearer home is that of the process whereby the colour of a flame changes from yellow to blue which occurs in exactly the same place at the same time as another process on which it is causally dependent, namely the process whereby the temperature of the flame increases. This is a particularly interesting example in the context of the present discussion, not only because it involves two separate causally related processes occurring at the same place and time, thus providing an excellent analogy for the kind of relationship envisaged by the epiphenomenalist theory of the mind-brain relationship, but because both these processes are aspects of another process of which they form part, namely the process of combustion, thus simultaneously providing an excellent analogy for the kind of relationship envisaged by the Double Aspect theory of the mind-brain relationship. On the other hand there are certain disanalogies between this case and the experience/brain process case which not only cast doubt on the propriety of using this example as an analogy for the mind-brain relationship, but also tend to support the view that identity of spatio-temporal location in a case like that of experiences and brain processes, if it could be demonstrated, would indeed provide strong presumptive evidence of the identity of the two processes.

The most important disanalogy between the heat of flame/colour of flame case and the experience/brain process case is that changes in the heat and colour of a flame are processes constituted by a change in a single property or aspect of another process. Now it might conceivably be argued that experiences and brain processes are two aspects of another process, namely the process of preparing to respond or behave in relation to the organism's environment; but what cannot be plausibly argued is that these two processes consist in changes in a single property of that process. Experiences clearly have a large number of properties which, though they may be difficult to characterise without circumlocution, are subject to continuous change along a large number of different dimensions; and the same must be true of any brain processes which could be plausibly adopted as candidates for identification with experiences. In other words experiences and the corresponding brain processes are much more like the process of combustion of which the changes in heat and colour are aspects than they are like the processes constituted by those changes in heat and colour. Moreover if we confine our attention to multi-aspect, multi-property processes which are the kind of processes involved in the experience/brain process case, it is clear that the case of the flame is a case in which there is only one such multi-aspect, multi-property process taking place at the relevant spatio-temporal location, namely the process of combustion. An analogy in the case of experience to the effect of changes of heat on changes in the colour of a flame would be something like a change in the apparent salinity of a liquid in the mouth which alters the hedonic tone or acceptability of the experience in question. Here the change in the quality of the experience and the change in its acceptability may well, on the analogy of the flame, be conceived as two causally related processes occupying the same place at the same time. But the total experience of which these two processes are aspects would be a single process whose spatial location can be fixed, in so far as it can be fixed at all, only by virtue of identifying the spatial location of the brain process in which it presumably consists.

The problem concerning the identity of spatio-temporal location as a presumptive criterion of the identity of experiences and brain processes relates not so much to the validity of the criterion itself, as to its application in the case in question. There are two problems here. One, which we have already discussed, concerns the logical applicability of the concept of spatial location in the case of experiences. We cannot say here, as Boring (2) wants to do, that because the spatial location of conscious experiences is logically problematic a perfect temporal correlation between conscious experiences and brain events is all that is required to establish the identity of the two. This could only be an acceptable thesis in terms of Leibniz's Law, if the spatial location of brain processes were as indeterminate and as logically problematic as is the spatial location of conscious experiences. Unfortunately it is not; and we are therefore, faced as we have seen, with the objection that experiences and brain processes cannot be the same thing, because the brain processes are spatially located, whereas experiences are not.

I argued in the previous lecture that once we appreciate (a) that the mind is not a substance (b) that

experiences are mental processes and not mental dispositions and (c) that the idiom of spatial location is used to indicate the apparent location of stimulus of a bodily sensation rather than the location of the experience itself, we can recognise not only that there are no reasons in principle why we should not assign a spatial location to the occurrence of an experience, but also that the identification of experiences with brain processes makes possible in principle the precise specification of the spatial location of experiences which their status as processes logically requires. Nevertheless the lack of precision with which the spatial location of an experience can be specified on the basis [of] introspection means that the identity of spatio-temporal location between experiences and brain processes is much too rough and approximate to be of much use as a presumptive criterion of the identity of the two processes, or as a guide in searching for the particular brain process involved.

Micro-reductive explanation as a criterion of Identity

Much more helpful in this respect I suggest, is the presumptive criterion which is suggested by the formulation of the relation between experiences and brain processes in terms of the composition of the one by the other which we discussed in [Lecture 21](#). As we saw in [Lectures 4 & 6-1](#) a substantial micro-reduction of an entity into its constituent parts or matter and the form or arrangement of those parts should, if it is correct, provide us with a complete explanation of the properties displayed by the entity in question at the macroscopic level of analysis. This suggests that what we ought to be looking for if we want to give empirical substance to the mind-brain identity theory, is a theoretical account of the workings of the brain which would lead us to expect to find within it a brain process having precisely those properties which we attribute to our private experiences on the basis of introspective observation. Clearly the case for saying that experiences must be processes in the brain would be very much stronger if we could show, not merely that a brain process having all the properties of an experience is logically conceivable, not merely that the brain is a system of sufficient complexity to contain such a process, but that it is difficult if not impossible, to explain the workings of the brain without postulating the existence of such a process within it. It may well be argued however, that such theoretical considerations are only important in so far as they give us grounds for the expectation that future neurophysiological research will reveal, what it has not yet revealed namely, brain processes which have all the properties we attribute to experiences on the basis of introspection. What it does not show is that if and when we discover such a process, we should be compelled to conclude that the experiences and the brain process are one and the same thing and not two different and causally related or causally unrelated things.

There are two sets of considerations which suggest that, even if we could find a brain process which explained the properties of experience as observed introspectively, we would not be compelled to say that the two were one and the same thing. In the first place, as we have already seen, any micro-description of a brain process which would explain why experiences have the properties they do have at the macroscopic level would necessarily involve attributing to those brain processes properties which, although it would arguably not be self-contradictory to predicate them of experiences, we would have no reason for predicating them of the experiences, if we did not have other reasons for supposing that the experiences and the brain processes are one and the same thing. Secondly, as we saw in [Lecture 6-I](#), there are cases where we can give a micro-reductive explanation of the properties of something, where we would not want to say that the micro-description describes the same state of affairs as the state of affairs it explains. The case in question is the case of the dispositional properties of a substance which are explained by, but are not said to be identical with the features of the micro-structure of the substance in question. An example here is the horse-power of a motor car which is explained by such features of its internal structure as the volume of cylinders, the design of the fuel injection system and the ignition timing, but which could not conceivably be said to be the same thing as these internal features of the car's construction on which the horse-power depends.

There is however, an important difference between a dispositional property, like brittleness, horse power or intelligence and a process like disintegration, combustion or experiencing a sensation in that, if Ryle (7) is right, to say that something is brittle, has a certain horse-power or is intelligent is not to say that anything apart from the substance which is brittle has the horse-power or is intelligent, actually exists or is happening at the moment of time to which reference is made, whereas to say that something is disintegrating,

burning or experiencing a sensation is to assert that the process in question is actually taking place at the time. On the other hand the description of the microstructure of a substance which explains the state of affairs at the macroscopic level, whether it be a process like combustion or a dispositional property like horse-power, necessarily asserts the actual existence or occurrence of some process or categorical state at the microscopic level. It follows from this that whereas in the case of a process both the macro-description and the micro-description describe things belonging to the same existential category, namely, processes, in the case of a dispositional property there is a categorical difference between the hypothetical nature of what is asserted when a dispositional property is predicated of something at the macroscopic level and the categorical nature of what is asserted by the description of the state of the internal microstructure on which it depends. This categorical difference, involving as it does quite different existential implications and a quite different relationship to space and time in the two cases, rules out any possibility of identifying the referents of the two descriptions in such a case. In the case of the micro-description which explains a process described at the macroscopic level on the one hand, both descriptions describe a process and the existential implications and relations to space and time, allowing for the greater detail and precision of the micro-description, are the same for both descriptions. Consequently Leibniz's Law does not rule out the possibility of identifying the referents of the two descriptions, as it does in the case of the dispositional property and the internal categorical state of the micro-structure on which it depends.

But more important than this is the fact that the micro-description which explains the nature and occurrence of a process at the macroscopic level postulates the occurrence of one and only one process which it analyses into its constituent parts, whereas the description of the categorical state of the internal microstructure of a substance which explains the dispositional properties of the substance at the macroscopic level asserts the actual existence of the internal microstructure at the time and the merely hypothetical existence or occurrence of various subsequent and consequent performances of the substance at other times and places, which are necessarily two quite distinct and separate things. In other words the assumption of the identity of the referents of the two descriptions is built into the theoretical micro-reduction in the case of something like a process or a substance, whereas the distinction between the dispositional property and the categorical state of the internal microstructure which explains it is necessarily built into the theoretical micro-reduction in the case of a dispositional property.

The moral which I wish to draw from this feature of different types of micro-reductive explanation is that in the case of things like substances, stuffs and processes, where such an identification is logically permissible, the identity of the referents of the micro and macro-descriptions is invariably built into the theoretical explanation of the entity, as described macroscopically in terms of its microstructure and that the empirical verification of such a theoretical explanation is ipso facto an empirical verification of the identity hypothesis. It might of course, be argued that the only reason for preferring a single substance, stuff or process theory in such a case to a two substance, stuff or process theory is Ockham's principle of parsimony and that any evidence which supports a single substance, stuff or process theory would equally well support a theory which assumed two separate substances or stuffs at the macroscopic and microscopic levels. However it is important to notice (1) that in the case of the dispositional property where we accept the micro and macro descriptions refer to two different things, there is still only one thing, the categorical state of the internal microstructure, whose actual existence is asserted at the time to which reference is made, whereas a two process micro-reductive theory would involve postulating the occurrence of two separate processes in approximately the same place at exactly the same time and (2) that an explanation involving two processes rather than one, necessarily has much more to explain than a single process theory and must necessarily be very much more complex, since it would need to explain the simultaneous occurrence at approximately the same place of two processes one of which has no properties which the other does not have where a single process would apparently have served equally well. In such a case we are much more likely to find ourselves choosing between two theories one of which (the single process theory) explains all the relevant facts, while the other (the two process theory) leaves an important issue (why two processes when one would serve?) wholly unexplained, than we are to find ourselves in the situation envisaged by Ockham's principle where we choose the simpler of two theories both of which explain all the relevant facts equally well.

The explanation of common observations as a criterion of identity

These then, are the considerations I would now wish to put forward for regarding the possibility of providing a micro-reductive explanation of the occurrence of a process of the kind referred to in the macro-description as the most important presumptive criterion of the contingent identity of the referents of the two descriptions. This account differs in one important respect from the account of the presumptive logical criteria for the identity of what is observed under two different conditions which I put forward in my 1956 paper (6b) and which I reiterated in 1960 (6c) and again in 1969 (6e). In the 1956 paper I suggested that "we treat the two sets of observations as observations of the same event in those cases where the technical scientific observations set in the context of the appropriate body of scientific theory provide an immediate explanation of the observations made by the man in the street". (6b, p. 48).

In other words, as I put it in 1960, "the process or event observed in or inferred from the second set of observations should provide us with an explanation, not of the process or event observed in the first set of observations, but of the very fact that such observations are made". (6c pp. 101-2). This criterion which was derived originally by induction from the example of lightening and the electric discharge through the atmosphere in which it is said to consist, I would now wish to withdraw favour of the more general criterion that a micro-description has the same referent as a macro-description if all the properties of something which are observable at the macroscopic level are (a) completely explicable in terms of the micro-description and (b) are assumed by the micro-reductive theory to belong to the same entity as that to which the properties observed at macroscopic level belong. Clearly if the micro-description is to explain all the properties observed at the macroscopic level one of those macro properties which will require explanation in terms of the micro-description will be the fact that certain kinds of observation are made at the macroscopic level. On the other hand, the observation which I made in my 1956 paper that in such cases the micro-reductive theory explains the fact that certain observations are made at the macroscopic level instead of explaining the occurrence of a separate process which is available for observation at the macroscopic level is merely a reflection of the fact that the micro-reductive theory in such case already assumes that there is only one actual process involved here rather than two separate processes corresponding to the two different sets of observations. In other words the process or other entity which is observed at the macroscopic level has already been characterised in the micro-description and does not need to be mentioned again in explaining how it comes to be observed macroscopically.

Nevertheless, though I now prefer the more general criterion to the more specific criterion for which I have argued previously, the more specific criterion has the important virtue, to which I drew attention in my 1969 paper of focussing attention on the problem of accounting for the fact that we make the kind of observations which we do make at the macroscopic level in developing a micro-reductive explanation of the phenomena in question. As I put it in the 1969 paper (6e) "what we need to do in order to discover a brain process, of which we could properly and legitimately say that it is the very same thing as the conscious experience reported by the subject, is to find a process in the brain whose general functional characteristics and particular condition at any moment of time are such as to explain (a) the fact that human beings are apparently able to give first hand descriptions of a process occurring within themselves which plays an important part in the control of their behaviour and (b) the character of these experiences at any one time as described by the subject. In other words if it is possible to explain the phenomenon of introspection and the character of individual introspective reports in terms of the functional characteristics of a process in the brain without having to introduce into the explanation a separate process (the experience) which is produced by the brain process and reported by the subject, we shall then be justified in saying that the brain process and the conscious experience and one and the same thing". (6e, p. 288).

The restriction of the mind-brain identity theory to experiences and mental processes

Before going on to consider the kind of brain process whose functional characteristics would serve to explain both the phenomenon of introspection and the properties of experience as reported by the introspecting subject, something needs to be said about the reasons for confining the application of the mind-brain identity theory to one aspect of mental life, namely mental processes, experiences or sensations and excluding other aspects such as mental states and mental dispositions. As we saw initially in [Lecture 21](#), Feigl (3), Smart (8a)

and myself (6b) were all originally agreed in restricting the application of the identity theory in this way. There were however, certain differences between us both with respect to the precise range of mental phenomena to which the thesis was intended to apply and with respect to the reason given for making this restriction. Smart who confined his discussion solely to sensations or sensory experiences gave no reasons for restricting the application of the identity thesis in this way. I described the historical background to this restriction as far as Smart and myself were concerned in a paper published in 1967 as follows:

At the time when this thesis was being hammered into shape at the University of Adelaide, both Smart and myself were strongly influenced by Ryle and The Concept of Mind (7). Both of us, though for slightly different reasons, wanted to get rid of the notion of extra-physical mental states and processes.

We both thought that Ryle's dispositional theory had effectively and permanently knocked the ghost out of such concepts as 'intelligence', 'knowledge', 'comprehension', 'memory', 'belief' and 'motives'; but we were worried about the apparently irreducibly subjective character of another group of concepts clustering around the notions of 'sensations', 'dreams' and 'mental images'. We were aware of Wittgenstein's (10) attempt to reduce pain to pain behaviour but were unconvinced by it, although Smart's adoption of the identity thesis was delayed by a feeling that it might somehow prove possible to develop a more defensible version of the Wittgensteinian view. (6d p. 58).

For Smart then, the only reason for restricting the application of the identity theory to sensations and other similar experiences was simply that it was only in this case that something was needed to demystify those mental concepts which Ryle and Wittgenstein had apparently failed to demystify. Consequently when this restriction was subsequently challenged by Armstrong (1) who rejected Ryle's hypothetical analysis of dispositions on grounds similar to those of Geach (4a) and wanted to extend the identity theory to cover mental states as well as mental processes, Smart found no difficulty in agreeing with him (8b, p. 88).

Feigl, as we saw in Lecture 21 drew a distinction between "the events and processes of direct experience (i.e. the raw feels)" and "the 'intentional acts' of perception, introspective awareness, expectation, thought, belief, doubt, desire, volition, resolution, etc", and restricted the application of the identity theory to the former, giving as his reason for excluding the intentional aspects of mental life the argument that

Since intentionality as such is to be analysed ... in terms of pure semantics (and thus falls under the category of the logical rather than the psychological), it would be a category mistake of the most glaring sort to attempt a neurophysiological identification of this aspect of mind (3, p. 445).

Nevertheless, although he does not specifically make the point, the fact that he uses the expression "the raw feels of experience" strongly suggests that Feigl was also impressed, as Smart and I were, by the fact that the concept of private experience always seems to remain as an irreducible residue when the attempt is made to analyse mental concepts in terms of publicly observable behaviour.

The expression 'the raw feels of experience' was originally coined by the psychologist E. C. Tolman in his book Purposive Behavior in Animals and Men (9). In this book which was published in 1932, Tolman set out to redefine the so-called mental concepts employed in our everyday descriptions and explanations of behaviour in terms of different aspects of the publicly observable behaviour of a rat running a maze. Tolman did not claim, as Ryle was later to do, that in giving this behaviourist analysis of these mental concepts, he was explaining how they are ordinarily used by the man in the street, but he certainly thought that his recommended behaviourist definitions corresponded sufficiently closely to ordinary usage to justify the retention of the same words in his theoretical system. He also maintained that the system of concepts so derived enabled him to describe all the important facts of human and animal psychology with one notable exception. Having given an account of consciousness in the rat in terms of the behaviour of 'running-back-and-forth' at a choice point in a maze he says:

But the 'mentalists' will still protest. "The above" he will say, "is all beside the point. Consciousness and ideation may perhaps have as their cash value that which is accomplished by running-back-and-forth or an adjustment to running back-and-forth. But consciousness per se is not a behavior or the function performed by a behavior. It is a unique inner stuff. It is a unique 'raw feel'."

"Very good" we reply "but then, by definition, consciousness is not something with which we, as scientists need be concerned. 'Raw feels', are by the very definition outside the purview of our science" (9, pp. 214-5)

My own view on this matter was stated in the opening paragraph of my 1956 paper as follows:

In the case of cognitive concepts like 'knowing', 'believing', 'understanding', 'remembering' and volitional concepts like 'wanting' and 'intending', there can be little doubt I think, that an analysis in terms of dispositions to behave (10 and 7) is fundamentally sound. On the other hand, there would seem to be an intractable residue of concepts clustering around the notions of consciousness, experience, sensation and mental imagery, where some sort of inner process story is unavoidable (6a). It is possible of course, that a satisfactory behaviouristic account of this conceptual residuum will ultimately be found. For our present purposes however, I shall assume that this cannot be done and that statements about pains and twinges, about how things look, sound and feel, about things dreamed of or pictured in the mind's eye, are statements referring to events and processes which are in some sense internal to the individual of whom they are predicated. (6b p. 44)

What is not made clear in this passage however, is that among the mental concepts involving a reference to the occurrence of an inner process in my view are mental activity verbs like 'attending', 'concentrating', 'watching', 'looking', 'listening' and 'pondering' which I had discussed in my 1954 paper 'The concept of heed' (6a). In other words there was implicit in the thesis for which I was arguing in 1956, the notion that the distinction between those concepts which refer to something inside the person which will probably turn out to be something in his brain and those which are susceptible to analysis in terms of the disposition to behave in some publicly observable way, corresponds to the categorical distinction between mental processes, on the one hand and mental states, on the other, which we discussed in [Lectures 17](#) and [18](#). One reason I did not make this explicit at the time was that I had not yet worked out the view of mental acts and mental events which I presented in [Lecture 20](#). For many years I have been in a state of confusion about mental acts and events; sometimes wanting to identify mental events with brain events, as I wanted to identify mental processes with brain processes; at other times assimilating them to the mental states of knowing, believing or intending which they inaugurate, thus giving them an analysis in terms of capacities or propensities to behave in some publicly observable way. "But" as I remarked in a recent paper (6f p. 422)

if as I have argued, a mental act is the 'interface' between an antecedent mental process and a consequent and subsequent mental state, it would seem to follow that no separate account of the mental/physical relationship is needed in the case of mental acts. In so far as it involves an antecedent mental process, a mental act is a conceptually irreducible private occurrence which in all probability is as a matter of contingent fact, a process in the brain; in so far as it involves a consequent and subsequent mental state it is conceptually reducible to the disposition to behave in a variety of publicly observable ways".

The exclusion of intentionality

The extension of the scope of the identity theory to embrace all mental processes and the mental process component of mental acts and events involves what appears to be a disagreement between my position on this matter and that adopted by Feigl when he excludes from the scope of the identity theory the intentional aspects of mental life. As we saw in [Lecture 8](#), there are some mental process concepts such as 'looking at', 'listening to' and 'having a sensation' which come out as non-intentional by Geach's (4b) criterion of taking a Shakespearian object: if I look at a picture which happens to be a Van Gogh, I look at a Van Gogh whether I know it or not; if I listen to music that happens to be a Beethoven symphony, I listen to a Beethoven symphony whether I know it or not; if I have pain caused by a thorn in my foot, I feel the effect of a thorn in my foot whether I know it or not. But equally there are other mental process concepts, like looking for or thinking about something which are intentional by Geach's criterion in that their objects are not Shakespearian: if I look for my pen and my pen is on the mantelpiece, it does not follow that I am looking for something on the mantelpiece; if I think about my brother and my brother happens to be in Mexico, it does not follow that I am thinking about a man in Mexico. It would seem therefore, that whereas

on my view, both looking at something and looking for something are brain processes, Feigl would have to say that while looking at something was a brain process, looking for something was not.

However this difference between Feigl and myself is readily resolved once we appreciate the logical complexity of these intentional mental process concepts like 'looking for' or 'thinking about something'. I argued in [Lecture 12](#) that those mental act and mental activity verbs which take intentional (non-Shakespearian) objects do so because and in so far as they entail some kind of subsequent or concurrent mental state of knowing, believing, understanding, wanting or intending something. From this it follows that it is the entailed mental state rather than the mental occurrence as such, which gives such mental act or activity verbs their intentional character. Thus the difference between looking for something and merely looking systematically around at the various features of one's environment does not lie in any difference in what the individual actually does; the difference lies solely in the purpose or intention behind his looking, what it is that he wants or hopes to achieve thereby. It is only what is common to looking at and looking for, not what differentiates the one from the other that is a mental activity; and it is only this non-intentional aspect of the activity which in so far as it does not consist in publicly observable eye movements and the manipulation of objects in order to expose what is not otherwise visible, consists in my view, in some process in the brain.

Like Feigl, though not for the reasons that he gives which I do not understand, I regard the intentional aspects of those mental activities and processes which have an intentional aspect as falling outside the scope of the mind-brain identity theory. For Feigl this is because the intentional belongs to the category of the logical rather than the psychological; for me it is because the intentional aspects of mental activity belong to the dispositional state which governs the activity rather than to the activity itself and because the dispositional states are in a different existential category from activities and processes, one which does not permit the identification of the state with its micro-reductive explanation.

The Inclusion of mental activities

The inclusion of the non-intentional and non-publicly observable aspects of mental activities within the scope of the identity theory implies that the private experiences which are witnessed by their owners and susceptible to introspective observation are not the only kind of mental process to which we refer in ordinary discourse which is held, on the version of the identity theory to which I subscribe to be some, as yet undiscovered process in the brain. There are also the processes or activities of concentrating or attending and visualizing or picturing something in the mind's eye, in the mind's ear or in the mind's nose whereby, as we saw in [Lecture 18](#), the individual is able to exercise control over or in the case of visual imagery, actually produce *de novo* from within himself the experiences he has. As I remarked in [Lecture 18](#), all the subject witnesses or observes about these mental activities is their effect on the experiences that he has. How he manages to bring these effects about, when he does so without adjusting his receptors and without stimulating them by means of his own movements, is something about which our experience tells us nothing. In this respect mental activity resembles the mental events constituted by the onset of a mental state such as a particular interpretation of a current experience, a belief or an intention which likewise leave no observable mark of their occurrence within experience and are known to have occurred by their owner only by their effects on what he is subsequently inclined to say, do and think. Nevertheless, in so far as such things happen and in so far as their occurrence is mentioned in our ordinary talk about mental life, they are occurrences which on my version of the identity theory, resemble experiences in that they actually are processes and events in the brain. On the other hand the mental states which result from these mental acts and events, although they undoubtedly depend upon some categorical state of the brain as a functional system, cannot in my view, be identified with this as a categorical state of the brain.

Central State Materialism (Armstrong)

In his book [A Materialist Theory of the Mind](#) published in 1968, David Armstrong criticised this restriction of the identity theory to experiences and other mental processes and the exclusion of mental states and the intentional aspects of mental life. His reason for rejecting this restriction and for defending the doctrine which he calls 'central state materialism' according to which all mental processes, events and

states without exception are processes, events, or states of the brain, is that he rejects Ryle's analysis of mental state concepts in terms of dispositions to behave in a publicly observable way.

Although he does not refer to Geach's (4a) argument in [Mental Acts](#) which we discussed in [Lecture 6-1](#), Armstrong's criticism of Ryle's behavioural analysis of mental state concepts is formally identical with Geach's argument. In other words, like Geach, what he is rejecting is not so much the thesis that 'knowing', 'believing', 'wanting', 'intending' etc. are dispositional concepts nor yet the thesis that they refer to dispositions to behave in a variety of publicly observable ways. Indeed Armstrong's own definition of a mental state as "a state of the person apt for bringing about a certain sort of behaviour" (1, p. 82) makes it clear that he fully accepts Ryle's account in this respect. What Armstrong is rejecting is what Geach rejects, namely, Ryle's account of dispositional concepts in general according to which to say that something has a given dispositional property, whether it be that it is brittle, that he believes something, that it is magnetic or that he intends to do something, is not to say anything categorical about what it or he is currently doing or about any currently existing state of affairs, but only something hypothetical about how it or he would behave if certain contingencies were to arise. According to both Geach and Armstrong when we predicate a dispositional property of someone or something we are categorically asserting the existence of a state of its internal microstructure on the existence of which the truth of the hypothetical statement about how it would behave under the relevant circumstances depends. The only significant difference here between Geach's position and that of Armstrong is that whereas Geach presumably regards the internal categorical state of the person on which the truth of the hypothetical depends as some kind of extra physical mental state, Armstrong takes to its logical conclusion the analogy with the molecular structure of the iron bar which explains why it attracts other iron objects to it and identifies the internal categorical state, which explains why someone is able to answer questions correctly when required to do so, with some as yet unknown state of the microstructure of his brain.

Since I have given my reasons for rejecting Geach's arguments in [Lecture 6-1](#) and since Armstrong's argument does not differ significantly from that of Geach, there is no need to give a detailed exposition of my reasons for rejecting those arguments. Briefly stated, my first argument was that in the paradigm cases like brittleness, being magnetised and having a certain horsepower we have no temptation to say that the disposition and the categorical state of the internal microstructure of the substance in question on which it depends are one and the same thing. The second argument was that dispositional concepts have an explanatory function with respect to the particular facts which constitute instances or exercises of them which does not depend, as Geach implies that it does, on our knowledge of the internal microstructure of the object and the way this in its turn explains the phenomenon constituted by dispositional property itself.

There is however, a further difficulty for Ryle's hypothetical analysis of dispositional concepts which is raised by Armstrong's emphasis on the role of dispositions as causes of what happens when for example, the stone strikes the glass. You will remember that I defended the view that dispositional properties can quite properly be numbered amongst the causal factors or conditions contributing to the occurrence of an event in [Lecture 6-1](#) and again as applied to beliefs and wants in [Lecture 12](#). It may be argued however, that if to have a dispositional property is nothing more than what is expressed by a hypothetical statement about what would happen if certain contingencies were to arise, it is hardly the sort of thing which can plausibly be said to enter into the causal determination of a concrete event. Moreover if, as I argued in [Lecture 6-1](#), to predicate a dispositional property of a particular substance is merely to state a universal law in which we quantify over instances and occasions involving the particular individual in question, but not over the members of any class to which the particular itself belongs, how does it come about that we are quite willing to treat dispositional properties as causal factors when we would never treat a universal causal law in which we quantify over individuals as well as over instances and occasions as a causal factor in the occurrence of events which fall under them? It would be very odd, for example, to talk of Ohm's Law as one of the causes of a flow of electric current through a conducting medium, while it is quite acceptable to talk of the resistance of the particular conductor as a causal factor in such a case.

This however, need not perhaps surprise us if we consider the account of what it means for

something to be a cause of an event which I gave in [Lecture 5](#). For if all we are saying when we say that A is a cause of B is that B would not have happened if A had not occurred or been the case, it is clear that while it makes sense to suppose that the laws which are peculiar to an individual might have been different from what they are and indeed that something might be done to change them, it makes no practical sense to consider the possibility that the laws which apply universally across individuals might be different from what they are or that steps might be taken to change them.

This however, draws our attention to a further difficulty in that if we now unpack what is meant by saying for example, that the brittleness of the glass was a cause of the glass shattering when the stone struck it in terms of these two analysis of dispositional properties and causation simultaneously, we end up with a complicated multiple contrary to fact conditional statement of the form: 'If it had not been the case that if the glass were struck by a hard object it would shatter, it would not have shattered when struck by the stone'. Contrary to fact conditionals are notoriously difficult to interpret satisfactorily from the logician's standpoint. This one I imagine, must be a logician's veritable nightmare. Nevertheless for good or ill that is the analysis to which I find myself committed

Other arguments against Armstrong's position which have been mentioned in passing in previous lectures are (a) that Armstrong's position commits him to holding that mental states have precise spatial location in the brain, whereas I am not committed to this ([Lecture 22](#)) and (b) that Armstrong's position leads him to ignore the important categorical distinctions which I drew in [Lectures 17, 18](#) and [19](#) between mental activities, experiences, mental acts, mental events, mental dispositions and states of mind and in particular to the important difference between the observational knowledge that we have of our own experiences and the non-observational intuitive knowledge that we have of our own mental dispositions.

Nevertheless it is important to notice that despite these important differences between us, the ontological commitments of Armstrong's theory coincide exactly with those of my own. For I do not wish to deny that there must exist some categorical state of the internal microstructure of the organism which explains the fact that it has those mental or behavioural dispositions which it does in fact have. Nor would I wish to deny that this categorical state of the internal microstructure must, on the empirical evidence, be some state of the brain. All that I am denying is that the mental disposition and the categorical state of the internal microstructure on which it depends are one and the same thing in the way that I do want to say that mental processes are one and the same thing as the corresponding brain processes, and that we are referring to this categorical state of the internal microstructure when we talk about what a man believes, wants and intends, as I would argue we do refer to what is going on inside us when we talk about our mental activities and experiences. The difference between us is not a matter of ontology, of what there is or is not in the world; it is simply a difference of view about the logical analysis of certain mental concepts. Nevertheless this difference about the analysis of mental concepts is not without its importance for our understanding of what there actually is in the world. For as I shall try to show in [the next lecture](#), the categorical distinctions within mental life which I drew in [Lectures 17-19](#), prove to be extremely useful and important in developing a theoretical account of how these different aspects of mental life may be supposed to fit together to form a coherent system for regulating and controlling behaviour.

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