



COLLECTED PAPERS ON BRAIN, MIND AND CONSCIOUSNESS

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DEDICATION

This collection of papers is dedicated to Professor J.J.C. Smart, Hughes Professor of Philosophy in the University of Adelaide, without whose help and encouragement most of them would never have been written and without whose constant advocacy such merit as they possess would never have been recognised.

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II. Papers on Brain, Mind and Consciousness in order of composition.

- 1952/3 1. 'The Concept of Heed', British Journal of Psychology, 1954, XLV, 243-255.
- 1954 2. 'Is Consciousness a Brain Process?', British Journal of Psychology, 1956, XLVII, 44-50.
- 1957/8 3. 'The phenomenological fallacy - a reply to J.R.Smythies' British Journal of Psychology, 1959, 50, 72-73.
- 1959 4. 'Materialism as a scientific hypothesis', Philosophical Review, 1960, LXIX, 101-104.
- 1959 5. 'Understanding the language of sensations', unpublished.
1965. 6. 'Psychological predicates III', in W.H.Capitan and D.D.Merrill, eds. Art, Mind and Religion, University of Pittsburgh Press, 1967, pp 55-68.
- 1965 7. 'Consciousness and Perception in Psychology II' Proceedings of the Aristotelian Society, Supplementary Volume XL, 1966, pp 101-124.
- 1969 8. 'Burt on Brain and Consciousness', accepted for publication in the Bulletin of the British Psychological Society, 16/6/69
- 1969 9. 'Sensations and processes - a reply to Munsat', accepted for publication in Mind, 26/5/69.

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INTRODUCTIONMind-Body Identity

The claim that the collection of papers here presented constitute a substantial and original contribution to a branch of letters namely, the philosophy of mind, rests primarily on the 2nd paper in the collection, a paper entitled "Is consciousness a brain process?" which was published in the British Journal Psychology in 1956. This paper together with a paper by Professor Herbert Feigl entitled "The 'mental' and the 'physical' " which appeared in 1958 in Volume II of the Minnesota Studies in the Philosophy of Science, and a paper by Professor J.J.C. Smart entitled 'Sensation and Brain Processes' published in Philosophical Review for 1959 are the three primary sources for what has since become known as the 'identity theory' of the mind-body relationship. Needless to say the view that mental processes, mental events or mental states are nothing more or less than physical processes, events or states of the brain has a long history prior to 1956. What is probably the earliest use of the term "identity theory" to describe this position is to be found in E.G. Boring's 'Physical Dimensions of Consciousness' published in 1933; but, under the name of Materialism (strictly speaking the view that there is only one kind of substance, namely matter or physical substance, in contrast to the Cartesian Dualism which recognises two kinds of substance one physical, the other mental, and Idealism which recognises only mental substance), it can be traced back at least as far as Hobbes, who maintains in the Leviathan that "sense", meaning by that what more recent philosophers have referred as "sensory experience" or "sensation", is a "motion" induced by "pressure" on the sense organs which is transmitted "by the mediation of nerves to the brain and heart". And of sensible qualities he says "Neither in us that are pressed, are they anything else, but

divers motions; (for motion,produceth nothing but motion)" (Hobbes 1651 Ch.1.)

Before the late 1950's,however, the claim of the identity theory to provide a satisfactory solution of the mind-body problem had not been taken very seriously by professional philosophers in view of what appeared to be insurmountable logical and epistemological objections. The importance of the 1956 paper was that it showed for the first time that the logical objections to the identification of the mental with the cerebral hold only for the view that statements about mental states, processes and events are equivalent in meaning to statements about brain states, processes and events. If what is claimed is that these statements, though different in meaning, both nevertheless refer, as a matter of empirical fact, to the same phenomenon, the thesis at once becomes very much more difficult, if not impossible to refute by logical argument alone. As Professor Brian Medlin (1969) has recently stated "it is manifest that the expressions 'mental state' and 'brain state' are not synonyms. It is precisely for this reason that the identity theory was not taken seriously before Place's insight of 1956".

Phenomenalism

While Medlin is undoubtedly right in claiming that it was only when the identity theory was presented "as a plausible empirical hypothesis" rather than as " a supposed logical truth" that the identity theory came to be recognised as a viable solution to the mind-body problem, it is important to recognise that this "insight" as he calls it, which, incidentally, came independently to Feigl at around the same time, was only made possible by virtue of the fact that the epistemological objections, which historically were a much more powerful bulwark against Materialism, had already been swept away in the revolution which overtook philosophical thinking in the English speaking world in the years immediately following the Second World War. I refer to the collapse of Phenomenalism

as an acceptable epistemological theory due to the recognition that the epistemological problem to which Phenomenalism is an answer is a pseudo-problem.

Phenomenalism, the thesis originally proposed by Berkeley (1710), according to which the material world is constructed by the mind out of sensory or perceptual experience, is a response to the sceptical doubts originally raised by Descartes (1637) about the existence of the material world. The conclusion that Descartes drew from his examination of those doubts, namely, that the existence of the material world can only be established by the somewhat devious argument that God would not deceive us into thinking that the material world existed, if it did not, provided him with his strongest argument for the dualism of mind and body. The weakness of this inference is in marked contrast to the certainty, that attaches to the existence of the individual's own thought processes by virtue of the apparent self-contradiction involved in denying their occurrence - Cogito ergo sum. Furthermore it was precisely because it failed to provide a convincing answer to the epistemological doubts that Descartes had raised with respect to the existence of the material world that the Materialism proposed by Hobbes failed to gain the support of any important philosophical writer for more than three hundred years after the death of Descartes.

It is difficult to be sure who should be given the credit for recognising that the Cartesian doubts about the existence of the material world are without serious intellectual foundation. In my own case the final emancipation from the shackles of Cartesian Scepticism and Phenomenalism came when I heard the late Professor J.L.Austin give his famous course of lectures entitled 'Sense and Sensibilia' at Oxford in 1948 (Austin 1962). I was already prepared, however, to accept Austin's refutation of Phenomenalism by the strongly anti-Cartesian tenor of Ryle's lectures in which he delivered the substance of what was to appear as The Concept of Mind in 1949.

Having been trained in philosophy at Oxford, however, I was only partially aware at that time of the undoubted influence on both Austin and Ryle of Ludwig Wittgenstein whose Philosophical Investigations did not appear in print until 1953. In the Investigations Wittgenstein does not discuss Phenomenalism explicitly by name, but he does discuss the notion of a private language composed of words which purport to refer to the individual's inner experience. There can be little doubt, I think, that when Wittgenstein (1953 pp88-100) criticises the notion of a private language and points out that such a language could not be taught to anyone else and could not therefore function as a means of interpersonal communication, the sort of language he has in mind is the 'Sense-datum language' proposed by latter day phenomenologists like Moore (1953), Russell (1914), Broad (1925), Price (1932) and Ayer (1940) whose theories require such a language to formulate the fundamental and incorrigible statements about an individual's sensory experience from which empirical statements about the material world can be inferred.

Wittgenstein's contention that a private language of this kind could not be understood by another person and could not therefore serve as a means of interpersonal communication, is based on a recognition that language, and hence the knowledge that is expressed in terms of it, is a social phenomenon which can subserve its communicatory function only in so far as there exists some kind of tacit agreement or convention between speakers as to the reference of its component words. The recognition of this fact has two important implications for epistemology and the philosophy of mind respectively. The important epistemological consequence is that the fundamental statements which provide the foundation of empirical and scientific knowledge cannot be statements in a sense-datum language referring to an individual's private experience, they must be statements in the ordinary language of interpersonal communication referring to features of their common environment which two or more speakers can simultaneously observe and accept as the referents of the form of words used to express the

statement in question. For the philosophy of mind the important consequence is that the only way in which an individual can make reference to his own inner experience in such a way as to be understood by another person is by identifying his experience as the sort of experience which characteristically occurs whenever something (specified) is the case in the common environment which he shares with other people. In other words we can only refer to private experiences by using a language whose primary function is to describe and refer to objects, events, states and processes in the material world. To propose, as the phenomenalist does, the derivation of statements about the material world from statements about sensory experience, is to put the Cart before the horse.

These, of course, are the consequences that I would draw from Wittgenstein's observations on the private language. They are not the consequences that Wittgenstein himself draws. Unfortunately, in my view, he draws the much more radical and controversial conclusion that no language that is capable of subserving the function of interpersonal communication, such as the natural language that we use in everyday life, can be used to refer to the private inner experiences of the speaker. There can, therefore, be no words in a natural language which refer to such experiences; and any words in such a language, such as those which are normally said to refer to bodily sensations, 'pain', 'itches', 'throbs', 'tingles', etc., which are commonly taken to refer to such experiences, must be construed in some other way. Nevertheless the negative implications of Wittgenstein's argument in so far as they bear on Phenomenalism and Cartesian Scepticism are plain enough, and they must have been appreciated by Wittgenstein and many of his pupils long before the text of the Investigations was assembled in 1945. Since I consider that this argument provides a more decisive refutation of Phenomenalism and Cartesian Scepticism than any other, and since the argument in the modified form in which I have stated it

bears close affinities with the argument I used (Place 1956,1959a) to refute a form of Phenomenalism prevalent amongst physiologists and psychologists which I referred to as "the phenomenological fallacy", I am inclined to give Wittgenstein the credit for this development.

Although I had read the Philosophical Investigations when I wrote my 1956 paper, my attention was focussed at that time on Wittgenstein's behaviourist theory of sensation which I explicitly rejected in formulating my version of the identity theory. I did not become aware of the affinity between Wittgenstein's private language argument and my own discussion of the phenomenological fallacy until 1959, when I attended a graduate class on the Investigations at Oxford under the auspices of Professor Ryle. This resulted in the hitherto unpublished paper entitled 'Understanding the language of Sensations', a revised version of which appears as the 5th article in this collection (Place 1959 b).

Nevertheless although I was not consciously aware of the influence of Wittgenstein when I compiled the 1956 paper, apart from that part of his teaching which I was explicitly rejecting, I have no doubt that my refutation of the phenomenological fallacy owes much to Wittgenstein indirectly through the influence of those of my teachers and colleagues who had been more directly and personally influenced by him. I am thinking here especially of B.A. Farrell who was my tutor in psychology during part of my undergraduate career at Oxford and who had a powerful influence on my thinking both in psychology and philosophy during this time, and of my former colleague at the University of Adelaide, Dr. now Professor C.B. Martin who although he had not known Wittgenstein personally, had taken his Doctorate at Cambridge at a time when Wittgenstein's influence was still very much alive and had made Wittgenstein's teaching very much a part of himself.

But if it is true that I was unconsciously influenced by Wittgenstein in my discussion of the phenomenological fallacy, it is likewise very probably true that Wittgenstein was unconsciously influenced in his turn by J.B. Watson the originator of Behaviourism in psychology. For it was Watson (1913) who first pointed out that the observations on which all genuine empirical sciences are based, are objective observations of publicly observable phenomena which can be checked by any number of independent observers. What Wittgenstein did in effect was to generalise Watson's principle of objectivity from the specific case of the fundamental observation statements of empirical science to any relation between a referring expression and its referent in any language that is capable of functioning as a medium of interpersonal communication. Nor does the analogy end there; for just as Watson was led by the principle of objectivity in scientific observation to the conclusion that objectively observable behaviour is the only proper subject of enquiry for a science of psychology, so Wittgenstein was led by the principle of objectivity in language in general to the conclusion that all mental concepts in ordinary language must be construed, in so far as they refer to the individual, as referring to his behaviour.

Behaviourism

Although Behaviourism is from one point of view an alternative and rival to the identity theory as a solution to the mind-body problem, it is doubtful if the identity thesis could have been formulated when and in the way that it was, had it not developed, as it clearly did in my own case, out of a strong bias in favour of the principal objective of Behaviourism, namely to describe mental phenomena without introducing the concept of a mind or soul considered as a supernatural entity capable of a separate existence apart from the body, combined with a recognition of the inadequacy of Behaviourism as applied to certain aspects of mental life. It was not, however,

the inadequacies of Watson's Behaviourism that led to the evolution of the identity theory. For although Watson himself sometimes speaks as if his view entails the non-existence of private inner experiences, his position is logically tenable only in the form which has since become known as Methodological (as opposed to Metaphysical) Behaviourism. Methodological Behaviourism is the point of view which is defended by Watson's namesake, A.J. Watson, in his contribution to a symposium entitled 'Consciousness and Perception in Psychology' held at the Joint Session of the Aristotelian Society and the Mind Association in 1966 to which the 7th paper in this collection was a reply. It holds that the existence or non-existence of conscious experience is not an issue that can be decided by a scientific psychology which can study only the publicly observable features of an individual's behaviour. The Methodological Behaviourist is not concerned to deny that human beings sometimes talk about events and processes taking place within themselves which are not available to public inspection. All he wants to maintain is that such events and processes are not a proper subject for scientific enquiry and can be safely left to the tender mercy of philosophers and other literati.

Behaviourism only became a viable solution to the mind-body problem as it presents itself to philosophers, when it became possible to argue that the mental concepts of ordinary language refer not to private experiences but to some aspect of the individual's behaviour. Although this suggestion seems to have originally come from Wittgenstein, it was Ryle (1949) who first carried out a systematic exposition of the mental concepts of ordinary language along behaviourist lines; and it was as a means of plugging what seemed to me a major weakness in Ryle's account of mental concepts, without making concessions to the Cartesian doctrine of "the ghost in the machine", that my own version of the identity theory was originally conceived.

Although Ryle's was the first systematic attempt to show that a behaviourist interpretation is the correct interpretation of the mental

concepts of ordinary language, he was not the first to show that a behaviourist interpretation of those concepts is logically possible. The credit for this must go to the American behaviourist psychologist E.C. Tolman who in his Purposive Behavior in Animals and Men, published in 1932, showed that it was possible to give definitions of most of the mental concepts of ordinary language in terms of different aspects of the objectively observable behaviour of the rat in the maze. Tolman did not claim, as Ryle did, that he was giving an account of these concepts as they are ordinarily used, 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 thought that the system of concepts so derived provided a tolerably complete description of human and animal behaviour and enabled him to say everything that can be said in terms of the mental concepts of ordinary language with only one notable omission. Armed with a set of concepts defined solely in terms of behaviour, he could not, he acknowledges give an account of conscious experiences or, "raw feels" as he calls them (Tolman 1932 pp 214-215). Tolman's influence on my own formulation of the identity theory was slight in comparison with that of Ryle. It did, however, play an important role in relation to Feigl's independent formulation of the identity thesis published in 1958. For just as I had seen my own version of the thesis as filling a gap in Ryle's behaviourist account of mental concepts, so Feigl presented his version as filling the corresponding gap in Tolman's. In my own case the term 'consciousness' which I wanted to identify with a process in the brain, was a generic term embracing those mental concepts, such as having a sensation or a mental image, looking, listening, paying attention, thinking without talking out loud or under one's breath and dreaming, where, so it seemed to me, neither Ryle's account in terms of behavioural dispositions nor Wittgenstein's account (elaborated subsequently by Malcolm (1959) in his theory dreaming) in terms of the avowal or expression of such tendencies

could be made to work. For Feigl it was Tolman's "raw feels" that were to be identified with states of the brain.

Central State Materialism

Needless to say, from its inception the mind-body identity thesis has generated controversy. Most of the controversy, however, has been controversy between its protagonists and those who have sought to show in one way or another that the thesis is false or logically untenable. Among those who have argued in its favour there has been remarkably little disagreement. Only on one issue have the supporters of the identity thesis become seriously divided. This issue concerns the nature of the two terms between which the identity relationship is supposed to hold. In my own version of the theory consciousness, in the sense outlined above, is identified with a brain process. In Feigl's version Tolman's "raw feels" are identified with brain states. In Smart's version sensations are identified with brain processes. In another version of the theory recently proposed by D.M. Armstrong (1968) mental states are identified with brain states. Of these different formulations the differences between Smart, Feigl and myself are in the main differences of terminology rather than of substance. In the late nineteen fifties when our original papers were published we were all agreed in restricting the application of the identity thesis to a limited range of concepts. We were also in substantial agreement in limiting the application of the identity theory to those mental concepts which do not readily lend themselves to a behaviourist interpretation and in accepting a behaviourist account as valid for the remainder. Furthermore although neither Feigl nor Smart specify very clearly the range of concepts over which the identity theory is intended to hold, there is an obvious conceptual connection between Tolman's "raw feels", as used by Feigl and terms like "consciousness" and "private experience" in the sense in which I used those terms, while Smart's term "sensations" focuses attention quite explicitly on one of the group of concepts which, as I made clear in the 1956 paper, my term "consciousness" was intended to embrace.

Armstrong's position on the other hand, represents a significant break, with the identity theory as it was originally formulated, in that he wants to extend the application of the mind-body identity relationship to all mental concepts including concepts like 'knowing', 'believing', and 'wanting' where an analysis in terms of behavioural dispositions had earlier seemed impregnable. The motives behind the development of Armstrong's "Central State Materialism", as he calls it, are not hard to divine. One of the principal attractions of the identity thesis is the simple and direct way in which it cuts through the tangled web of sophistries which are required in order to give plausibility to the various alternatives from Berkeley's Idealism at the one extreme to Malcolm's Behaviourism as applied to dreaming at the other. But there is one point in the theory, in its original form, where it becomes necessary to draw fine distinctions, develop subtle and complicated arguments and use technical philosophical terminology rather than ordinary language, and this is at the point where it becomes necessary to define the line of conceptual demarcation between the concepts to which the identity theory is to be applied on the one hand and the concepts which are interpreted behaviourally on the other. It is one of the attractions of Armstrong's theory that it cuts this particular Gordian knot.

A second factor contributing to the extension of the identity theory to embrace mental states is that it provides or appears to provide an answer to certain objections that have been raised since the publication of my 1956 paper, notably by my colleague Professor Geach in his book Mental Acts published in 1957, to Ryle's interpretation of mental concepts in general and of knowledge and belief in particular in terms of a disposition to exhibit certain specifiable kinds of publicly observable behaviour. Geach's criticism of the dispositional theory of mental concepts is that it fails to account adequately for the use of these concepts in explaining the publicly observable behaviour of the individual. For if, as the dispositional theory holds, to say that someone is in a given mental

state is to make a hypothetical statement about how he would behave if certain contingencies were to arise, and to say nothing categorical about him, it would seem to be an unilluminating tautology to say that someone behaved in a certain way because he was in a given mental state, where to be disposed to behave in that way is part of what is meant by saying that he is in that mental state.

Although he does not acknowledge his indebtedness to Geach, Armstrong bases his Central State Materialism on an analysis of mental states which arises directly out of an argument (Armstrong 1968, pp.85-88) which looks remarkably like a paraphrase of Geach. He argues for what he calls a "realist" account of dispositions in contrast to what he describes as Ryle's "phenomenalist" account of dispositions in which the existence of dispositions said to consist solely in the truth of certain counterfactual conditional statements. A mental disposition in Armstrong's view is a solid categorical state of the individual which is responsible for the individual "manifesting certain behaviour in certain circumstances" (Armstrong 1968, p.86), or, to use the formula he recommends as a definition of mental states in general, "a state of the person apt for the bringing about of certain behaviour" (Armstrong 1968, p.82). As far as ordinary language is concerned nothing more can or need be said about such states, but just as a physicist would want to discover the physical basis of a dispositional property such as the brittleness of glass in terms of the molecular structure of the material, so the psychologist or neurophysiologist would quite justifiably want to discover the physical composition of a mental state which, we can be fairly certain on empirical grounds, is some state of the brain.

In spite of the arguments of Geach and Armstrong, I remain, as I was when I wrote the first paper in this collection (Place, 1954), a convinced believer in the behavioural disposition theory of mental states. The advantages of this theory over traditional inner process or inner state theories of mental states which are discussed in more detail below are not in my view outweighed by the objections that Geach

and Armstrong have brought against it. Nor, so it seems to me, does Armstrong's compromise conception of an inner state "apt for the production of behaviour" enable him to incorporate the principal virtue of the hypothetical contingency interpretation of mental dispositions, namely the account it gives of the truth conditions governing first person mental states assertions like 'I know that p.', 'I believe that p' and 'I want O'.

I do not of course, wish to deny that there are states of the brain which underly and which, if we knew more about them, would explain the existence and nature of mental states. What I do want to deny is Armstrong's thesis that the identity relationship, which I have suggested applies in the case of mental processes or consciousness and brain processes, also applies as between mental states and brain states. I first put forward the argument against the identification of brain states with mental states in the 6th paper in the present collection (Place 1967) which was my contribution to a symposium on "Psychological Predicates" at the Oberlin Colloquium in 1965. In this paper I suggested that mental states could be regarded as performance characteristics of the behaving organism, and, as such, could be compared to the horse power of a motor car. I pointed out that performance characteristics like horse power depend "on the physical dimensions and characteristics of the machine; but horse power is not the same thing as the constructional features on which it depends. Clearly if we apply this analogy to mental states, capacities and tendencies we do not want to say that they are the physical states of the brain microstructure. The most we could possibly want to claim is that they are characteristics of the individual as a functioning unit which he has by virtue of the current state of the microstructure of his brain.... "(Place 1967, p.60).

The contention that dispositional properties cannot be identified with the underlying physical structures on which they depend not only contradicts Armstrong's theory of the identity of mental states and brain states, it also makes Armstrong's

theory redundant by deflecting Geach's objection to Ryle's hypothetical analysis of dispositional concepts which Armstrong's theory is designed to meet. To illustrate this point let us consider the two examples of dispositional properties that Geach discusses, namely Ryle's case of the brittleness of the glass and his own case of the magnetized bit of iron. As Geach points out " a physicist would be merely impatient if someone said to him: 'Why look for, or postulate, any actual difference between a magnetized and an unmagnetized bit of iron? Why not say that if certain things are done to a bit of iron certain hypotheticals become true of it?' He would be still more impatient at being told that his enquiries were vitiated by the logical mistake of treating 'X is magnetized' as categorical, whereas it is really hypothetical or semi-hypothetical" (Geach 1957.p.6). What this argument shows is that from a scientific point of view it is not sufficient simply to assert the existence of a dispositional property and suppose that this assertion is in itself sufficient to explain the phenomenon. What it does not show, as Geach seems to think it does, is that it is a mistake to analyse dispositional properties in hypothetical terms. Any scientist worth his salt will always look for some categorical basis for any dispositional property; and if he looks for it, he usually finds it. But this does not show that the dispositional properties are really categorical. For the categorical basis of a dispositional property is not the same thing as the dispositional property which depends upon it and whose existence is explained by it. Thus the polarization of its constituent atoms explains why the iron becomes magnetized; but we would not ordinarily be inclined to say that the magnetic properties of a piece of iron are the same thing as the polarisation of its constituent atoms.

I fancy that the conclusion that I wish to draw from these considerations namely that mental states and dispositions are not to be identified with the brain states on which they depend, will not be readily acceptable to my fellow materialists. Armstrong, I imagine, would want to charge me with inconsistency. Now, he might argue, can I maintain that sensations and other mental processes not merely depend on, but actually are brain processes, while claiming that beliefs and other mental states depend on states of the brain, but are not the same thing as those brain states? My answer to this objection would be that there is a fundamental difference, which Armstrong largely ignores, between processes on the one hand and states on the other, and that this logical difference is such that the logical relationship between a process and its physical or physiological analysis is necessarily different from the logical relationship that holds between a state or dispositional property and the physical or physiological state on which it depends.

Another objection is one which Smart, I feel, might be tempted to raise against me. This is the objection that if I allow a causal relationship between two separate things in the case of a mental state and the underlying brain state. I am opening the door for someone to argue that mental states are metaphysical properties which exist independently of any publicly observable behaviour on the one hand and any potentially observable brain state on the other. The short answer to this objection is to point out that anyone who drew this conclusion from my view would also have to hold, if he were to be consistent, that things like the horse power of the car, the brittleness of the glass and the magnetic properties of the iron bar are metaphysical properties which exist independently both of the behaviour of the objects in question under certain specifiable contingencies on the one hand and their mechanical, atomic or molecular structure on the other. A longer answer is that since I follow Ryle in interpreting statements attributing a dispositional property to someone or something as hypothetical statements about how the object

or individual in question would behave if certain contingencies were to arise, to assert the existence of such a property does not involve any categorical assertion about what is actually the case at any given moment of time. Of course, as Geach points out, there is always a presumption that whenever such a hypothetical statement is demonstrably true there is always some underlying condition of the object or individual in question that accounts for it. But there is no need to invent a metaphysical property to fill this particular bill, since there is always some physical or physiological state which does the job very much better.

The weakness of Geach's discussion of dispositional concepts in Mental Acts, to my mind, is that it confuses explanations of phenomena with explanations that are given of individual facts. By a phenomenon here I refer to the sort of relationship between events that is expressed in an empirical generalisation and whose existence is verified by systematic and repeated observation or by some kind of test or experimental procedure. By a fact I refer to an individual event or occurrence which is observed on a particular occasion. Any fact in this sense is an instance of some phenomenon, and the observations that combine to establish the existence of a phenomenon are observations of individual facts. When we explain facts in this sense, we usually explain them by showing that they are instances of an empirical generalisation which describes a phenomenon of which the fact in question is an instance. Explanations of facts, in this sense, occur very frequently in ordinary non-technical discourse, and are of special importance in legal contexts, in clinical medicine and in technical enquiries into the causes of accidents and disasters. In pure science and in many fields of applied science, explanations of individual facts are conspicuous by their absence. Scientists, for the most part, are concerned with explaining phenomena. Considerable care and attention is devoted to precise observation of individual facts; but the object

of this is not to be able to explain those facts considered as isolated occurrences. Its purpose is to define as precisely as possible the phenomenon of which the facts in question are an instance. Only when the phenomenon has been precisely specified, does the question of a scientific explanation of the phenomenon arise.

Now a dispositional property in terms of this distinction is a phenomenon. It is an observed relationship between events or occurrences. It can, therefore, be used with perfect propriety to explain the individual facts that constitute instances of it. Thus we can explain the fact that the glass broke when the stone struck it by referring to the brittleness of glass; we can explain the fact that pins collected on the iron bar by the iron bar's being magnetised; we can, if we don't mind using archaic language, attribute the fact that the man went to sleep after smoking opium to the dormitive power of the drug; and we can attribute the speed with which the car climbed the hill to its large horsepower. By the same token we can explain Dr. Johnson's standing in the rain in Uttoxeter market place (Geach 1957 p.8) by his wish to do penance. What we cannot do is to explain a phenomenon by an empirical generalisation which simply describes the phenomenon itself in other words. That is what is wrong in Geach's (1957.p.5) example where the dormitive power of opium is used to explain the fact that it puts people to sleep. This example does not show, as Geach seems to think, that dispositional concepts like 'dormitive power' have no explanatory use. It only shows that a dispositional property cannot be used to explain itself.

At this point in his argument Geach creates further confusion by comparing this case where a dispositional property is explained by itself under another description with the case where the physicist is faced with the problem of explaining the phenomenon of magnetism. Here we are dealing not with the use of dispositional properties to explain other things, but with the scientific explanation of the dispositional property itself. In the example he chooses it is true that the scientific explanation of the dispositional property involves the postulation or discovery of some underlying categorical state of the

object that has the property. But this does not show what he seems to think it shows, namely that the explanatory utility of concepts like 'brittleness' and 'Being magnetised' derives from this underlying categorical state. For the underlying categorical state, the molecular structure of the glass or the atomic structure of the iron bar, does not explain the same thing that dispositional properties themselves explain. Dispositional properties like brittleness and being magnetised explain individual facts like the glass shattering and the pins collecting on the bar. The molecular structure of the glass and the atomic structure of the iron explain the brittleness and the magnetic properties.

I conclude, therefore, that Geach has failed in his attempt to show that it would not be possible to account for the explanatory function of dispositional concepts, if it were, as Ryle (1949 p.43) has argued, simply a matter of "subsuming the thing under a law". But if Ryle is right about concepts like brittleness, then he is probably also right in applying this argument to mental states like knowing, believing and wanting. Certainly Geach's argument does not show that he is wrong. Furthermore if Geach's argument fails, there is nothing but the urge for simplicity and uniformity to support Armstrong's Central State Materialism in the face of the evidence I have presented which shows that dispositional properties are not ordinarily said to be identical with the underlying physical or physiological structure that accounts for their existence.

The Logical heterogeneity of mental concepts

If in the light of these consideration we decide to reject Armstrong's attempt to generalise the identity theory to cover all the various things to which the adjective 'mental' is applied, we are again faced with the difficult problem of drawing a firm logical distinction between those mental concepts to which the identity theory is to be applied and those where some kind of dispositional story is more appropriate. Needless to say the suggestion that such a distinction

can be drawn at all, implies that mental concepts are a logically heterogeneous group. It cannot not, I think, be seriously doubted that mental concepts as a group are logically heterogeneous; and the credit for recognising that, and in what respects they are logically heterogeneous must, I consider, be given to Professor Ryle in his epoch making survey of "the logical geography" of our ordinary mental concepts in The Concept of Mind.

What Ryle tries to do in The Concept of Mind is to show that what he calls the "official doctrine" consistently misclassifies and misrepresents the logic of all mental concepts. The official doctrine, as he describes it, (Ryle 1949 pp 11-15) holds that the mind consists of a continuous sequence of occurrences that take place in some, not very clearly defined, sense inside the individual whose mind it is. These internal mental episodes or occurrences can be inspected by their owner with the aid of a special power or faculty known as 'introspection', but are not accessible to observation or inspection by any one else. Ryle tries to show that this official theory completely misconstrues the logic of all mental concepts of ordinary language and attempts to replace it, wherever possible, with an account of in terms of some kind of disposition to behave in some publicly observable way. He is compelled to recognise, however, that the arguments he uses to show that the official doctrine is false and that the dispositional theory provides a more plausible account, apply with greater force to some mental concepts than they do to others. It is clear, for example, that although concepts like 'knowing', 'believing', 'wanting', and 'intending', do not refer to occurrences since they cannot be said to occur or to be occurring at a particular point in time, there are other mental concepts like 'observing', 'interpreting', 'noticing', 'realising', 'enjoying', and 'worrying' which do refer to occurrences. Similarly although there are some mental concepts like 'being vain', 'being intelligent', 'knowing', 'understanding', and 'remembering' where the decision as to whether or not they apply

does not rest with the individual concerned, there are other mental concepts, like 'believing', 'imagining', 'having a sensation', and 'dreaming' where the individual's ascription of the concept to himself cannot be challenged by another person without imputing the intention to deceive. Consequently in order to maintain his thesis that the official doctrine misconstrues, not just some, but all mental concepts, Ryle is compelled to distinguish different logical varieties amongst the group of mental concepts as a whole and to use different arguments in applying his general thesis to these different varieties of concept.

In the first paper in the present collection (Place 1954) I criticised the account that Ryle gives of the concept of paying heed or attention to something which is central to his account of consciousness and observation. I argued (1) that his objections to the official interpretation of attention and consciousness as an inner activity or process do not carry conviction, (2) that his attempt to provide an alternative dispositional theory of these concepts fails, and (3) that the official theory provides a much more satisfactory account in this case.

The conclusions which I drew from these considerations was that although Ryle's account in terms of dispositions to behave, or something like, it holds true for certain mental concepts there is, as I put it in a later paper, "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" (Place 1956 p.44). In other words the official doctrine, as Ryle calls it, is not wholly wrong. It is mistaken as applied to some mental concepts, but is substantially correct as applied to others. But, in arguing in favour of the traditional inner process story with respect to certain mental concepts, I did not want to return to Cartesian Dualism; and it was in order to avoid putting this group of concepts back beyond the reach of scientific theory

and empirical investigation that I made the original suggestion at the end of the 1954 paper that "the logical objections to the statement 'consciousness is a process in the brain' are no greater than the logical objections which might be raised to the statement 'lightning is a motion of electric charges'" (Place 1954 p.255).

The logical criteria which I used in "The Concept of Mind" to distinguish those mental concepts to which the "official" inner process doctrine and hence, also, the identity thesis could be applied from those for which I wanted to retain Ryle's dispositional analysis, were themselves derived from The Concept of Mind. These criteria are of two kinds. In the first place there is a set of distinctions based on what may be termed the temporal reference of the concept in question. This is the distinction which I drew rather more clearly in the 6th paper in the present collection (Place 1967) and again in the unpublished paper written earlier this year (1969b) entitled 'Sensations and Processes - a reply to Munsat' which appears in the 9th paper in the collection, between nouns referring to states, events and processes, with a parallel distinction in the case of verbs between dispositional verbs, act verbs and activity verbs. The second set of criteria are those relating to the truth conditions that apply to different mental concepts, particularly with respect to what Ryle has called the "Privileged Access" of the individual to his own mental condition.

Although the distinctions based on these sets of criteria partly cut across one another, it will be convenient for purposes of exposition to consider separately each of the categories distinguished according to temporal reference, states, processes and events, and deal with the distinctions based on the truth conditions that apply to each of these categories in turn.

Mental states

A state, as I use the term, is a condition or property of someone or something " that is the case for a specifiable period of time, but which cannot like an occurrence be said to occur at a specific point of time" (Place 1969 b'p.2). There are many varieties of mental states in this sense, but for our present purposes it will be convenient to consider only three of them represented by the verbs 'know', 'believe', and 'want'.

Mental states like knowing, believing and wanting differ from some, though by no means all states in the physical environment in that their presence in another individual cannot be determined simply by inspection. On the "official theory", as Ryle expounds it, this is explained on the assumption that cognitions and motives are hidden inside the individual and that, although they cannot be inspected by another person, they can be inspected by their owner, in the way that the occupier of a house can inspect the state of decoration and repair of its different rooms. However, as Ryle points out, this theory does not account for the way in which we in fact determine whether or not someone knows, believes or wants something. For if this theory were true, it ought to be the case that our only way of finding out what someone else knows, believes or wants is to ask him and unless we had reason to suppose that he was lying, we would not be in a position to dispute his statement that he knows, believes or wants what he says he knows, believes or wants. Now it is certainly true that asking him is normally the best way of finding out what someone knows, believes or wants; but in the case of knowing the individual's statement that he knows something carries no special authority, as it would do if the official theory were correct. In order to decide whether or not someone knows something we have to get him to display his knowledge either in what he says or, in the case of knowing how to do something, in what he does; but the decision as to whether what he says or does adds up to his knowing something, does not rest with him. This depends on whether or not his performance

satisfies or reaches a certain standard as assessed objectively by a competent observer.

However it is possible to defend the official theory from some of the impact of this argument by pointing out that the only thing that makes knowledge a matter of public determination is the implied claim that what is known is in fact correct. The individual may be wrong in claiming, as he does when he calls it knowledge, that what he believes to be the correct answer, is in fact correct; but he cannot be mistaken in making the more limited claim that he believes it to be correct.

Nevertheless although it is true that one cannot be mistaken in claiming to believe something, there is something decidedly odd about the suggestion that this is because the owner of a belief can somehow look inside and inspect it. An individual can be said to know what he believes, but this knowledge is not derived from observation. We cannot observe a belief in the way we can be said to observe a sensation. Nor are beliefs, unlike dreams, sensations and other kinds of experience, things we can be said to describe, or report. An individual can state or express his beliefs, but he does not describe or report them. Moreover when he does state his beliefs he is not talking about himself, unless he happens to be stating his beliefs about himself. If I say that the earth is round, I am stating my belief that the earth is round; but it would be very odd to say in such a case that in stating my belief I am making an introspective report. I am talking about the earth and not about myself; and it does not seem plausible to argue that I have switched from talking about the earth to talking about myself if, instead of saying 'the earth is round', I say 'I believe that the earth is round'. This point is discussed in greater detail in the paper entitled 'Consciousness and Perception in Psychology' which appears as the

7th paper in the present collection (Place 1966 pp 120-122).

In the case where an individual states or expresses what he wants, it is more natural to speak of his providing inside information about himself; but it still does not make sense to talk of his observing, describing or reporting on his desires. Furthermore whereas it does not make sense to talk of someone having beliefs he does not know about, it does make sense to talk of his having desires which he doesn't know about though he cannot, very well be mistaken in thinking that he has the desires he believes he has. These logical facts are perhaps not totally irreconcilable with the official doctrine as applied to our knowledge of wants, but they are not easily explained by it.

Ryle's dispositional theory is, by contrast, very much at home with mental states. The invisibility of mental states is explained on this view by the hypothetical nature of what is stated when a dispositional property is ascribed to someone or something. What we are saying when we ascribe a dispositional property like brittleness to something is not that it is in some condition that can be determined simply by inspection, nor that there is something happening to it now; what we are saying is that something would happen, if certain contingencies were to arise. In order to determine the truth of a hypothetical statement of this kind, we have either to wait until the relevant contingency arises, in the case of brittleness until a stone happens to strike the glass, or we have to perform an appropriate test in which we arrange for the contingency to occur ourselves, in the brittleness case by actually throwing the stone at the glass. When we ask someone whether they know something, what they believe, or what they want, we are, on the dispositional theory carrying out just such a test. The reason why the individual cannot be mistaken in asserting that he believes what he claims to believe, is that believing entails the disposition under appropriate circumstances circumstances to assert the proposition he is said to believe and to mean what he says. If therefore he states his belief, meaning what he says, he has exhibited the very behaviour in a disposition to perform

which his belief consists. If he does not mean what he says, we do not say he is mistaken in thinking that he believes what he says he believes; we say that he is pretending to believe what he does not in fact believe. On this view the statement 'I believe that p' is not an introspective report. It is a self-verifying statement. You cannot say 'I believe that p' without ipso facto asserting ~~that~~ p, and since to believe that p is on this view to be disposed to assert p and act accordingly, your saying 'I believe that p' shows that you have a tendency to assert p. It does not show that you have a tendency to act on p; but if you were not inclined to act on p, the assertion of p that is encapsulated in the statement 'I believe that p' would not be made in good faith. It would be a pretence, not an honest mistake.

A similar argument applies in the case of wanting something. To want something according to the dispositional theory, is to be disposed to act in appropriate circumstances in such a way as to bring about the object of one's desire. One way of bringing about the object of one's desire is to ask for it, and one way of asking for it is to say that one wants it. Consequently it is not possible to make the statement of the form 'I want O', meaning what one says, without ipso facto performing the kind of act that is calculated to bring O about. Here again the statement 'I want O' is self-verifying. There is however a difference here between 'believing' and 'wanting'. The statement 'I do not believe that p' is self-verifying since it involves the assertion of the proposition 'not p' which anyone who does not believe that p must be disposed to assert. A denial that one wants O on the other hand is not self-verifying since it does not follow from the fact that one is disinclined to act so as to bring O about by saying 'I want O', that one is not in fact inclined to act so as to bring O about in other ways. Hence the possibility of unconscious motives.

There cannot be much doubt, I think, that the dispositional theory provides a much more satisfactory account of the truth conditions of first person statements involving verbs like 'know' 'believe' and 'want' than does the amended form of the official doctrine which holds that they are internal states of the individual accessible to introspective scrutiny. If, therefore, I am right in thinking that Geach's (1957) objections are the only serious objections that have been raised against the dispositional theory of mental states, and if I am also right in thinking that the arguments presented above show that Geach's arguments do not prove what he thinks they prove, it seems safe to conclude that the dispositional theory provides a correct account of all mental states, which, on the analogy of the concept of horse power used above, are to be conceived as performance characteristics of the individual causally dependent upon, but not identical with the underlying state of the brain.

Mental Processes

The distinctive feature of a state is that it is not an occurrence, it cannot be said to occur or be occurring at a specific point in time; though, if like a mental state it is dispositional in character, it may involve a liability to produce occurrences of a certain kind from time to time. Occurrences are of two kinds, events which occur at specific points in time, but are not extended in time, and processes which are extended in time, but which, unlike states, can be said to be occurring at any point of time during their period of operation. Some mental occurrences are mental events, and some are mental processes. These categories deserve separate consideration, and I propose to consider mental processes first because it is here that the contrast with mental states is sharpest.

Mental process words are of two kinds. On the one hand we have a set of nouns and noun phrases like 'a sensation' and its subordinate concepts, 'pain', 'itch', 'twinge', 'throb', 'spots before the

eyes', 'singing in the ears' etc., nouns like 'feeling', 'experience', 'after-image', 'mental picture', 'train of thought', and 'dream'. On the other hand we have a set of verbs like 'look', 'watch', 'listen', 'pay attention', 'read', 'scrutinise', 'ponder', 'enjoy' and 'dream' which are activity verbs, the verbal counterparts of process nouns "where one can say of someone that he was doing something both at a particular point in time and for a period of time" (Place, 1969b.p.3). There are certain other mental verbs like 'feel', 'smell', 'taste' and 'observe' which can sometimes be used to refer to an activity or process that is extended over time and sometimes to a mental act or event that is not extended in time. There are also two adjectives 'aware' and 'conscious' which, when combined with the preposition 'of' and some non-factual object, refer to a process, but which in the expressions 'conscious' or 'aware that p' or 'of the fact that p' refer to a mental state. Finally the verb 'to think' and its noun 'thought' can be used either as an activity or process expression as in 'a train of thought', as an act or event expression as in 'the thought occurred to me', or as a mental state expression as in 'he thinks that p'.

On the official theory, as Ryle (1949 pp 11-15) caricatures it, all the contents of the mind are construed as mental processes, and it is one of the main criticisms of the theory that it fails to recognise that there are other modes or categories of mental life. It is not surprising therefore to find that it is in dealing with mental processes that the official theory is most at home, while the dispositional theory runs into serious difficulties. For not only are mental processes the sorts of things that the official theory expects to find in the mind, it is also very much easier to sustain the view that mental processes are processes hidden within the individual whose mental processes they are and available only to his introspective observation. There are, of course, certain aspects of mental activity which are not hidden within the individual. Looking and watching for example usually involve movements of the head and eyes so as to bring the object of observation into focus. Similarly feeling, in the activity sense of the term, usually involves a deliberate movement either of the fingers over the object of observation or of the object itself over some sensitive part of the skin

such as the cheek. Again, both reading and thinking in the activity sense of that term may involve utterances that are audible to others, though intended only for the benefit of the reader or thinker. But in no case are these objectively observable concomitants invariably associated with the mental activity in question, nor is their occurrence an infallible sign of mental activity. If we don't want someone to know he is being watched, we can watch him out of the corner of our eyes, that is without making the head and eye movements which we would normally make to bring him into focus. Moreover in performing this manoeuvre we allow our eyes to settle on something else that may not register at all and which we cannot, therefore, be said to be looking at or watching. Similarly we can be engrossed in a train of thought for a long period of time without showing any observable sign in our outward behaviour. We can also mutter without paying attention to what we are saying in which case our muttering is not part of our thought.

Two points emerge from a consideration of these examples. The first arises in those cases where the outward movements are absent and the mental activity continues. Here it is difficult to resist the conclusion that an internal process or activity takes over the function performed by the outward observable movements. In the case of watching out of the corner of one's eye, what seems to be required is a process like the central filter mechanism postulated by Broadbent (1958) to account for the selective registration of one out of two or more simultaneously presented auditory messages, which focusses, as it were, on part of the periphery of the visual field to the exclusion of the stimulation that is impinging on the fovea. In the case of thinking that occurs without visible or audible speech, it is very tempting to see in mental imagery, whether it be auditory imagery of words or visual imagery of things actually seen, a means whereby the individual can commune with himself without any overtly observable movement.

The second point emerges from the cases where the overt behaviour occurs without any corresponding registration of objects in the line of regard or of the words which the individual is apparently muttering to himself. In these cases although another person may have strong or even conclusive evidence that the stimuli in question were registering at the time from the way the individual adapts his behaviour to them or from his ability to recall them later, the registration itself is a process that can never be observed by another person.

As we have seen, the fact that the existence of mental states is not immediately detectable by another person is not an argument for the view that these states are internal to the individual concerned, since on the dispositional theory the existence of a mental state only becomes apparent if and when the potentiality in which it consists is actualised. The fact that no exercise of the disposition is observed over a particular stretch of time is no evidence for the non-existence of the state. The situation in the case of processes is very different. For a process is by definition something of which it makes sense to say that there is something going on throughout its period of operation, and this, as I pointed out in the 9th paper in the present collection, implies that "a process is something that is subject to continuous change or movement during the period of its operation" (Place 1969b p.6). Now since it is perfectly possible for someone who is completely immobile to be continuously, watching, listening, feeling pains, itches, throbs, and twinges, thinking, picturing things in his mind's eye or dreaming throughout this period of total immobility, it is clear that the continuous change or movement involved in these processes does not consist in such a case in any change or movement in his limbs or any externally observable part of his anatomy and must, therefore, consist in changes or movement inside him not detectable by gross observation from outside.

Furthermore the idiom of observation and description which, as we have seen, is inappropriate in giving an account of how an individual can tell what he knows, believes or wants, fits very much better in giving an account of how the individual comes to know and is able to tell others about his own mental processes. The relationship, however, is not a simple one. With one exception it makes sense to talk of someone observing and describing all the mental processes referred to by the group mental process nouns and noun phrases. Someone can be said to observe and describe, both at the time and subsequently, his sensations, his pains, his itches, his twinges, his throbbings, the spots he gets before his eyes, the singing in his ears, his feelings, his experience, his after images, his mental pictures and his train of thought. The one exception is his dreams which he cannot be said to observe or describe at the time when they are going on, though he can describe them after the event; but this is only because during sleep, when dreams occur, he is not in the frame of mind to scrutinise anything in the careful and attentive way implied by the word 'observation' or to tell any kind of coherent story.

In the case of a mental activity verb, on the other hand, it does not make sense to speak of someone either observing or describing the activity itself. An individual can observe and describe his sensations, but not his feeling or his having them. He can observe and describe the experience of looking at or listening to something, but not the looking or listening itself. He can describe the things he observes or pays attention to, but he cannot be said to observe or describe the attention he pays to them or his observation of them. He can observe and describe his mental images and other thought processes, and he can describe his dreams; but he cannot observe or describe his picturing or his thinking of them, nor can he describe his dreaming of his dreams. Not only is it unidiomatic to talk of someone observing his mental activities; it involves, as Ryle (1949 p.165)

has pointed out an infinite regress of higher order observations of lower order observations in accounting for the individual's ability to report his own mental activity.

At first sight the fact that it makes sense to talk of observing and describing in the case of mental process nouns, but not in the case of mental process verbs, appears to run counter to one of the basic principles on which the identity theory as applied to mental processes, has been based. This is the contention that in the case of mental process nouns like 'sensation', 'experience', 'mental image', and 'dream' there are not two things, the sensation and having or feeling it, the experience and the consciousness of it, the mental image and the picturing of it, the dream and the dreaming of it. In such cases the grammatical distinction between verb and object does not reflect a corresponding distinction in reality, as it does in the case where the grammatical object is something in the individual's physical or physiological environment. I made this point originally in 'The concept of heed' (Place 1954 pp 250 & 252), in arguing against Ryle's "mongrel categorical" theory of heed paying. It was taken up by Smart (1959 p.151) who made it a central point in his presentation of the identity thesis. He uses it to deflect the objection that sensations and after images have properties such as colour or spatial position that are inconsistent with their being brain processes. Smart argues that it is the having of the sensation or the image that is the brain process, not the sensation or image itself which does not exist as a separate entity apart from the having of it. No one would want to say that the having of a sensation in one's toe was in the toe, or that the having of a green after image was itself green. I used the argument in this way myself in the 6th paper of the present collection (Place 1967 p.67 footnote) and again in the 9th paper (Place 1969b p.9). The same point has been

made by Armstrong (1962) in connection with bodily sensations. Armstrong distinguishes what he calls "transitive sensations", by which he means what I would prefer to call 'intro-perceptions' like feeling one's heart beating, from "intransitive sensations" like feeling a throbbing. In feeling one's heart beating there are two things the heart beating and the feeling of it since the heart goes on beating when its owner is no longer feeling it. In feeling a throbbing, on the other hand, the throbbing exists only so long as it is felt. I find Armstrong's transitive-intransitive terminology a useful way of expressing this distinction; but I do not favour his use of the term 'sensation'. I would prefer to speak of transitive and intransitive consciousness or transitive and intransitive observation reserving the term 'sensation', as it is reserved, in my view, in ordinary language, as a name for one of the 'objects' of intransitive consciousness.

I find the distinction between transitive and intransitive observation or consciousness particularly valuable in making sense of the fact, already mentioned, that we can speak of observing and describing in connection with mental process nouns, but not in connection with mental process verbs or adjectives. The point here seems to be that mental process nouns are the grammatical objects of intransitive observation or consciousness. It would seem to be the case that all mental activity verbs either are or involve some kind of observation or consciousness. In the case of some forms of mental activity verbs like picturing and dreaming the consciousness involved is necessarily always intransitive. In other cases, like thinking, paying attention, observing, feeling and being conscious of, it can be either transitive or intransitive. Looking, watching, listening, smelling and tasting on the other hand are normally used only in cases of transitive consciousness.

Observing or being conscious of something whether transitively or intransitively entails being able to describe what one observes or is conscious of, both at the time and subsequently. Where the observation or consciousness is transitive what is described is some object or state of affairs in the physical or physiological environment of the individual. Where the observation or consciousness

is intransitive what is described is the mental process itself, which is describable, not because it has been observed, but because it is itself a form of observation or consciousness.

Normally intransitive consciousness is only mentioned and described in cases where no transitive consciousness is possible, cases like having a sensation in the ordinary sense of the term where it refers to an experience produced by sensory stimulation which does not lend itself to an interpretation in terms of something being the case in the environment, or like having a dream or mental image where there is no corresponding sensory stimulation as well as no corresponding state of the environment, or like an illusion where the interpretation suggested by the stimulus is known to be incorrect as description of the environmental state of affairs. It is to this kind of intransitive observation that the term 'introspection' properly applies. As I pointed out in my original exposition of the identity thesis (Place 1956 pp 49-50), descriptions of intransitive consciousness (introspective reports) always take the form of a comparison between the intransitive consciousness that is being described and some form of transitive consciousness which it resembles. This observation for which I am partly indebted to a discussion of what he calls 'low claim assertions' by a former colleague in the Philosophy Department of the University of Adelaide, Dr. C. B. Martin (1954), leads on directly to the theory of introspection and introspective reporting which I originally formulated in correspondence with Professor J.J.C. Smart and which he subsequently expounded with appropriate acknowledgements in his formulation of the identity thesis published in 1959. "Psychologically speaking", he says, "the change from talking about the environment to talking about one's state of consciousness is simply a matter of inhibiting descriptive reactions not justified by appearances alone, and of disinhibiting descriptive reactions which are normally inhibited because the individual has learned that they are unlikely to provide a reliable guide to the state of the environment in the prevailing circumstances" (Smart 1959 p.154). More recently in the 8th paper in this collection 'Burt on Brain and Consciousness', (Place 1969a). I elaborated

this theory as part of an attempt to construct a psychophysiological theory of consciousness which lends itself to empirical confirmation or disconfirmation rather more readily than the vague hypothesis that consciousness is some as yet unspecified process in the brain. In my view this theory of introspection provides a much more satisfactory answer than does the rival theory of an internal scanning process, proposed by Putnam (1960) and subsequently adopted by Armstrong (1968), to the problem which I stated in the 7th. paper in the present collection, as follows: "Most human beings believe they can report and describe things that go on inside them that others cannot observe. It may be that this is a false belief and that when they think they are reporting inner processes and events, they are doing something quite different. But if so, it is the responsibility of the psychologist, as a student of human behaviour, to show that human beings do not in fact have this capacity they think they have and explain how they come to believe that they have. If, on the other hand, human beings have this capacity, then it is equally the responsibility of the psychologist to explain how this comes about" (Place 1966 pp 103-4).

What are the implications of this theory of introspection as intransitive consciousness for the problem of the alleged incorrigibility of introspective reports? In order to answer this question it is necessary, I believe, to distinguish two senses in which a statement may be said to be incorrigible. A statement may be incorrigible in the way that I have suggested first person belief statements are incorrigible, because they are self-verifying. In this sense a statement of the form ' I believe that p ' may be false; but the speaker cannot be mistaken in uttering it, since it can only be false in a case where he is not honestly asserting p, as the form of words he uses implies that he is. Introspective reports understood as reports or descriptions of intransitive consciousness are not incorrigible in this sense, because unlike statements of belief they describe or report an occurrence that is

independent of the report or description that is given of it. They are, however, incorrigible in another sense, in that there is at present no way whereby an independent observer can check the accuracy of the report or description that is given by an individual of his sensations, images and dreams. In the absence of such an independent check on the accuracy of introspective reports, it is not possible to point to cases where the individual is clearly mistaken in the descriptions that he gives of his intransitive consciousness. But from what psychologists have discovered about the factors that influence the accuracy of first hand reports and descriptions in cases where the consciousness involved is transitive and the report or description can be compared with the object or occurrence which it reports or describes, there is no reason to suppose that factors such as expectations, attitudes and other preconceptions do not distort reports and descriptions of intransitive consciousness in much the same way that they are known to distort descriptions of the objects of transitive consciousness. Such distortions are particularly likely in cases like fleeting images and dreams, where there is necessarily an appreciable lapse of time between the occurrence of the mental process and the description or report that is given of it.

Although such theories are much less obviously applicable to mental processes than they are to mental states, there have been two attempts to give an account of mental process concepts in terms of behavioural dispositions. One is Ryle's (1949) attempt to explain mental activity verbs like 'thinking' and 'paying heed' or 'attention' as "mongrel categorical expressions". The other is Wittgenstein's (1953) theory that first person pain statements "replace crying" which has been adapted with remarkable ingenuity by Malcolm (1959) to the case of dreams and dreaming. I do not propose to examine either of these theories in detail here since criticisms of both of them, have been published elsewhere. The 1st paper in this collection,

'The Concept of Heed' published in 1954, contains what I would still regard as the decisive refutation of Ryle's mongrel categorical theory of attention and heed paying. The only point I would like to add to this discussion now is to point out that there is at least one mental activity verb namely 'enjoying' which is a genuine mongrel categorical in Ryle's sense. A mongrel categorical verb, as Ryle uses the term, is an activity verb in the sense defined above, but which is better construed as a kind of adverbial expression which derives its logical status as an activity verb from some other genuine activity which it qualifies. It is a way of performing some other kind of activity rather than a special kind of activity in itself. Moreover to perform an activity in a certain way in this context means performing it in a certain frame or state of mind. Thus enjoying something is not a matter of doing something else over and above the activity that the individual in question is enjoying. It is a matter of doing what one is enjoying doing in a certain frame of mind, namely, as Penelhum (1969) has suggested, in the frame of mind of wanting to continue doing whatever it is that one is enjoying doing. As I pointed out in 'The Concept of Heed' (Place 1954), this type of analysis fails in the case of concepts like 'looking', 'listening', and 'paying attention' because our own activities are not the only things to which we pay attention. In the case of enjoying, on the other hand, what we enjoy is always something that we are doing at the time. But, as Penelhum (1957) has again pointed out, there is only one kind of activity we can enjoy, namely some kind of mental activity such as looking, watching, listening, smelling, tasting, feeling, contemplating, thinking or dreaming. If, however, we are to give an account of enjoying as the performance of these mental activities in a certain frame of mind, we can hardly go on to argue, as Ryle wants to do, that they in their turn consist in the performance of some other activity in another frame of mind.

Ryle's mongrel categorical story is intended to give an account of what I have called transitive consciousness in which the individual pays attention to or is conscious of publicly observable phenomena in his environment, particularly the individual's transitive consciousness of his own behaviour. Since, however, paying heed or attention, on this interpretation, is simply a matter of carrying out some publicly observable performance in a certain way, Ryle assumes that the presence or absence of attentive performance is a matter of public observation and makes no serious attempt to explain the much more obvious privacy of intransitive consciousness involving sensations, mental images and dreams. It is here that Wittgenstein's (1953) discussion of pain and other sensation words and Malcolm's (1959) discussion of dreaming, fill a serious gap in the dispositional theory of mind as expounded by Ryle; although no attempt has yet been made to link these two approaches together into a consistent dispositional theory of consciousness as a whole.

The strength of Wittgenstein's theory lies not in the positive account that is given of sensations and dreams, as in its criticism of the alternative view which holds that sensations, images and dreams are private experiences known only to their owner. It is not difficult to pick holes in the thesis that first person pain-statements are not really statements at all, they are mere cries for help that "replace crying". Nor is it difficult to pick holes, as Ayer (1960) for example has done, in Malcolm's theory that dreaming consists in the disposition on waking to make false statements about what was happening during the period of sleep. It is much more difficult to show that Wittgenstein's private language argument (Wittgenstein 1953 pp 88 ff) does not prove what Kenny (1963) for example thinks it proves, namely that there cannot be such a thing as a private experience or private mental event. This is what I tried to do in the 5th paper in the present collection entitled 'Understanding the language of Sensations' written originally in 1959, but substantially rewritten for inclusion here.

If, as I think it does, this paper refutes Wittgenstein's criticism of the view that sensation words are the names of private experiences as decisively as 'The Concept of Need' (Place 1954) can be said to have refuted the mongrel categorical theory of consciousness, it is clear that there is no case for rejecting, and no effective alternative to the traditional inner process story as far as mental process concepts are concerned. But if we conclude that the only way to account for the fact that mental processes are not available to public inspection is to suppose that they are processes that take place inside their owner, it is difficult to see what meaning can be attached to the word 'inside' here, if it is not taken to indicate that the processes in question take place in a literal physical sense somewhere underneath the skin of the individual concerned. Moreover, since we know that there are processes occurring in the individual's brain whenever he is known to be engaged in any mental activity or undergoing any mental process, and that the functions of these brain processes are very closely related to, if not identical with, those we attribute to mental processes, it is reasonable to assume on the principle of Occam's razor that there is in fact only one set of processes here under two different descriptions.

This, of course, is the position which I took up when I argued that it is not possible on logical grounds alone to exclude an affirmative answer to the question 'Is Consciousness a Brain Process?' (Place 1956). When I proposed the identification of brain processes with consciousness, I was using the term 'consciousness' to embrace the group of concepts which I have here referred to as 'mental process concepts'. Consciousness in this sense was intended to apply only to those cases in which we speak of someone being conscious or aware of an object, whether it be a case of transitive consciousness involving some object or other sensible feature of the physical environment or a case of intransitive consciousness involving a grammatical object like a sensation, a mental image or a dream.

It was not intended to apply, to consciousness of facts, since expressions like 'being conscious' or 'aware that p' or 'being conscious' or 'aware of the fact that p' are mental state expressions, not mental process expressions. It was and still is my contention that consciousness of objects in this sense is a mental process and that there are no mental process concepts that do not refer to some kind of object-consciousness, either transitive or intransitive. As I pointed out in the 9th. paper in the present collection, "The mental phenomena which the term 'consciousness' was intended to embrace were those mental phenomena and only those which, in my view, could be properly described as processes. It was precisely for this reason that I proposed the identification of this group of phenomena with processes in the brain rather than with brain events, brain states or with performance characteristics of the cerebral machinery". (Place 1969b p.2).

Mental Events

Throughout the series of papers included in the present collection I have consistently maintained that mental processes are processes within the individual tentatively identifiable with processes in the brain. I have also consistently maintained that mental states are to be interpreted along the lines suggested by Ryle (1949) as dispositions to exhibit certain types of publicly observable behaviour and are not to be identified with the states of the brain on which they undoubtedly depend. In my treatment of mental events, on the other hand, I have repeatedly vacillated between treating them, or some of them, as introspectible inner occurrences like mental processes to which the identity thesis can be properly applied, and giving a dispositional account which would place them in the same basket as mental states.

This vacillation over mental events is well illustrated in the 1st. paper in the present collection, 'The concept of heed' (Place 1954) where on page 246 the mental event word 'recognising' is included along with a number of mental state words as an example of a concept where "to my way of thinking there can be little doubt that the dispositional account is substantially correct". On page 252, on the other hand, two mental event concepts 'realising that p' and 'calling to mind that p' are used in giving examples of cases where "it makes sense to ask the individual what it is like to watch, listen, observe or be conscious of something" in contrast to having "a certain capacity or tendency" where it does not make sense to talk in this way. In fact I based the latter argument on cases where it makes sense to talk of 'describing what it is like to', instead of just 'describing' in order to include mental events like realising and the occurrence of a thought to someone along with mental processes in the concept of consciousness.

In the 2nd. paper in this collection in which I developed the identity thesis (Place 1956) I confined its application strictly to the relationship between mental processes and brain processes. However in the 4th. paper in the present collection entitled "Materialism as a scientific hypothesis', (Place 1960), I accepted the possibility of an identity relationship holding between two independently observed events, although again I confined the application of the identity thesis as far as the mind-body relationship is concerned to the mental process/brain process relationship. In fact I have never deviated from my original view that the neurological side of the equation is to be represented by brain processes rather than brain states or brain events. On the other hand in the 7th. paper in the present collection I followed the usage of my fellow symposiast (Watson 1966) in accepting that the concept of consciousness implies that "human beings can report the occurrence inside themselves of events and processes which play an important part in determining their behaviour "(Place 1966 p.103).

I have been conscious for many years that my failure to provide a consistent account of mental events and their relationship to brain events has been a major weakness of the identity theory in the form in which I have expounded it. For although there is no inconsistency involved in holding, as I have done, that the identity theory applies to mental processes and not to mental states, while remaining agnostic with respect to its application to mental events, there is something decidedly unsatisfactory about a theory which gives two distinctly different accounts of two out of the three basic categories which mental concepts are divided without giving an account of the third major category, and without suggesting any unifying principle which might be supposed to link all three categories of mentality together, other than the rather superficial characteristic of immunity to immediate public inspection. It is this aspect of the identity thesis in the form in which I have expounded hitherto, which, as I see it, has led to Armstrong's (1968) dissatisfaction with the thesis in its original form and to his formulation of what I regard as the heretical doctrine of Central State Materialism.

The solution to this problem which I now favour is to recognise that mental events form a kind of bridge or link between mental processes on the one hand and mental states on the other, and that, in conformity with this intermediate status, the psychophysical relationship between mental events and brain events is to be construed as a kind of double aspect relationship intermediate between identity on the one hand and causal dependency of independent entities on the other.

As we have seen, events differ both from states and from processes in that they are not extended in time. On the other hand like processes and unlike states, they are occurrences. The essential feature that occurrences have in common which differentiates them from states is that they involve change. In the case of processes which are

extended over time the change is either progressive, as in the case of what I have called "productive processes" (Place 1969, p.7), or fluctuating. In the case of events the change is instantaneous. States, on the other hand, do not change as long as they are the case. When a state changes it ceases to be that state; another and different state has come into being.

The fact that events involve change whereas states necessarily remain the same, appears to provide strong support for the view that mental events are events occurring within the individual which are available to inspection only by their owner. For though we can often tell by the gleam that comes into someone's eyes that he has noticed, realised, recognised, grasped or inferred something, what we observe in such cases is a behavioural by-product of the mental event, not the event itself, which may occur without any outward observable sign. Yet the individual to whom a mental event occurs usually has no difficulty in reporting, not only what happened, but precisely when it happened. Changes of this kind clearly are not publicly observable changes in behaviour, and it is therefore, very tempting to conclude that they must be introspectible changes in the individual's inner life. The dispositional theory, which attributes the public invisibility of mental states to the hypothetical character of what is asserted when they are attributed to someone, seems much less plausible in accounting for the public invisibility of ^{the} precisely clockable change that constitutes a mental event.

There are other respects, however, in which mental events concepts are very much more like mental state concepts. The chief of them is the fact that, with the exception of 'deciding to do something' which sometimes entails intending to do it, all mental event concepts fall into the category of cognitive concepts in the sense that they entail either knowing something or believing something. Thus noticing entails knowing that there is something answering to the description in question in or on whatever the individual was

observing at the time. Realising entails knowing that what was realised was, is or will be the case. Recognising entails knowing that what one is observing is something that one has observed on a previous occasion. Grasping the point or the meaning of something entails knowing what the point is or what it means. Inferring entails believing that the conclusion in question follows from the premisses from which it has been derived. The occurrence of a thought entails at least a temporary inclination to believe it. In this respect mental event concepts are quite different from mental process concepts. For although 'looking', 'watching', 'listening', and 'observing' may be described as cognitive concepts in the sense that they all refer to ways of getting to know something, they are not cognitive concepts in the sense we are considering, since they do not entail any actual knowing or believing. One can look and fail to see, listen and fail to hear, pay attention and fail to notice, think and fail to reach a conclusion, ponder and fail to decide.

These examples serve not only to bring out the point that mental activity or process verbs do not entail mental state verbs, in contrast to mental act or event verbs which do. They also draw attention to the fact that mental event words usually, if not invariably, refer to the attainment of the goal towards which some kind of mental activity is directed, the goal of the mental activity being the attainment of a mental state which consists either in some kind of knowledge or some kind of belief or, as in the case of a decision, in an intention to do something. This, I take it, is the point that Ryle (1949 pp 149-153) is making when he draws attention to the distinction between "task " and "achievement" verbs and the relationship between them.

As I pointed out in the 9th. paper in the present collection "any process, like any state, entails at least two events, its beginning and its end " (Place 1969b, p.10). One might add that every event is both the end of one state or process and the beginning of another. In some cases, as when a billiard ball hits

the cushion, one process, movement towards the cushion, ends and another process, movement away from the cushion, begins. In other cases, as when the ball loses momentum and stops, a process gives way to a state. When the ball is struck by the cue or by another ball, the stationary state gives way to a process or movement; but in such cases attention is usually focussed on the process-process relationship between the movement of the cue and the movement of the ball when struck by it. Changes from one state to another without an intervening process, though logically possible, belong to the realm of magic and miracles rather than to reality as we know it in every day life. It is clear from this that events which end a process and begin a state are one of the two most common varieties of event, the kind of event, moreover, that is necessarily required to bring any purposive activity to its consummation. It is not surprising, therefore, to find that all mental events to which we commonly refer are of this type.

If the mental events to which we commonly refer are, as I have suggested, always transformations of mental processes into mental states, and if, as I have also argued, mental states are dispositions to behave, whereas mental processes are private occurrences within the individual, what are we to say about mental events? The answer that suggests itself is that mental events are a bit of both. In so far as they constitute the termination or consummation of a mental process, they involve private occurrences within the individual; in so far as they constitute the beginning of a mental state, they involve dispositions to behave in a publicly observable way.

The view that a mental event consists in the production of a mental state out of a pre-existing mental process, implies that the truth conditions governing statements asserting the occurrence of a mental event are a matter of some complexity.

To say that someone, saw, heard, realised, recognised, remembered, inferred or decided something, or that a particular thought occurred to him, implies on this view (1) that he was engaged in some kind of mental activity such as looking, listening, or thinking at the time. (2) that from the moment in question he was for a short time at least in some kind of mental state such as knowing, believing or intending to do something, which was not the case before the event occurred, (3) that the mental state in question came into being at some specifiable point in time, and (4) that the development of the mental state occurred as a result of the antecedent mental process. The truth conditions that apply are necessarily different for each of these separate assertions. Thus the first of them is a statement about the occurrence of a mental process and is therefore subject to the truth conditions governing such statements. Hence, if the argument presented above is correct, this part of what is involved in the ascription of a mental event refers to a private inner process of consciousness whose objects whether transitive or intransitive can be described by the individual in whom the process occurs, either at the time or in subsequent recall, but which cannot be inspected, as things stand, by anyone else. The second constituent assertion, on the other hand, ascribes a mental state to the individual. In this case, therefore, the truth conditions governing the ascription of mental states apply. On the view presented above this means that the existence of the state in question can be determined objectively by applying the appropriate test, which in the case of a belief is satisfied quite simply by the sincere assertion of the proposition believed by the individual in question.

In this connection, however, a problem arises in the case where a thought occurs to someone, which he does not adopt as a belief. The problem here is not that there is no dispositional mental state that comes into existence when the thought occurs, since it seems not unreasonable to argue that if the thought that p occurs to someone, he is at least temporarily inclined to believe that p and hence disposed

to assert p. The problem arises from the fact that in the case we are considering he may no longer be even inclined to believe p when he comes to report the occurrence of the thought that p. Consequently in reporting the occurrence of the thought that p he is not ipso facto asserting p, as he is when he expresses the belief that p. Hence the statement 'the thought occurred to me that p' is not self-verifying in the way that the statement 'I believe that p' is self-verifying. On the other hand it is logically on all fours with past tense first person belief statements of the form 'I used to believe that p', which are likewise non-self-verifying. However past tense first person belief statements do not have the characteristic of incorrigibility that applies to first person present tense belief statements. For it is perfectly possible for someone to make a mistake in reporting his past beliefs. It sometimes happens that a scholar makes a statement about the beliefs which he held at a certain stage of his career which can be refuted from a study of his published works written at the time. Similar mistakes can occur in reporting the thoughts that occur to the individual, though in this case they are less common or less commonly detected, partly because thought occurrences are usually reported very shortly after their occurrence when there is less likelihood of memory distortion, and partly because people are less inclined to commit themselves in speech, and still less in print, to evanescent thoughts which they do not incorporate in their system of beliefs. But unless he is heard to blurt out his unconsidered thoughts as they occur, it is clear that the individual is normally in a much better position than anyone else to know what thoughts occur to him. In some cases, where the individual exercises his tentative disposition to assert a given proposition by muttering a form of words under his breath that is audible only to himself or by imagining himself speaking, hearing or reading the words in question, he can quite properly be said to derive his information about his own thoughts from introspection. But in the case of the so-called 'imageless thoughts', which were the subject of a famous psychological controversy at the beginning of this century, where the individual is able to report the content of his thoughts, although no words or imagery occurred at the time, we cannot say that this information is

derived directly from introspection in the sense defined above, where it refers to a process of intransitive observation or consciousness. What presumably happens when an individual reports an imageless thought of this kind after the event, is that he rehearses from memory the sequence of objects of which he was both transitively and intransitively conscious until, by so doing, he reinstates his mental state at the time in question. He is then able to express in words the verbal disposition which was previously left unexpressed. In such cases the information provided may theoretically be mistaken since it is subject to the fallibility of memory; but as in the case of introspection proper it is incorrigible in that, as things stand, no one but the individual concerned is in a position to correct any mistakes he may make.

This explanation of the way in which the individual acquires the ability to report his imageless thoughts, also accounts for his ability to specify, as no one but he can do, precisely when it was that a given mental event occurred to him. For to locate an occurrence is essentially a matter of specifying its position in a temporal sequence of antecedent and subsequent occurrences, which is precisely the sort of information which a rehearsal of the kind envisaged above would give. It will be noticed that the temporal location of a mental event, like the mental process which gives rise to it and unlike many of the mental states that result from it, is something that is not subject to objective determination by an outside observer. Nor yet is it something that is directly ascertained by introspective observation. For although the individual may be said to observe both the antecedent mental process and any subsequent expression of the mental state that results from it, the mental event itself is not susceptible to observation or description. An outside observer can satisfy himself that someone has seen, heard, recognised, decided or inferred something from what he says or from the way he behaves, but he can seldom determine with any certainty how long this new found potentiality had existed before it was expressed in word or deed. As far as the timing of mental events is concerned the individual himself has privileged access to inside information not available to an outside observer.

Finally in the case of the causal relationship between the antecedent mental process and the subsequent mental state which is implied by the assertion that a given mental event has occurred, it is clear that on any view of the epistemology of causation, the individual in whom the mental event in question occurs is in a much better position to determine the existence of such a causal relationship than is an outside observer. For information about the occurrence of the antecedent mental process and about the time relationship between the mental process and the onset of the mental state, both of which are important in drawing conclusions of this kind, are, as we have seen, available to individual concerned in a way that they are not available to an external observer. However, as is shown by the phenomenon of beliefs demonstrably induced by verbal suggestions made by another person, which are nevertheless explained by the individual as resulting from his own sensory experience of the phenomenon in question, it is quite possible for the individual to be mistaken in asserting a causal relationship between a particular mental process and a subsequent mental state.

The final problem that demands our attention is the relationship between mental events and the brain events with which they are presumably correlated. We can find the answer to this question, I suggest, if we consider a mechanical analogy, like the analogy of horse power which I used in discussing the relationship between mental states in the 6th paper in the present collection (Place 1967). In the case of a mental event, the appropriate analogy, in my view, is the closing of a switch that puts the light on in a room. Here we have one process the moving of the switch which results in two states, the switch in the closed position and the light being on. Here the switch, when in the closed position, keeps the light on, and we have no temptation to say that the switch being in the closed position is the same thing as the light being on. But when we consider the event whereby the switch closes and the light goes on, although we should still want to say that the switch

closing and the light going on are to that extent two separate causally related things, we do not speak of two separate causally related events. There is only one event with two causally related parts or aspects, the closing of the switch and the light going on.

On this analogy, when someone notices, realises or decides something, there is presumably a change in the state of the brain which results in a change in the dispositional properties of the behaving organism. The state of the brain and the mental state are two separate causally related things, from which it follows that the mental event whereby these two states come into being has two causally related parts or aspects, a change in the state of the brain which produces the change in mental state. But these two changes do not constitute two separate events. There is only one event with these two aspects, one mental, the other neurological.

This dual aspect solution, by contrast, is not acceptable in the case of mental processes. For in cases like lightning and the electric discharge through the atmosphere which I used in the 1956 paper, where the occurrence of a process is conceptualised and observed in two different ways, we do not say that the electric discharge causes the lightning or that the electric discharge and the lightning are two separate parts or aspects of a single process. The electric discharge and the lightning are one and the same process. If, therefore, as I have argued since 1954, this is the correct analogy to apply in the case of mental processes and brain processes, the relationship of mental processes to the associated brain processes must likewise be one of identity and not a dual aspect relationship.

To conclude; the general theory of the mind-body relationship which I now maintain is a tripartite theory. The relationship that applies between brain and mind is held to depend on whether we are dealing with mental states, mental events or mental processes. In the case of mental states I hold a dualist view in which there is a

unidirectional causal action of brain states on mental states. This is not, however, an epiphenomenalist view since I also hold that mental states in their turn determine behaviour. In the case of mental events I hold a double aspect view in which again the brain aspect acts unidirectionally on the mental aspect; while in the case of mental processes I hold, as I have always done, that the relationship is one of identity. However, since in spite of Geach's (1957) arguments I still maintain a behavioural disposition theory of mental states and the mental aspects of mental events, reserving categorical status for the independent brain states on which they depend, in conceding dualism to be true of mental states and the double aspect theory to be true of mental events, I am not making any concession to the traditional view of the mind as something that has no place in the physical world. Nor in spite of this emphasis on the logical heterogeneity of mental concepts, am I denying the underlying unity of the mind. For the goal of mental activity is the production of a mental state and the attainment of that goal is a mental event.

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THE CONCEPT OF HEED

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I. *Introduction* (p. 243). II. *The concept of heed* (pp. 243-244). III. *The contemplative theory of heed* (p. 244). IV. *Ryle's objections to the contemplative theory* (p. 245). V. *The dispositional theory of mental concepts* (pp. 245-246). VI. *Ryle's application of the dispositional theory to heed concepts* (pp. 426-248). VII. *Ryle's account of the logic of heed concepts* (pp. 248-249). VIII. *The objection to Ryle's account of the logic of heed concepts* (pp. 249-250). IX. *The dispositional theory restated* (pp. 250-251). X. *The case for the traditional view* (pp. 251-254). XI. *Conclusions* (pp. 254-255). *Reference* (p. 255).

I. INTRODUCTION

Do the words and expressions which the subject uses when he makes his introspective report, refer to internal events going on inside him? If they do, it is difficult to see why we should not use the subject's statements in order to formulate and verify hypotheses about such processes. If they do not it is difficult to see what reason we should have for believing in the existence of the sort of events which are described in the text-books of introspective psychology. If, as is suggested in this paper, some of them do and some do not, it becomes extremely important for the psychologist to be able to discriminate between the two cases.

Now in so far as the language of the introspective report is the 'psychological' language of ordinary speech, this is the question which has recently been exercising the minds of the philosophers; and in at least one case (Ryle, 1949) the conclusion that has been reached is preponderantly negative. In his book *The Concept of Mind* Ryle has attempted to show that the traditional view which holds that mental states and processes are private internal occurrences within the individual is mistaken. He does not deny that some of the statements which we ordinarily make about people, refer to states and activities of the individual that are 'private' or 'covert' in the sense that only the individual himself can report their occurrence. He would maintain, however, that such statements constitute only a small minority of the statements we make about our own and other people's minds.

I shall argue in this paper that the number of mental concepts which do entail a reference to covert states and activities of the individual is much larger than Ryle is prepared to admit. In particular it will be contended that a reference of this kind is involved in our ordinary use of such expressions as 'being conscious of' or 'paying attention to something', 'observing', 'watching', 'looking', 'listening', 'seeing', 'hearing', 'smelling', 'tasting', 'feeling', 'noticing', 'perceiving' and 'recognizing'.

II. THE CONCEPT OF HEED

The key notion in Ryle's account of what is traditionally referred to as our 'apprehension of the external world' is the concept of 'heed'. As he himself points out (p. 136), this notion of 'heed', or 'heeding' is closely related to the concept of 'consciousness' which is the basic concept in all the traditional theories of mind. While heed does not carry quite the same theoretical load as does the notion of consciousness in the traditional theories, it is employed by Ryle in his analysis of a wide range of mental concepts, and a large part

of his case against the view that mental concepts entail a reference to covert states, processes and activities, would seem to depend on his ability to show that paying heed is not a covert activity.

Ryle defines the notion of 'heeding' or 'minding' as embracing such concepts as 'noticing, taking care, attending, applying one's mind, concentrating, putting one's heart into something, thinking what one is doing, alertness, intentness, studying and trying'. Concepts which 'entail, but are not entailed by, heeding' include 'enjoying, disliking, pondering, searching, testing, debating, planning, listening, relishing, calculating and scrutinizing' (p. 136), looking (p. 232), observing, watching, descreying (p. 207) and recognizing (p. 223). Remembering something, according to Ryle (pp. 91 and 137-9) involves having paid heed to it at the time, while being conscious of sensations in one's body or objects in one's environment is evidently synonymous with heeding or noticing them (pp. 157-8). It will be seen from this that Ryle's concept of heed corresponds more closely to the traditional concept of attention than to that of consciousness. On the traditional theories consciousness is the basic notion of which attention is a special active or conative form. For Ryle on the other hand, it is 'attending' or 'heeding' which is the basic concept, and no distinction is drawn between paying attention to something and being conscious of it.

III. THE CONTEMPLATIVE THEORY OF HEED

The traditional or, as Ryle calls it, the 'contemplative' theory of heed or attention and consciousness in the form in which I wish to defend it, may be stated as follows. The expression 'paying attention' refers to an internal activity of the individual presumably of a non-muscular variety whereby he exercises a measure of control over the vividness or acuteness of his consciousness of (a) the sensations to which he is susceptible at that moment, or (b) such features of the environment as are impinging on his receptors, without necessarily adjusting his receptor organs or their position in any way. In paying attention to something the individual is regulating the vividness of his consciousness of the object or sensation in question and hence the number of its features of which he is conscious. The expression 'being conscious of something' refers to a peculiar internal state of the individual which normally accompanies any reasonably intense stimulation of his receptor organs, the particular form assumed by the individual's state of consciousness at a given moment being determined by the pattern of physical energies impinging on his receptor organs at the time.

Being conscious of something is by definition a necessary condition of the individual's being able to give a first hand report on that something either at the time or later. It is not, however, a sufficient condition of the individual's ability to make such a first hand report, since it is possible for someone to be conscious of things which he cannot put into words, without his actual capacity to verbalize being in any way disturbed. Likewise, though here the relationship is probably contingent rather than necessary, the successful performance of any skilled activity depends to a greater or lesser extent on the individual paying attention to, i.e. maintaining a vivid consciousness of, relevant features of the situation and his own activity with respect to it; but the mere fact that someone is paying attention to what he is doing does not entail that the performance will be adapted to the demands of the task.

IV. RYLE'S OBJECTIONS TO THE CONTEMPLATIVE THEORY

Ryle's first objection to this type of theory (pp. 136-7) is that it leads to a *reductio ad absurdum* in those cases where we speak of watching carefully or attentively. He points out that it is always possible to ask of a spectator, whether he has been a careful or a careless one. In order to interpret this on the contemplative view, he suggests, we should have to postulate an additional process of watching his watching, which is present in the careful spectator and absent in the careless one. This interpretation leads to an infinite regress, since it would always be sensible to ask whether or not this watching of one's watching was done carefully or not. There is, however, no reason why the contemplative view should force us to adopt this particular interpretation. As Ryle himself points out (p. 136), minding can vary in degree. There is, therefore, no reason why we should not say that the difference between the careful and the careless spectator lies in the amount of heed that each pays to the scene before his eyes. The careless spectator is not one who fails to watch his watching, nor is he completely oblivious of what is going on, he merely pays insufficient heed to it. What distinguishes the careful spectator from the careless one are the detailed and accurate reports which he is able to furnish as a result of the richness and vividness of the impressions with which his more active heed-paying provides him.

Ryle's second objection to the traditional theory of attention is that it fails to account satisfactorily for those cases where we speak of applying our minds to some task, such as whistling or driving a car. In this case, he argues (p. 138), we are not doing two things, whistling and minding, driving the car and attending to our driving; we are performing a single activity in a certain way. He points out in support of this contention that we cannot stop driving the car and continue our heed-paying. This argument, however, is singularly unconvincing. The fact that we cannot stop driving and continue our heed-paying merely shows that we cannot continue to pay heed to something that is no longer there to pay heed to. We do not normally lapse into unconsciousness after applying the hand-brake; we turn our attention to other things. On the other hand the fact that one can, if one is sufficiently foolhardy, continue to drive and cease to pay heed to what one is doing would suggest *prima facie* that there are two distinct processes going on here. Ryle is doubtless right in pointing out that in driving with care one is not doing two things at once in quite the same sense as one is when one is walking along and humming at the same time. In humming and walking at the same time one is performing two distinct sets of muscular movements simultaneously. When heeding and driving occur together, on the other hand, there is only one set of muscular movements, those of manipulating the controls; and in that sense there is only one activity being performed. No one, however, supposes that heed-paying is a separate set of muscular movements occurring alongside the muscular movements involved in driving. Nor is heeding thought of as an unrelated activity going on at the same time as the driving. It is a peculiar sort of internal activity which controls the movements of the driver's limbs, by regulating his consciousness of the stimuli to which he responds.

V. THE DISPOSITIONAL THEORY OF MENTAL CONCEPTS

Although Ryle has failed to produce any conclusive objections to the contemplative theory, it is clear that if he can give a plausible account of the logic of 'heed concepts' which dispenses with the assumption that they refer to peculiar private events within

the individual, we should undoubtedly be led to prefer such a theory on the grounds of parsimony. We must therefore examine the account which Ryle has offered of the logic of these concepts in order to discover whether or not it constitutes a satisfactory alternative to the traditional view.

The peculiarity of mental concepts as a class is that in order to determine whether or not someone knows, believes, understands, recognizes, remembers, wants, feels, is enjoying, attending to or thinking about something, you either have to cross-examine him or else observe considerable stretches of his behaviour before you can settle the question with any degree of confidence. This logical peculiarity is traditionally explained on the assumption that these mental concepts refer to invisible states and processes within the individual, whose existence and nature can only be determined with certainty by the individual in whom they occur, although it is usually possible also for an external observer to make reliable inferences about them by observing the behaviour to which they give rise.

Ryle's explanation of this logical feature is quite different. He supposes that mental concepts, or at least most of them, refer to what may be called behavioural dispositions, i.e. capacities, tendencies or temporary dispositions to behave in a certain way. To assert that someone has a capacity or tendency to behave in a certain way on this view is not to say anything about what is going on here and now, it is to assert a hypothetical proposition about how the individual could or would behave if certain circumstances were to arise. Hypothetical propositions of this kind can only be verified by investigating the behaviour of the individual under the conditions supposed. The proposition '*X* can swim', for example, can only be verified by observing *X*'s behaviour when in the water. Similarly with the proposition '*X* knows the date of the battle of Salamis': unless you happen at that moment to hear *X* say 'Salamis was fought in 480 B.C.', you would either have to wait for the chance of hearing his reactions when called upon to exhibit his knowledge of ancient history, or else adopt the more practical course of testing his knowledge by asking the appropriate question. The reason why it is often necessary to cross-examine the individual in order to discover what he knows, is not that knowing is a peculiar internal state or activity of the individual of which he alone is directly apprised; it is that an important part of what we mean when we say that *X* knows the date of the battle of Salamis is that he can give you the correct date when asked to do so.

With a few notable exceptions of which 'cogitating', 'visualizing' and 'having sensations' are the most important, Ryle attempts to apply this type of explanation to all the mental concepts treated in his book. In most cases moreover the attempt has proved remarkably successful. To my way of thinking there can be little doubt that the dispositional account which he gives of such concepts as 'knowing', 'believing', 'understanding', 'recognizing', 'remembering', 'intending' and 'wanting' is substantially correct. It is only with his attempt to apply it to such concepts as 'attending to', 'observing' and 'being conscious of something' that I wish to quarrel.

VI. RYLE'S APPLICATION OF THE DISPOSITIONAL THEORY TO HEED CONCEPTS

Ryle contends (pp. 137-9) that to say that someone is paying attention to what he is doing entails that he has at least two important dispositions, (*a*) the disposition under favourable circumstances to remember and give a first hand report on what it is he has been paying heed to, and (*b*) the disposition to adapt his performance to the various

demands of the task as they arise. Now it is quite true that if we are told that someone is paying close attention to what he is doing, we normally expect him to be able to answer questions about his activity and to have made at least a better showing at the activity than if he had not been applying his mind to the same extent. It is also true, as Ryle points out, that we frequently conclude from the fact that someone is unable to answer questions about something that has been said in his presence, or from his failure in certain skilled performances, that he has not been paying attention to what was said or to what he was doing. But it does not follow from this that to say that someone is paying attention entails that he has the disposition to do these things. A schoolmaster frequently concludes from the fact that a boy has got the wrong answer to a mathematical problem, that he has set about it in the wrong way. Yet this would not lead us to say that to set about a problem in the right way entails a disposition to get the right answer. We only conclude that the boy must have used the wrong method if we know that his capacities are such that he could not have avoided getting the right answer had he used the correct method. Similarly, we only attribute someone's failure in a skilled activity to lack of attention if we know that his capacities are such that no other explanation of his failure is possible. One would hardly expect someone who had never been near an aeroplane before to be able to meet the demands of the task of piloting one, however closely he attended to what he was doing.

On the view which I am urging, the individual who pays attention is more likely to succeed in so far as he becomes acutely conscious of those features of the situation which are relevant to the successful performance of the task. Close attention to his own activity will be of no avail to the unskilled person because he has not learnt to discriminate between the relevant and irrelevant features. On the other hand an acute consciousness of the details of his own activity in relation to the environment may actually detract from the efficiency of performance in the case of an individual who has learnt to make many of the adjustments involved automatically. Thus we frequently say of someone whose skill is already well developed that his performance suffered because he paid too close attention to what he was doing. It is difficult to see what meaning could possibly be attached to this statement on a dispositional theory of attention.

In claiming that 'attending' entails 'being able to say something about what is going on', Ryle is on stronger ground. It is certainly true that it would be extremely odd to say that someone was paying attention to something, but could tell you absolutely nothing about it. But it is arguable that this is merely because one cannot pay attention to something without at least noticing the thing to which one is paying attention. There is no doubt that to say one has noticed something entails that one has the capacity to mention it and point it out, but to say that one has noticed something and to say that one has paid attention to it, are not, as Ryle appears to think, to say the same thing. 'Noticing' is an achievement concept like 'recognizing', 'perceiving', not an activity concept like 'pondering' or 'attending'. 'Noticing', 'perceiving', or 'recognizing', are the achievements that result from the activities of looking, listening and attending. If one looks, listens or attends one normally notices or recognizes something or other, but one can also attend and fail to notice; one can look and fail to see, listen and fail to hear. When we say that we have failed to notice anything, what we really mean is that we have failed to notice anything remarkable or anything additional to what we have already noticed. You can hardly be said to have paid attention, if there was nothing at all which you could be

said to have noticed as a result of your attending. But it does not follow from the fact that *A* notices more about the situation than *B* that *A* was paying closer attention. The man who pays closer attention usually notices more, but the relationship is contingent rather than necessary.

VII. RYLE'S ACCOUNT OF THE LOGIC OF HEED CONCEPTS

The expression 'paying attention to something' exhibits the distinctive logical characteristics which are normally associated with words and expressions which refer to activities. The fact that it is perfectly good sense to speak of someone being engaged in paying attention to something, while it is nonsensical, for example, to speak of someone being engaged in knowing or understanding something, clearly shows that 'paying attention' or 'heed' is an activity expression in contrast to dispositional verbs like 'expect', 'know', 'like', and 'believe' or achievement verbs like 'understand', 'remember', 'recognize', 'perceive' and 'infer' where such a combination would be nonsensical.

It might be objected that 'attending' differs from those verbs which unquestionably refer to activities in that it is not sensible to use it in conjunction with adverbs like 'quickly' or 'slowly'. We can say 'he slowly began to pay attention to his surroundings', but not 'he paid slow attention to his book for five minutes and then rapid attention to the black-board'. There are, however, a number of expressions which can properly be described as 'activity verbs' of which the same is true. For example we can say 'he slowly took hold of the hammer' but not 'he held the hammer slowly for five minutes'. The analogy between 'attending' and 'holding' seems generally very close.

In support of his contention that 'attending' is not an ordinary activity verb, Ryle draws attention to the curious fact that it is always possible to replace a 'heed verb' by a 'heed adverb'. We can speak, to use his examples, of 'reading attentively', 'driving carefully' and 'conning studiously' just as readily as we can of 'attending to the page in front of one', 'taking care in one's driving', and 'applying one's mind to the task of translation' (p. 138). Ryle contends that the adverbial form is the more accurate way of expressing what is meant when a 'heed concept' is used. To say that someone is doing something heedfully, he maintains is merely to say that he is doing it in a certain way or in a certain frame of mind, i.e. with a disposition to adapt his performance to the various demands of the task as they arise and to answer questions about it.

On this theory the fact that 'paying attention' behaves like an ordinary activity word is explained on the assumption that the phrase 'paying attention to something' is analysable into two parts, (a) a categorical statement that a certain activity is taking place, and (b) a hypothetical or dispositional statement about how the individual in question would behave if certain contingencies were to arise. Ryle calls it for this reason a 'mongrel categorical statement'. The categorical part of the statement from which it derives its logical characteristics, is however, extremely uninformative. It asserts merely that some unspecified activity is being performed. In order to discover the nature of this activity we must find out what it is that the individual in question is paying attention to. As Ryle points out (p. 143) to say that someone is paying attention is an incomplete statement, unless we are told or unless it is obvious from the context of the remark what it is that he is paying attention to. On this view the part of the supposed meaning of the phrase which refers to the performance of an activity is strictly speaking redundant, since it must always be supplemented by a specification of the activity which is being performed.

In his lengthy discussion of 'mongrel categorical expressions' (pp. 140-7) Ryle is at pains to try to explain how it is that the fact of attention or inattention can be used to explain the failure or success of the individual in the activity he is performing. He shows convincingly enough that we can explain the bird's flying south by saying that it is migrating, without implying that migration is an additional process superimposed on the activity of flying south. The statement that the bird is migrating explains the behaviour of the bird by bringing the particular behaviour in question under the general rule that birds of certain species change their habitats at certain times of the year. Unfortunately he does not explain how the analogy is to be applied in the case where we explain the failure of an individual to complete a task satisfactorily or to give an adequate report on what was happening, by saying that he was not paying sufficient attention. It is difficult in this case to see what the general rule involved could be, unless it is the rule that if you don't pay attention you won't be able to carry out the activity you are performing satisfactorily or give an adequate first hand report on what went on. On Ryle's analysis of attention this general proposition reduces to the tautology 'unless you are disposed to give a first hand report on what is going on and to carry out what you are doing satisfactorily, you won't be able to give a first hand report on what is going on or carry out the activity you are performing satisfactorily'.

VIII. THE OBJECTION TO RYLE'S ACCOUNT OF THE LOGIC OF HEED CONCEPTS

Although Ryle fails to produce any conclusive reasons for adopting his theory of 'attending' in preference to the traditional account, it is difficult to produce any decisive arguments against it as long as we restrict the discussion to the special case where we speak of someone paying attention to what he is doing. His case breaks down, however, once we try to apply it to those cases where we are said to pay heed to an object in our environment or to some feeling we have, without being engaged in any other activity with respect to it. Ryle castigates the traditional theorists for 'misdescribing heed in the contemplative idiom' (p. 137), but he himself overlooks in developing his own theory the important cases where paying heed to something is purely a matter of watching, listening, observing or contemplating. Ryle explains the fact that 'attending' exhibits the usual characteristics of an activity verb, rather than those of a dispositional verb, on the assumption that verbs like 'attending' and 'heeding' assert the occurrence of the activities which are being performed attentively. There is no special activity called 'attending', there is only the attentive performance of an activity. The logical consequence of this theory is that the individual's own activities are the only sorts of things to which attention can be paid. If Ryle's theory were correct it should be nonsensical to talk of someone paying attention to anything other than an activity which he himself is performing. In fact, of course, we can speak with perfect propriety of the paying attention to any kind of object, phenomenon or sensation which is visible, audible, tangible, or otherwise perceptible. In such cases there is no activity which is being performed attentively or heedfully. To attend in such cases is merely a matter of contemplating or observing the object or phenomenon in question. We cannot say that when we pay heed to something we are watching it, listening to it, observing or contemplating it heedfully, since as Ryle himself points out (pp. 207 and 223), words such as 'watching', 'listening', 'observing' and 'describing' already entail that heed is being paid. These expressions do not refer to activities like driving a car which can be performed with or without heed, they refer to

special forms of the activity of heed-paying itself. It makes nonsense to say that someone was observing, watching, contemplating or listening to something without paying any attention to it, whereas it makes perfect sense to speak of someone driving without paying any attention to what he is doing.

The inadequacy of Ryle's account appears most clearly when we examine the account which he gives of expressions like 'being conscious of', 'observing', 'watching' and 'listening'. To be conscious of the sensations in a blistered heel according to Ryle (pp. 157-8) is to pay heed to them; but what is the activity which is being performed attentively or heedfully here? It would seem from his long discussion of 'observation' (ch. VII) that for Ryle to say that one is observing something is to say that one is paying heed to the sensations derived from it, and 'watching' and 'listening' by the same token, refer to the paying of heed to visual and auditory sensations respectively. But we cannot say that 'having sensations' is the activity which is being performed heedfully in these cases, since to have a sensation itself entails paying at least some heed to the sensation. We can speak of failing to notice the sensations which one would have had if one had paid attention to them; but to say that one had a tingling sensation in the left toe without noticing it is nonsense. Ryle accuses the traditional theory of being unable to provide a sensible account of the difference between a careful and a careless observer, but his own theory, while giving a plausible account of carefulness, fails to explain the activity of observing.

IX. THE DISPOSITIONAL THEORY RESTATED

Although Ryle has failed to provide a satisfactory account of consciousness, attention and observation in terms of dispositional theory of mental concepts, it would be unwise to conclude that such an account cannot be given. Ryle's account fails mainly because he overlooks the fact that our own activity is not the only sort of thing to which we can pay attention. The possibility of providing a plausible dispositional theory which takes account of our consciousness of and attention to objects, phenomena and sensations is not ruled out. Indeed it is not difficult to suggest the form which such a theory might take.

We have seen that although paying attention to what one is doing does not entail being prepared to meet the demands of the task in hand, it cannot be denied that to pay attention to something entails noticing and hence being able to say something about it. It must also, I think, be conceded that it involves being ready to encounter something, although one need not be prepared to encounter the sort of thing that is actually there. This, however, cannot be all that we are saying when we say that someone is attending to something, since we can be ready to behave in a manner appropriate to the presence of some object or event in our immediate environment without actually being conscious of it. Our disposition to act in this way may be a result of something we have been told, some inference we have drawn or some observation made a few moments previously. In such cases we might be said to know, remember or suspect that it was there, but we would not be observing, attending to or conscious of it. In order for us to be conscious of something our disposition to react to its presence must result from its impingement on our sense organs at the time.

With the qualification that the disposition must result from sensory stimulation, it becomes quite plausible to maintain that to be conscious of something is to be ready to

react both verbally and otherwise to the presence of some object or event in one's immediate environment. On this theory the contribution of attending to skilled performance would be explained by pointing out that unless the individual is disposed to react in a manner appropriate to the presence of the relevant features of his own activity and the environmental situation in which it takes place, he is not likely to be very successful.

On this view 'consciousness', 'attention' and 'observation' refer to a temporary state of readiness for something. You would therefore expect them to exhibit the logical features of expressions referring to temporary states of affairs. Expressions like 'being conscious' or 'aware of' do exhibit these logical characteristics. Words like 'attending', 'observing', 'watching', 'looking' and 'listening', on the other hand, exhibit the logical behaviour characteristic of expressions which refer to activities. This fact as we have seen, appears to provide a formidable obstacle to any dispositional theory of the meaning of these words. Nevertheless the difficulty can probably be overcome without appealing to any kind of internal process or activity, by examining the notion of 'activity' itself. It is at least arguable that when we speak of an individual's activities, of the things he does, we refer to those changes in him which can be induced by such things as commands, entreaties, instructions and deliberations. Any changes whether muscular or non-muscular which he can decide or be asked to bring about in himself are things which he does. Paying attention and observing are not muscular movements, nor are they movements of a mysterious transcendental musculature, they are, so the theory might run, changes in the individual's short term dispositions, readinesses or sets (to use a term which has a wide currency in the psychological literature) which can be induced by appropriate commands, requests or by decisions on the part of the individual himself.

In the light of these considerations we may restate the dispositional theory of attention, observation and consciousness as follows: to observe or pay attention to something is to bring about a change in oneself such that the impingement of the object or phenomenon in question on one's receptor organs prepares one to respond both verbally and otherwise in a manner appropriate to the presence of something; while to be conscious of something is to be so disposed.

X. THE CASE FOR THE TRADITIONAL VIEW

Stated in this way my quarrel with the dispositional theory is less substantial than my agreement with it. My contention is not so much that it is wrong as that it is incomplete. It is incomplete because it makes no reference to the internal state of the individual which enables him to describe and respond appropriately to the presence of objects in his vicinity. On the view which I wish to defend, when we use what Ryle calls a 'heed concept', we are not merely referring to the disposition to respond in a manner appropriate to the presence of the thing in question and specifying how that disposition is brought into being, we are also referring to an internal state of the individual which is a necessary and sufficient condition of the presence of such a disposition. I shall now try to present arguments in support of this contention.

One of the major weaknesses of Ryle's account of mental concepts is, as he himself recognizes, his retention of the traditional extended use of the term sensation (ch. VII). He is compelled to retain this use in order to provide something—having a sensation—which the observer of an object can be said to do heedfully. One of the advantages of the revised form of the dispositional theory which I have stated is that it dispenses with the

necessity for this concession to the traditional misappropriation of mental concepts. But although it dispenses with the necessity of abusing the concept of sensation, it runs into serious difficulties when applied to those cases where we do speak of being conscious of or of attending to our sensations, i.e. in those cases where our state of consciousness results from interoceptive or proprioceptive stimulation or from the various twists and quirks of our sensory apparatus, rather than from the impingement on our sense organs of any specifiable state of affairs in our environment.

Suppose that having applied pressure to my eyeball, I am conscious of a sensation of light. According to the revised dispositional theory this means that I am disposed to react to the presence of something. But what is it that I am disposed to react to? It cannot be the pressure on my eyeball, since to be conscious of light sensations is not the same thing as being conscious of pressure applied to the eyeball. But it cannot be the presence of the sensation either. Sensations, as we have seen, do not exist independently of our consciousness of them. There are not two things, my sensation and my consciousness of it, in the way that there are two things, a penny and my consciousness of the penny. The occurrence of a sensation entails someone's consciousness of that sensation.

To be disposed to react to a sensation therefore would be to be disposed to react to one's consciousness of that sensation. In other words we now have an infinite regress of dispositions, instead of the infinite regress of ghostly operations which appears so frequently in Ryle's criticisms of the traditional theories. We might be tempted to meet this objection by supposing that to say that someone is conscious of a sensation of light is to say that he is temporarily disposed to react as he would normally do if there had been a flash of light. But to be disposed to react as if there were a flash of light, would be to believe or be tempted to believe that a flash had occurred; whereas it makes perfectly good sense to say that he was conscious of a vivid sensation of light, yet it never occurred to him for one moment to suppose that there had been any actual flash of light. In other words an individual's state of consciousness is something over and above any dispositions which it arouses in him.

An objection which applies to any attempt to give a dispositional amount of consciousness and attention is the objection that it always makes sense to ask the individual to describe what it is like to watch, listen, observe or be conscious of something, whereas it does not make sense to ask him what it is like to have a certain capacity or tendency. We can only describe what something is like if it is an object, situation or occurrence. We can describe, characterize or define such things as relationships, capacities and tendencies, but we cannot describe what they are like. We can describe what a car is like, but we cannot describe what its horse-power is like; we can describe what it is like for one billiard ball to strike another and propel it forward, but we cannot describe what the causal relationship is like; we can describe what it is like to swim or what it is like to realize that one can swim, but not what it is like to be able to swim; we may be able to describe what it is like to be told or call to mind the fact that whales are mammals, but we cannot describe what it is like to know or believe that they are. If to be conscious of something were merely to be disposed to react in some way, it should be logically impossible for us to describe what it is like to be conscious of something. In fact there is no logical impossibility here. We are continually describing what it is like to watch, look at, listen to or feel things.

It might be objected with some justification here that what we describe is not our

consciousness, but the things we are conscious of. As we have seen, part of what is meant by saying that someone is conscious of something is that he can say something about it. It is certainly true that when we describe some object in our environment of which we are conscious, our description is a description of the object itself, and not, as has sometimes been supposed, a description of our consciousness of that object. It is also true that we cannot describe the state of being conscious in abstraction from the things we are conscious of. But that does not mean that we do not on occasions describe our consciousness of things as distinct from describing the things themselves. When we say, to use a familiar example, that the penny looks elliptical when viewed at an angle, we are not describing the penny, nor are we describing the image which it projects on our retina; we are describing what it is like to look at a penny from that particular angle; we are saying that it is somehow like looking at an ellipse viewed full face. When we say this, moreover, we do not imply that we are disposed to act in a manner appropriate to its being an ellipse. The elliptical shape of the penny is not an optical or a psychological illusion (cf. Ryle's discussion of this problem pp. 216-18).

When we describe a state of consciousness, we usually do so by comparing being conscious of one thing with being conscious of another. Nevertheless there are one or two expressions like 'pleasant', 'unpleasant', 'vivid', 'dim', 'acute' and 'vague' which we apply to the states of consciousness themselves. These are somewhat unusual adjectives to apply to a state of readiness. Furthermore the difference between vividness and dimness, acuteness and vagueness is difficult to explain on a dispositional theory of consciousness. The only possible interpretation on such a theory is in terms of the appropriateness of the behaviour, for which one is prepared, to the presence of whatever it is one is conscious of. Acute consciousness, however, does not guarantee the appropriateness of the resulting behaviour. The statement 'his consciousness of his own ineptitude was so acute that he was unable to do anything about it', makes perfectly good sense. It also describes a situation with which some of us are only too painfully familiar. If we recognize that consciousness is some sort of internal state of the individual these discrepancies between the intensity of the individual's consciousness and the adequacy of the behaviour for which it prepares him, no longer constitute a problem.

Finally, there are considerations of a more general nature. If there were no decisive arguments either way, we should probably prefer the dispositional to the internal process theory of consciousness and attention on the grounds of parsimony. As against this must be set the fact that in every other case where verbs having 'activity' characteristics are involved, it has been found impossible to apply a purely dispositional analysis, and in at least one group of cases the reference to internal processes within the individual cannot seriously be denied. The cases I have in mind here are thinking (in the sense of thinking about or thinking to oneself), pondering, calculating, imagining, dreaming, visualizing and doing mental arithmetic. Ryle (p. 27) has made a strong case for the view, that when we talk about someone thinking (in the relevant sense), pondering, calculating, or imagining we are not asserting the occurrence of any internal process or activity. He contends that the activity referred to, although sometimes covert, as when it consists of visualizing or performing mental arithmetic, need not be so. It may equally well consist in some entirely overt performance such as drawing, talking out loud to oneself or playing a game of make-believe. To assert that someone is thinking or imagining does not discriminate between these two possibilities. This argument disposes or, at least appears to dispose of,

the view that words like 'thinking' and 'imagining' necessarily assert the occurrence of covert activities, but there is no suggestion that these are dispositional concepts. Nor is there any attempt to deny that thinking sometimes consists in a purely covert process or that expressions like 'dreaming', 'visualizing' and 'mental arithmetic' refer to such processes. If this is conceded with respect to 'dreaming', 'visualizing' and 'mental arithmetic', it is difficult in view of the weight of traditional and common-sense opinion and the lack of any positive evidence against it, to see why a similar concession should not be made with respect to 'attending', 'observing', 'watching', 'looking' and 'listening'.

Concepts like 'observing', 'watching', 'listening' and 'being conscious of' are, in fact, closely related to concepts like visualizing and dreaming in a way, which is extremely difficult to explain, if the former are regarded as dispositional concepts. For if we want to explain what sort of thing this business of visualizing or dreaming is, the answer which immediately suggests itself is to say that visualizing something is like watching it except that there is nothing there really and you don't have to have your eyes open. Now if to watch something is merely to bring about a change in oneself such that the impingement of the thing in question on one's eyes prepares one to respond both verbally and otherwise in a manner appropriate to there being something there, this explanation becomes completely unintelligible. Apart from the fact that both visualizing and watching are things which the individual can be said to do, it is exceedingly difficult on this theory to find anything which the two cases have in common. We cannot say that to visualize is to be disposed to act and speak as if there were something impinging on one's eyes when in fact there is not. Any one who is so disposed would be suffering from a visual hallucination, and although having a visual hallucination may be said to involve visualizing, we can visualize things perfectly well without being hallucinated. The similarity between visualizing something and watching it lies in the internal state of the individual which is brought into being, not in the behavioural dispositions which that state induces.

XI. CONCLUSIONS

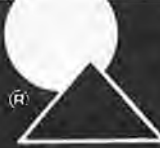
If the above arguments prove what I think they prove, are we back where we started at the beginning of Ryle's inquiry? Do these arguments merely put the Ghost back into the Machine? I do not think so. So far as I am aware, the criticisms I have made of the dispositional theory apply only to the dispositional analysis of consciousness and heed concepts generally. The dispositional analysis of intelligence, knowledge, belief, motives and memory remains unaffected, except in so far as these concepts involve dispositions to pay attention to or become conscious of certain features of one's environment. Indeed, since Ryle himself appears to accept the view that words like 'watching', 'listening' and 'observing' entail a reference to a covert process of having sensations, it is only in the case of the heedful performance of muscular activities that the view which has been urged in this paper differs from the account which Ryle has given as far as recognizing a reference to covert states and processes is concerned. On Ryle's view, however, these processes are relatively unimportant; we learn to talk silently to ourselves in order not to disturb others; we could plan our course of action on paper, but it is often more convenient to do it in our heads. If, on the other hand, our very ability to describe and adapt our behaviour to the objects and phenomena which impinge on our sense organs, is dependent on a special state of affairs within ourselves, which can itself be described by the person in whom it occurs, the reference which is made to such a process in our use of expressions

like 'attending', 'observing' and 'being conscious' can hardly be brushed aside as a matter of no great significance. If such a view is accepted, we can hardly avoid raising the question which Ryle has dodged persistently throughout his book, namely the question: 'What are these curious occurrences within ourselves on which we can give a running commentary as they occur?' Lack of space unfortunately precludes any discussion of this fascinating problem here. It is my belief, however, that the logical objections to the statement 'consciousness is a process in the brain' are no greater than the logical objections which might be raised to the statement 'lightning is a motion of electric charges'.

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IS CONSCIOUSNESS A BRAIN PROCESS?

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The thesis that consciousness is a process in the brain is put forward as a reasonable scientific hypothesis, not to be dismissed on logical grounds alone. The conditions under which two sets of observations are treated as observations of the same process, rather than as observations of two independent correlated processes, are discussed. It is suggested that we can identify consciousness with a given pattern of brain activity, if we can explain the subject's introspective observations by reference to the brain processes with which they are correlated. It is argued that the problem of providing a physiological explanation of introspective observations is made to seem more difficult than it really is by the 'phenomenological fallacy', the mistaken idea that descriptions of the appearances of things are descriptions of the actual state of affairs in a mysterious internal environment.

I. INTRODUCTION

The view that there exists a separate class of events, mental events, which cannot be described in terms of the concepts employed by the physical sciences no longer commands the universal and unquestioning acceptance amongst philosophers and psychologists which it once did. Modern physicalism, however, unlike the materialism of the seventeenth and eighteenth centuries, is behaviouristic. Consciousness on this view is either a special type of behaviour, 'sampling' or 'running-back-and-forth' behaviour as Tolman (1932, p. 206) has it, or a disposition to behave in a certain way, an itch for example being a temporary propensity to scratch. 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 (Wittgenstein, 1953; Ryle, 1949) 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 (Place, 1954). 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 private or internal to the individual of whom they are predicated. The question I wish to raise is whether in making this assumption we are inevitably committed to a dualist position in which sensations and mental images form a separate category of processes over and above the physical and physiological processes with which they are known to be correlated. I shall argue that an acceptance of inner processes does not entail dualism and that the thesis that consciousness is a process in the brain cannot be dismissed on logical grounds.

II. THE 'IS' OF DEFINITION AND THE 'IS' OF COMPOSITION

I want to stress from the outset that in defending the thesis that consciousness is a process in the brain, I am not trying to argue that when we describe our dreams, fantasies and sensations we are talking about processes in our brains. That is, I am not claiming that

statements about sensations and mental images are reducible to or analysable into statements about brain processes, in the way in which 'cognition statements' are analysable into statements about behaviour. To say that statements about consciousness are statements about brain processes is manifestly false. This is shown (a) by the fact that you can describe your sensations and mental imagery without knowing anything about your brain processes or even that such things exist, (b) by the fact that statements about one's consciousness and statements about one's brain processes are verified in entirely different ways and (c) by the fact that there is nothing self-contradictory about the statement 'X has a pain but there is nothing going on in his brain'. What I do want to assert, however, is that the statement 'consciousness is a process in the brain', although not necessarily true, is not necessarily false. 'Consciousness is a process in the brain', on my view is neither self-contradictory nor self-evident; it is a reasonable scientific hypothesis, in the way that the statement 'lightning is a motion of electric charges' is a reasonable scientific hypothesis.

The all but universally accepted view that an assertion of identity between consciousness and brain processes can be ruled out on logical grounds alone, derives, I suspect, from a failure to distinguish between what we may call the 'is' of definition and the 'is' of composition. The distinction I have in mind here is the difference between the function of the word 'is' in statements like 'a square is an equilateral rectangle', 'red is a colour', 'to understand an instruction is to be able to act appropriately under the appropriate circumstances', and its function in statements like 'his table is an old packing case', 'her hat is a bundle of straw tied together with string', 'a cloud is a mass of water droplets or other particles in suspension'. These two types of 'is' statement have one thing in common. In both cases it makes sense to add the qualification 'and nothing else'. In this they differ from those statements in which the 'is' is an 'is' of predication; the statements 'Toby is 80 years old and nothing else', 'her hat is red and nothing else' or 'giraffes are tall and nothing else', for example, are nonsense. This logical feature may be described by saying that in both cases both the grammatical subject and the grammatical predicate are expressions which provide an adequate characterization of the state of affairs to which they both refer.

In another respect, however, the two groups of statements are strikingly different. Statements like 'a square is an equilateral rectangle' are necessary statements which are true by definition. Statements like 'his table is an old packing case', on the other hand, are contingent statements which have to be verified by observation. In the case of statements like 'a square is an equilateral rectangle' or 'red is a colour', there is a relationship between the meaning of the expression forming the grammatical predicate and the meaning of the expression forming the grammatical subject, such that whenever the subject expression is applicable the predicate must also be applicable. If you can describe something as red then you must also be able to describe it as coloured. In the case of statements like 'his table is an old packing case', on the other hand, there is no such relationship between the meanings of the expressions 'his table' and 'old packing case'; it merely so happens that in this case both expressions are applicable to and at the same time provide an adequate characterization of the same object. Those who contend that the statement 'consciousness is a brain process' is logically untenable base their claim, I suspect, on the mistaken assumption that if the meanings of two statements or expressions are quite unconnected, they cannot both provide an adequate characterization of the same object or state of affairs: if something is a state of consciousness, it cannot be a

brain process, since there is nothing self-contradictory in supposing that someone feels a pain when there is nothing happening inside his skull. By the same token we might be led to conclude that a table cannot be an old packing case, since there is nothing self-contradictory in supposing that someone has a table, but is not in possession of an old packing case.

III. THE LOGICAL INDEPENDENCE OF EXPRESSIONS AND THE ONTOLOGICAL INDEPENDENCE OF ENTITIES

There is, of course, an important difference between the table/packing case case and the consciousness/brain process case in that the statement 'his table is an old packing case' is a particular proposition which refers only to one particular case, whereas the statement 'consciousness is a process in the brain' is a general or universal proposition applying to all states of consciousness whatever. It is fairly clear, I think, that if we lived in a world in which all tables without exception were packing cases, the concepts of 'table' and 'packing case' in our language would not have their present logically independent status. In such a world a table would be a species of packing case in much the same way that red is a species of colour. It seems to be a rule of language that whenever a given variety of object or state of affairs has two characteristics or sets of characteristics, one of which is unique to the variety of object or state of affairs in question, the expression used to refer to the characteristic or set of characteristics which defines the variety of object or state of affairs in question will always entail the expression used to refer to the other characteristic or set of characteristics. If this rule admitted of no exception it would follow that any expression which is logically independent of another expression which uniquely characterizes a given variety of object or state of affairs, must refer to a characteristic or set of characteristics which is not normally or necessarily associated with the object or state of affairs in question. It is because this rule applies almost universally, I suggest, that we are normally justified in arguing from the logical independence of two expressions to the ontological independence of the states of affairs to which they refer. This would explain both the undoubted force of the argument that consciousness and brain processes must be independent entities because the expressions used to refer to them are logically independent and, in general, the curious phenomenon whereby questions about the furniture of the universe are often fought and not infrequently decided merely on a point of logic.

The argument from the logical independence of two expressions to the ontological independence of the entities to which they refer breaks down in the case of brain processes and consciousness, I believe, because this is one of a relatively small number of cases where the rule stated above does not apply. These exceptions are to be found, I suggest, in those cases where the operations which have to be performed in order to verify the presence of the two sets of characteristics inhering in the object or state of affairs in question can seldom if ever be performed simultaneously. A good example here is the case of the cloud and the mass of droplets or other particles in suspension. A cloud is a large semi-transparent mass with a fleecy texture suspended in the atmosphere whose shape is subject to continual and kaleidoscopic change. When observed at close quarters, however, it is found to consist of a mass of tiny particles, usually water droplets, in continuous motion. On the basis of this second observation we conclude that a cloud is a mass of tiny particles and nothing else. But there is no logical connexion in our language between a cloud and a mass of tiny particles; there is nothing self-contradictory in talking about a cloud which is not com-

posed of tiny particles in suspension. There is no contradiction involved in supposing that clouds consist of a dense mass of fibrous tissue; indeed, such a consistency seems to be implied by many of the functions performed by clouds in fairy stories and mythology. It is clear from this that the terms 'cloud' and 'mass of tiny particles in suspension' mean quite different things. Yet we do not conclude from this that there must be two things, the mass of particles in suspension and the cloud. The reason for this, I suggest, is that although the characteristics of being a cloud and being a mass of tiny particles in suspension are invariably associated, we never make the observations necessary to verify the statement 'that is a cloud' and those necessary to verify the statement 'this is a mass of tiny particles in suspension' at one and the same time. We can observe the micro-structure of a cloud only when we are enveloped by it, a condition which effectively prevents us from observing those characteristics which from a distance lead us to describe it as a cloud. Indeed, so disparate are these two experiences that we use different words to describe them. That which is a cloud when we observe it from a distance becomes a fog or mist when we are enveloped by it.

IV. WHEN ARE TWO SETS OF OBSERVATIONS OBSERVATIONS OF THE SAME EVENT?

The example of the cloud and the mass of tiny particles in suspension was chosen because it is one of the few cases of a general proposition involving what I have called the 'is' of composition which does not involve us in scientific technicalities. It is useful because it brings out the connexion between the ordinary everyday cases of the 'is' of composition like the table/packing case example and the more technical cases like 'lightning is a motion of electric charges' where the analogy with the consciousness/brain process case is most marked. The limitation of the cloud/tiny particles in suspension case is that it does not bring out sufficiently clearly the crucial problem of how the identity of the states of affairs referred to by the two expressions is established. In the cloud case the fact that something is a cloud and the fact that something is a mass of tiny particles in suspension are both verified by the normal processes of visual observation. It is arguable, moreover, that the identity of the entities referred to by the two expressions is established by the continuity between the two sets of observations as the observer moves towards or away from the cloud. In the case of brain processes and consciousness there is no such continuity between the two sets of observations involved. A closer introspective scrutiny will never reveal the passage of nerve impulses over a thousand synapses in the way that a closer scrutiny of a cloud will reveal a mass of tiny particles in suspension. The operations required to verify statements about consciousness and statements about brain processes are fundamentally different.

To find a parallel for this feature we must examine other cases where an identity is asserted between something whose occurrence is verified by the ordinary processes of observation and something whose occurrence is established by special scientific procedures. For this purpose I have chosen the case where we say that lightning is a motion of electric charges. As in the case of consciousness, however closely we scrutinize the lightning we shall never be able to observe the electric charges, and just as the operations for determining the nature of one's state of consciousness are radically different from those involved in determining the nature of one's brain processes, so the operations for determining the occurrence of lightning are radically different from those involved in determining the occurrence of a motion of electric charges. What is it, therefore, that leads us to say that

the two sets of observations are observations of the same event? It cannot be merely the fact that the two sets of observations are systematically correlated such that whenever there is lightning there is always a motion of electric charges. There are innumerable cases of such correlations where we have no temptation to say that the two sets of observations are observations of the same event. There is a systematic correlation, for example, between the movement of the tides and the stages of the moon, but this does not lead us to say that records of tidal levels are records of the moon's stages or vice versa. We speak rather of a causal connexion between two independent events or processes.

The answer here seems to be 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. Thus we conclude that lightning is nothing more than a motion of electric charges, because we know that a motion of electric charges through the atmosphere, such as occurs when lightning is reported, gives rise to the type of visual stimulation which would lead an observer to report a flash of lightning. In the moon/tide case, on the other hand, there is no such direct causal connexion between the stages of the moon and the observations made by the man who measures the height of the tide. The causal connexion is between the moon and the tides, not between the moon and the measurement of the tides.

V. THE PHYSIOLOGICAL EXPLANATION OF INTROSPECTION AND THE PHENOMENOLOGICAL FALLACY

If this account is correct, it should follow that in order to establish the identity of consciousness and certain processes in the brain, it would be necessary to show that the introspective observations reported by the subject can be accounted for in terms of processes which are known to have occurred in his brain. In the light of this suggestion it is extremely interesting to find that when a physiologist as distinct from a philosopher finds it difficult to see how consciousness could be a process in the brain, what worries him is not any supposed self-contradiction involved in such an assumption, but the apparent impossibility of accounting for the reports given by the subject of his conscious processes in terms of the known properties of the central nervous system. Sir Charles Sherrington has posed the problem as follows: 'The chain of events stretching from the sun's radiation entering the eye to, on the one hand, the contraction of the pupillary muscles, and on the other, to the electrical disturbances in the brain-cortex are all straightforward steps in a sequence of physical "causation", such as, thanks to science, are intelligible. But in the second serial chain there follows on, or attends, the stage of brain-cortex reaction an event or set of events quite inexplicable to us, which both as to themselves and as to the causal tie between them and what preceded them science does not help us; a set of events seemingly incommensurable with any of the events leading up to it. The self "sees" the sun; it senses a two-dimensional disc of brightness, located in the "sky", this last a field of lesser brightness, and overhead shaped as a rather flattened dome, coping the self and a hundred other visual things as well. Of hint that this is within the head there is none. Vision is saturated with this strange property called "projection", the unargued inference that what it sees is at a "distance" from the seeing "self". Enough has been said to stress that in the sequence of events a step is reached where a physical situation in the

brain leads to a psychical, which however contains no hint of the brain or any other bodily part. . . . The supposition has to be, it would seem, two continuous series of events, one physico-chemical, the other psychical, and at times interaction between them' (Sherrington, 1947, pp. xx-xxi).

Just as the physiologist is not likely to be impressed by the philosopher's contention that there is some self-contradiction involved in supposing consciousness to be a brain process, so the philosopher is unlikely to be impressed by the considerations which lead Sherrington to conclude that there are two sets of events, one physico-chemical, the other psychical. Sherrington's argument for all its emotional appeal depends on a fairly simple logical mistake, which is unfortunately all too frequently made by psychologists and physiologists and not infrequently in the past by the philosophers themselves. This logical mistake, which I shall refer to as the 'phenomenological fallacy', is the mistake of supposing that when the subject describes his experience, when he describes how things look, sound, smell, taste or feel to him, he is describing the literal properties of objects and events on a peculiar sort of internal cinema or television screen, usually referred to in the modern psychological literature as the 'phenomenal field'. If we assume, for example, that when a subject reports a green after-image he is asserting the occurrence inside himself of an object which is literally green, it is clear that we have on our hands an entity for which there is no place in the world of physics. In the case of the green after-image there is no green object in the subject's environment corresponding to the description that he gives. Nor is there anything green in his brain; certainly there is nothing which could have emerged when he reported the appearance of the green after-image. Brain processes are not the sort of things to which colour concepts can be properly applied.

The phenomenological fallacy on which this argument is based depends on the mistaken assumption that because our ability to describe things in our environment depends on our consciousness of them, our descriptions of things are primarily descriptions of our conscious experience and only secondarily, indirectly and inferentially descriptions of the objects and events in our environments. It is assumed that because we recognize things in our environment by their look, sound, smell, taste and feel, we begin by describing their phenomenal properties, i.e. the properties of the looks, sounds, smells, tastes and feels which they produce in us, and infer their real properties from their phenomenal properties. In fact, the reverse is the case. We begin by learning to recognize the real properties of things in our environment. We learn to recognize them, of course, by their look, sound, smell, taste and feel; but this does not mean that we have to learn to describe the look, sound, smell, taste and feel of things before we can describe the things themselves. Indeed, it is only after we have learnt to describe the things in our environment that we can learn to describe our consciousness of them. We describe our conscious experience not in terms of the mythological 'phenomenal properties' which are supposed to inhere in the mythological 'objects' in the mythological 'phenomenal field', but by reference to the actual physical properties of the concrete physical objects, events and processes which normally, though not perhaps in the present instance, give rise to the sort of conscious experience which we are trying to describe. In other words when we describe the after-image as green, we are not saying that there is something, the after-image, which is green, we are saying that we are having the sort of experience which we normally have when, and which we have learnt to describe as, looking at a green patch of light.

Once we rid ourselves of the phenomenological fallacy we realize that the problem of explaining introspective observations in terms of brain processes is far from insuperable. We realize that there is nothing that the introspecting subject says about his conscious experiences which is inconsistent with anything the physiologist might want to say about the brain processes which cause him to describe the environment and his consciousness of that environment in the way he does. When the subject describes his experience by saying that a light which is in fact stationary, appears to move, all the physiologist or physiological psychologist has to do in order to explain the subject's introspective observations, is to show that the brain process which is causing the subject to describe his experience in this way, is the sort of process which normally occurs when he is observing an actual moving object and which therefore normally causes him to report the movement of an object in his environment. Once the mechanism whereby the individual describes what is going on in his environment has been worked out, all that is required to explain the individual's capacity to make introspective observations is an explanation of his ability to discriminate between those cases where his normal habits of verbal description are appropriate to the stimulus situation and those cases where they are not and an explanation of how and why, in those cases where the appropriateness of his normal descriptive habits is in doubt, he learns to issue his ordinary descriptive protocols preceded by a qualificatory phrase like 'it appears', 'seems', 'looks', 'feels', etc.

I am greatly indebted to my fellow-participants in a series of informal discussions on this topic which took place in the Department of Philosophy, University of Adelaide, in particular to Mr C. B. Martin for his persistent and searching criticism of my earlier attempts to defend the thesis that consciousness is a brain process, to Prof. D. A. T. Gasking, of the University of Melbourne, for clarifying many of the logical issues involved and to Prof. J. J. C. Smart for moral support and encouragement in what often seemed a lost cause.

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NOTES

The first of these is the fact that the authors have not provided a clear definition of the term "notes". It is not clear whether they refer to the notes of a meeting, or to the notes of a book, or to the notes of a lecture. This is a significant omission, as it leaves the reader in the dark as to what exactly is being discussed. The second point is that the authors do not provide any evidence to support their claims. They simply state their conclusions without providing any data or references to back them up. This is a serious flaw in their argument, as it leaves the reader with no way of knowing whether their conclusions are valid or not. Finally, the authors do not provide any information about their own qualifications or expertise in the field. This is another significant omission, as it leaves the reader with no way of knowing whether the authors are qualified to write about this topic.

In conclusion, the authors' argument is weak and unsupported. They have not provided any evidence to support their claims, and they have not provided any information about their own qualifications. As a result, their conclusions are highly questionable and should not be taken seriously.

The authors' argument is based on a number of assumptions that are not clearly stated. For example, they assume that the data they are using is accurate and reliable, but they do not provide any evidence to support this assumption. They also assume that their conclusions are valid, but they do not provide any evidence to support this assumption. These assumptions are significant, as they form the basis of the authors' argument. Without them, the authors' argument would be completely unconvincing.

The authors' argument is also based on a number of logical fallacies. For example, they use the fallacy of appeal to authority, as they cite the work of other authors without providing any evidence to support their claims. They also use the fallacy of bandwagon, as they claim that their conclusions are supported by a large number of people without providing any evidence to support this claim. These fallacies are significant, as they weaken the authors' argument and make it less convincing.

THE 'PHENOMENOLOGICAL FALLACY'— A REPLY TO J. R. SMYTHIES

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In attempting to demonstrate the fallaciousness of my account of what I have called (Place, 1956) the 'phenomenological fallacy', Smythies (1957) appears to have misunderstood what I meant by that term. He seems to think that on my view to come out with a statement like 'there is a green image in *O*'s mind' is to commit a logical fallacy. Statements by themselves can be true or false, meaningful or meaningless, but only arguments and inferences can be valid or fallacious. To commit a logical fallacy is to draw a conclusion which is not justified or demanded by the premisses of the argument. To say that an inference is fallacious is not to imply that the conclusion is necessarily false, merely that it does not follow from the premisses.

The phenomenological fallacy in my sense is the fallacy of supposing, for example, that the statement '*X* looks green to *O*' commits us logically and inescapably to the conclusion 'there is a green image in *O*'s mind'. This is not to say that the statement 'there is a green image in *O*'s mind' is logically untenable. It may be possible, as Smythies points out, to develop a sort of sense-datum language in which the statement 'there is a green image in *O*'s mind' is used where we should normally say 'so and so looks green to *O*'.

If such a language were generally adopted, there is a sense in which anyone who said '*X* looks green to *O*' would be committed on switching to the sense-datum language to the statement 'there is a green image in *O*'s mind', just as anyone who said 'the sky is blue' would be committed on translating his remarks into French to the statement 'le ciel est bleu'. But it would still be fallacious to deduce from the premisses 'images in the mind are sometimes green', 'brain processes cannot be green' the conclusion 'images cannot be brain processes', since words like 'green' in the sense-datum language would not mean what they mean in our ordinary physical object language to which statements about brain processes belong.

Another possibility which Smythies seems to be hinting at in the latter part of his paper is that, although we cannot legitimately infer the real properties of images in the mind from the apparent properties of things in the environment, we might conceivably have other reasons, perhaps of an experimental nature, for adopting the view that there is something literally green, i.e. green in the sense that grass, corroded copper and the 'Go' signal of the traffic light are green, in *O*'s mind whenever something looks green to him. If such a hypothesis were established beyond reasonable doubt on other grounds, the inference from the apparent properties of things to the real properties of images in the mind would no longer be a fallacy, since it would be supported by the major premiss 'whenever something appears to have a certain property, there is an image in the mind which actually has that property'.

While this possibility must undoubtedly be conceded, it is difficult to see any reason

for giving serious consideration to a hypothesis for which there is no empirical evidence, which is inconsistent with the whole trend of scientific thinking and to which no precise meaning has yet been given.

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MATERIALISM AS A SCIENTIFIC HYPOTHESIS

IN discussing the logical status of the thesis that sensations are processes in the brain, J. J. C. Smart¹ contends that I was partly right and partly wrong in maintaining that this thesis could and should be interpreted as a straightforward scientific hypothesis.² He argues that in so far as the issue is between a brain-process thesis and a heart, liver, or kidney thesis the issue is empirical and can be decided by experiment. But in so far as the issue is between materialism on the one hand and epiphenomenalism, psycho-physical parallelism, interactionism, and so forth, on the other, the issue is nonempirical. I shall argue that Smart is partly right and partly wrong in maintaining that the issue between the kind of materialism which both he and I would wish to defend and the rival doctrines of epiphenomenalism, psycho-physical parallelism, interactionism, and so forth, is a non-empirical issue.

In my own paper on this topic³ I argued that there are certain logical conditions which must be satisfied to enable us to say that a process or event observed in one way is the same process or event as that observed in (or inferred from) another set of observations made under quite different conditions.⁴ In that paper I suggested only one logical criterion, namely, that 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. I illustrated this point by comparing the case where the movements of the sun and the moon observed astronomically are used to explain the movement of the tides observed geophysically

¹ J. J. C. Smart, "Sensations and Brain Processes," *Philosophical Review*, LXVIII (1959), 141-156. The reference is to remarks on pp. 155-156. I should say that I am in substantial agreement with the remainder of Smart's paper.

² U. T. Place, "Is Consciousness a Brain Process?," *British Journal of Psychology*, XLVII (1956), 44-50.

³ *Op. cit.*, pp. 47-48.

⁴ This problem is discussed in more general terms in two papers by H. Feigl. In "The Mind-Body Problem," *Revue Internationale de Philosophie*, IV (1950), reprinted in H. Feigl and M. Brodbeck (eds.), *Readings in the Philosophy of Science* (New York, 1953), pp. 612-626; the relevant passage will be found, in the latter volume, from the bottom of p. 621 to the top of p. 623. See also pp. 438-445 of "The 'Mental' and the 'Physical,'" published in H. Feigl, M. Scriven, and G. Maxwell (eds.), *Minnesota Studies in the Philosophy of Science*, II (Minneapolis, 1958), pp. 370-497.

with the case where observations interpreted in terms of the motion of electric charges are used to explain, not a separate event called "lightning," but the fact that we see and hear the sort of things we do on a stormy night.⁵ I would now want to add to this the rather obvious additional 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.

For the purposes of the present argument it does not matter whether this account of the logical criteria used to establish the identity of an event described in terms of two different procedures of observation is correct or not. What is important is that there must be some logical criteria which we use in deciding whether two sets of correlated observations refer to the same event or to two separate but causally related events. The problem of deciding what these criteria are is a logical problem which cannot be decided by experiment in any ordinary sense of the term; and since we cannot be certain that the criteria are satisfied in the case of sensations and brain-processes unless we know what the criteria are, the issue is to that extent a philosophical issue. Moreover, even if we agree on the nature of these logical criteria, it is still open to the philosopher to question the logical propriety of applying them in the case of sensations and brain-processes.

For the sake of argument, however, let us assume that these

⁵ Feigl in Feigl and Brodbeck, *op. cit.*, p. 623 top, gives another example, that of temperature and molecular movement, which brings out the same point, although Feigl's interpretation of it differs from my own. He distinguishes between the identity of things observed under different conditions, as in the case of the same mountain observed from different viewpoints by different observers (p. 622 near top), and the identity of concepts, as in the case of 2^3 and $\sqrt{64}$ (p. 622 bottom). The identity of things is established empirically, while the identity of concepts is established either deductively, as in the case of 2^3 and $\sqrt{64}$, or empirically, as in the case of temperature and molecular motion, by the empirical verification of a scientific theory within which it is possible to define one concept in terms of the other. I prefer to regard the temperature, lightning, and sensation-brain-process cases as examples of a special variety of the identity of things in which an identity is asserted between a state, process, or event and the micro-processes of which it is composed. I suspect, however, that the difference between Feigl's position and my own on this point is not as fundamental as it appears at first sight.

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philosophical issues have been settled and that they have been settled in favor of the materialist hypothesis. We now find ourselves faced with a purely empirical issue, namely, whether there is in fact a physiological process, be it in the brain, the heart, the liver, the kidney or the big toe, which satisfies the logical criteria required to establish its identity with the sensation process. As it happens, we already know enough to be quite sure that, if there is such a process, it must be situated in the brain, and even within the brain there are extensive areas that can be ruled out with virtual certainty as possible loci of consciousness—areas, for example, where brain lesions produce motor disturbances without any change in consciousness other than an awareness of the disability itself and emotional reactions to the problems it creates. But the empirical problem is not, as Smart seems to think, simply a matter of determining the precise anatomical location of this physiological process. It is still an open question whether there is, even in this relatively circumscribed area, a process which satisfies the logical criteria required to establish its identity with the sensation process.⁶ Even assuming that we know what these criteria are and are satisfied that they are applicable in this case, we cannot regard the question as finally settled until a process satisfying the necessary criteria has been discovered or until we are sure that we know enough about the brain to be certain that no such process exists.

Until such time as this issue is settled by further psycho-physiological research, materialism remains an empirical hypothesis—the hypothesis that there exists, presumably in the brain, a physiological process which satisfies the logical criteria required to establish its

⁶ We certainly cannot say that a process has been discovered which satisfies the criteria I have suggested, that is, a process an understanding of which enables us to explain the peculiarities of sensations, mental images, and dreams as reported by the individual in whom they occur. We can, of course, explain a great many of the peculiarities of sensation in terms of the stimulus pattern impinging on the receptors, the anatomy and physiology of receptor organs, and the cerebral projection of afferent nerve fibres; but what we want, if I am right, and what we have not yet got, is the clear identification of a process in the brain which “incorporates” a relatively small part of the total stimulus pattern impinging on the receptors at any one moment in the way that the sensation process does, that is capable of assuming forms determined by factors endogenous to the brain as in dreams and mental imagery, and that has the sort of function in the individual’s thought processes and his adaptation to his environment which his sensations and mental imagery appear to have.

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identity with the sensation process. If this hypothesis is confirmed, the need disappears for alternative theories designed to explain the relationship between sensation, considered as an independent non-physiological process, and the physiological processes with which it is correlated. Theories like epiphenomenalism could then only be made tenable by refusing to accept the logical criteria put forward as establishing the identity of a process characterized by reference to two entirely different observation procedures or their application to the case of brain-processes and sensation. Given a solution of the logical issues favorable to materialism, these theories can be ruled out on empirical grounds in a way that Gosse's theory of creation⁷ cannot be ruled out.

In practice, of course, those who object to the materialist hypothesis are much more likely, and indeed would be much better advised, to make their stand among the logical issues I have mentioned than to accept the logical criteria put forward as establishing the identity of a physiological process with the sensation process and pin their hopes on the failure of scientific research to discover a process satisfying these criteria. It is among these philosophical issues that the real battle will be fought. To this extent Smart is right when he says that the issue between materialism on the one hand and epiphenomenalism, psycho-physical parallelism, and so forth, on the other will not be decided by a program of experimental research. But this does not affect my contention that materialism can and should be treated as a straightforward scientific hypothesis. It may be that the logical criteria for establishing the identity of the object of two types of observation are logically inapplicable to the case of sensations and brain-processes. If so, I am just plain wrong in claiming that materialism can be treated as a scientific hypothesis; but if the criteria are applicable, I am right. I am not partly right and partly wrong.

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⁷ Smart, *op. cit.*, pp. 155-156.

UNDERSTANDING THE LANGUAGE OF SENSATIONS

In a well known passage in the Philosophical Investigations Wittgenstein,¹ argues that a private language the component words

¹L.Wittgenstein, Philosophical Investigations. Oxford,Blackwell 1953
§§ 243-258

of which refer to the speaker's private experiences could not be understood by or explained to another person. This argument has been taken by some philosophers, notably by Kenny² as showing that

²A.Kenny, Action, Emotion and Will. London, Routledge & Kegan Paul, 1963

there cannot be such a thing as a private experience or a private mental event.

My concern in this paper is to defend the view that there are such things as private experiences and that we can and do describe them. Consequently I am not concerned with the question as to whether or not this is a correct interpretation of Wittgenstein's view at the time when he wrote Part 1 of the Philosophical Investigations. It is sufficient for my purposes that at least some reputable philosophers should have thought that this argument of Wittgenstein's, together with other arguments to be found in the sections that follow it, show either that private experiences, as traditionally understood, do not exist, or, if they do, that nothing intelligible can be said about them.

Kenny summarises the argument which he attributes to Wittgenstein as follows:

"Any word purporting to be the name of something observable only by introspection, and merely causally connected with publicly observable phenomena, would have to acquire its meaning by a purely private and uncheckable performance. But no word could acquire a meaning by such a performance; for a word only has meaning as part of a language; and a language is something essentially public and shareable" ³

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Kenny, *op. cit.* p. 13.

The conclusion that Kenny quite properly draws from these premisses is that there is no way in which a word which purported to refer to 'something observable only by introspection' could acquire such a meaning; and hence that meaningful words like 'pain' which have been traditionally interpreted in this way, have been misunderstood. Since I believe that there are such things as private experiences "observable only by introspection and merely causally connected with publicly observable phenomena" and that words like 'pain', 'itch', 'throb' and 'tingle' are the names of such experiences, it is clear that I do not accept the conclusion that Kenny draws from the argument he attributes to Wittgenstein. But since I accept that the conclusion follows logically from the premisses of argument, it follows that I am committed to rejecting either one or both of the premisses from which the conclusion is derived.

I have no wish, however, to dispute the thesis which appears as the second premisses in the argument as stated by Kenny, where he maintains that a word purporting to refer to a private experience cannot be supposed to acquire its meaning by virtue of a private decision to use the word to refer to a particular feature or aspect of the private experience of the individual concerned. For to hold that words like 'pain' can and do acquire their meaning in this way would contradict the account I have given elsewhere¹ of the way in which we learn

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U.T. Place, 'Is consciousness a brain process?' British Journal of Psychology, xlvii (1956), 44-50. The reference is to p.49

to describe our own private experiences. In attempting to refute what I called the 'phenomenological fallacy', I argued that "it is only after we have learnt to describe the things in our environment that we can learn to describe our consciousness of them. We describe our conscious experienceby reference to the actual physical properties of the concrete physical objects, events and processes which normally, though not perhaps in the present instance, give rise to the sort of conscious experience which we are trying to describe".

As will be apparent from this quotation, my quarrel is with the first premiss of the argument that Kenny attributes to Wittgenstein, the thesis that any word "purporting to be the name of something observable only by introspection..... would have to acquire its meaning by a purely private and uncheckable performance." My contention is that because the meaning of a word can only be explained by pointing or referring to publicly observable features of the common physical environment in which we all find ourselves, it does not follow that the word in question can only be understood as referring to those publicly observable phenomena by reference to which its meaning is explained. In my view there is no contradiction involved in holding both that words like 'pain' refer to a private experience and that the meaning of the word 'pain' can only be explained by reference to the publicly observable concomitants of pain.

On Kenny's interpretation of his argument Wittgenstein is apparently committed to a view which, on the evidence of other things he says in the Philosophical Investigations, it is difficult to believe he would have seriously held, namely, the view that the only way to explain the meaning of a word or expression is to point at the object or phenomenon to which it refers. In fact there is no word or expression whose meaning can be explained in this way. It is sometimes possible to explain to someone to what or to whom one is referring when using a proper name or what Strawson¹ has called

¹P.F.Strawson, Introduction to Logical Theory. London, Methuen 1952,
p.188.

a 'singular referring expression' by pointing to the object or person in question; but in neither case would it be natural to describe this as explaining the meaning of the proper name or the expression. In the case of the proper name this is because proper names are not words to which the concept of 'meaning' applies. Singular referring expressions such as 'the hat I wore yesterday' do have meaning; but their meaning is not the same thing as the object to which they refer. The meaning of an expression like 'the hat I wore yesterday' is the same regardless of who says it or the occasion on which it is said. Its referent on the other hand, if it has one, will change from day to day and from speaker to speaker.

Learning the meaning of a word or expression, as Wittgenstein repeatedly emphasises in the Philosophical Investigations, is a matter of learning a rule for the use of a word or expression in question. In the case of a referring word or expression the rules with which we are concerned are the rules governing the use of the word or expression in question as a means of referring or drawing attention to some recurring feature of the world that can appear in a wide variety of different contexts.

The meaning of a referring word or expression can be taught in a number of different ways. One way is to give the kind of definition which spells out in terms of a number of other words the criteria used in deciding whether or not the term in question applies in a given case.. For example the term 'bowler hat' might be defined as 'a hard hat with a brim and rounded dome-like top'. In this case it makes sense to say that the definition states the meaning of the word.

Another way of explaining the meaning is by giving synonyms as in a typical dictionary definition. In this case the synonyms can be said to have the same or approximately the same meaning as the word defined, though they do not state the meaning as in the

previous example. In both these cases the definition can only succeed as an explanation of the meaning of the word or expression in so far as the individual who is trying to learn the meaning already knows the meaning of the words of which the definition is composed. It follows from this that definitions of either kind are of limited application in the acquisition of word meanings and can only be used once the individual has acquired a substantial vocabulary which must have been learned in some other way. One procedure whereby a child can be taught this basic vocabulary is the procedure that has been somewhat misleadingly referred to by philosophers as 'ostensive definition'. This is the procedure in which the child is taught the rule for using a word as a means of referring to something by repeatedly pointing at instances to which it applies or to which it can be used to refer. To call this 'ostensive definition' is misleading because it suggests that the object or phenomenon to which the teacher points is part of the meaning of the word in the way that 'being a hard hat' is part of the meaning of the term 'bowler hat' in a formal verbal definition. That this is not the case is shown by the fact that if instead of pointing physically at an instance, we explain the meaning of a word by giving an instance referred to by a singular referring expression, the singular referring expression that refers to the instant will not be part of the meaning of the word whose meaning it is used to explain. Thus if instead of pointing at a bowler hat, we explain the meaning of the term to a child by saying that it is the sort of hat Uncle George wears when he goes to the office, it is clearly a matter of contingent fact and not a necessary truth that the hat Uncle George habitually wears when he goes to the office is a bowler, from which it follows that being the sort of hat Uncle George habitually wears to the office is not part of the meaning of 'bowler hat'.

There are two morals that I wish to draw from this example. The first is that no conclusions about the meaning of a word or expression can be drawn from a single instance to which attention is drawn in explaining its meaning. Thus if Uncle George's bowler happened to be black, a child could as readily conclude from this example that the word 'bowler' was a synonym of 'black' as that it meant a hat of a certain shape and solidity. My second moral is that the function of the so-called

ostensive definition is simply to draw the pupil's attention to an instance of something to which the word in question applies, it is only by repeatedly drawing the pupil's attention to a number of such instances in a variety of different settings that the pupil can, by the learning processes known to the psychologists as generalisation and discrimination, gradually learn to understand what the word means, at least to the extent of being able to identify what it is that someone else is referring to when he uses the word in question.

What are the implications of these conclusions for the case with which Wittgenstein is concerned where a child learns the meaning of a sensation word like 'toothache'? In § 257 of Philosophical Investigations Wittgenstein argues that "if human beings showed no outward signs of pain (did not groan, grimace, etc.)..... it would be impossible to teach a child the meaning of the word 'toothache' ". He then goes on to consider the possibility that a child might teach itself the meaning of such a word by a process of private ostensive definition, and he concludes that this idea is a logical non-starter, because neither the child nor anyone else could ever know whether or not he (the child) was using the word correctly. Now in the light of the above considerations we can probably agree that a word like 'toothache' or, if not 'toothache' then certainly the more fundamental concept of an 'ache' or 'pain' is the sort of basic word whose meaning could not be explained to a child by means of a verbal definition and would have to be explained by some kind of ostensive procedure. If, however, pain is a private experience which is 'observable only by introspection' it follows that the teacher cannot in any literal sense point at an instance to which the word 'pain' applies, whether it be an instance of his own or of his pupil's pain. Furthermore we can readily agree with Wittgenstein in holding that it makes nonsense to talk of a child's teaching himself the meaning of the word 'pain' by private ostensive definition.

Clearly if someone wants to teach a child the meaning of a word that refers to a private experience the best he can do if he cannot explain its meaning by definition is to draw the child's

attention to instances of that experience by pointing to its publicly observable concomitants. Now one, though by no means the only publicly observable concomitant of pain is characteristic behaviour (groans, grimaces, etc.) that it is said to evoke. Consequently one way of explaining the meaning of 'pain' by the ostensive method would be to point to someone, preferably the child who is learning the word, when he is displaying this sort of behaviour. Moreover, if it were the case, which it is not, that the behaviour it evokes were the only publicly observable concomitant of pain, I think we can agree with Wittgenstein that if people ceased to exhibit this behaviour, it would no longer be possible to explain to a child the meaning of the word 'pain' by the ostensive method, since on this hypothesis there would no longer be anything to point to.

There is nothing, however, in this argument that requires us to accept the contention that Kenny attributes to Wittgenstein to the effect that private ostensive definition is the only form of the ostensive method that could conceivably be used in explaining the meaning of a word that refers to a kind of private experience. This conclusion follows only if you suppose either that there has to be some logically necessary connection between the meaning of the word and the object or phenomenon to which the teacher points in explaining its meaning or that the object or phenomenon that is actually and literally pointed at must always be of something to which the word applies. In fact, as we have seen, there is no reason why we should accept either of these assumptions. We have seen in the case of Uncle George and his bowler hat that, in so far as one can make sense of the notion of a logical connection between the meaning and an instance to which it applies, there need be no such logical connection between the meaning of the word and the instance used to explain it. We have also noted that the function of the pointing is merely to draw the pupil's attention to one of a number of instances to which the word applies, from which follows that any device that will serve to call the pupil's attention simultaneously to the word and instance to which it applies

will satisfy the requirements. In the case of private experiences, of course, the only device that the teacher can use in order to draw the pupil's attention to the relevant private experience is to draw attention to its publicly observable concomitants in the pupil's own case; but the fact that this procedure is necessarily indirect does not mean that it is necessarily ineffective.

In § 270 of ¹ Philosophical Investigations Wittgenstein argues that if there is a publicly observable phenomenon such as a rise in blood pressure recorded on a manometer which is invariably correlated with a private experience of the individual which he designates by means of the letter E, this sign (the letter E) can only serve a useful function in the language game in so far as it serves to draw attention to the outward concomitant with which the experience is correlated (the rise in blood pressure recorded by the manometer). This suggests that Wittgenstein would argue that if the only way to draw an individual's attention to a private experience of his is to draw his attention to a publicly observable concomitant of that experience, it would be impossible to draw his attention to the experience without at the same time drawing his attention to the publicly observable concomitant, ~~and~~ He would, therefore, have no way of knowing that the word question referred to the experience rather than the concomitant of that experience, and thus no way of learning to use E as a sign for the occurrence of the experience rather than as a sign meaning a rise in blood pressure on the manometer. What Wittgenstein does not seem to have appreciated, in formulating this example, however, is that this situation would only arise in a case such as he envisages, where the occurrence of a particular private experience is correlated and, moreover, invariably correlated with only one publicly observable concomitant. In fact sensations

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are correlated rather loosely with an appreciable number of different publicly observable concomitants. Pains, for example, are correlated not only with a number of different behaviours such as groans, grimaces and more complex forms of escape and avoidance behaviour to which the pain stands in the relationship of cause to the behaviour as effect; they are also correlated with publicly observable events such as various kinds of tissue injury which are the causes of which the pain is the effect. By associating the word 'pain' with all these different concomitants, ~~as~~ each ^{of} which has its own separate and peculiar designation, it is not difficult to see how an individual can soon learn to eliminate all possible alternative constructions and thus come to use the word 'pain' as the name of the only feature common to these multifarious situations as they apply to himself, namely a particular variety of private experience that he has on such occasions. He can only acquire this ability, of course, if he does in fact have a distinctive experience which is correlated with the standard concomitants of pain, both its causes and its effects, in the standard way that pains are correlated with their publicly observable concomitants in all members of the human species who are normal in this respect.

At this point in the argument, however, Wittgenstein introduces another objection aimed at discrediting or, perhaps one should rather say, undermining our confidence in the belief that sensation words are the names of private experiences. In § 271 he argues that if pain is a particular kind of private experience, it is logically possible that someone might use the word 'pain' "in a way fitting in with usual symptoms and presuppositions of pain" and yet be referring to a quite different experience each time; and in § 272 he argues that it is logically possible - "though unverifiable - that one section of mankind had one sensation of red and another section another". The implication here is that there is no means of knowing whether the private experience that is supposedly referred to by a given word or expression is like or unlike the experience referred to by that word by different people or by the same individual on different occasions. There is therefore

no means of knowing whether or not the word is being used in the same or in a different sense on different occasions; and a word, such as this whose meaning can change from one occasion to another without one being any the wiser can perform no usefullinguistic function; it cannot serve to communicate anything. As Wittgenstein puts it "a wheel that can be turned though nothing else moves ~~it~~, is not part of the mechanism"¹. In examining this argument we need to consider separately the two cases that Wittgenstein gives the one in which

¹.op. cit. § 271.

the word 'pain' refers to something different when used by the same individual on different occasions and the one in which the word refers to something different when used by different people. The case which Wittgenstein discusses in § 271 when someone uses the word 'pain' in a way fitting in with the usual symptoms and presuppositions of pain, but, nevertheless, uses it to refer to a different experience every time, begs the question. For if it is the case, as I for one believe it is, that the word 'pain' refers to a particular variety of private experience, it follows that one of the "presuppositions of pain" is the presupposition that pain is a private experience all instances of which as they are experienced by a given individual have that distinctive quality characteristic of pain; and if this is one of the presuppositions of pain, it follows that someone who uses 'pain' to refer to a set of experiences that do not have any such distinctive quality in common is not using 'pain' in a way fitting in with its usual presuppositions

Nevertheless it is not sufficient simply to assert as a matter of individual opinion that being a private experience with the distinctive quality characteristic of pain is one of the presuppositions of pain. Some evidence is required to show that this is how the word is ordinarily used. Wittgenstein implies that the word 'pain' is ordinarily used in such a way that it can be just as easily construed as referring to the publicly observable concomitants of pain as to any supposed private experience underlying them. But if this were so,

every occurrence of the standard concomitants of pain ought to be a pain and there should be no differences between different kinds of pain that cannot be accounted for in terms of differences in its publicly observable concomitants.

In fact it is not difficult to produce examples where these principles do not hold. Groaning and grimacing, for example, can occur just as readily and without any element of pretence in response to a sensation like nausea which can be just as unpleasant as any pain, but is not itself a form of pain. Nausea, of course, makes us want to vomit which pains do not; but this is hardly a reason for refusing to call it a pain. The reason why we do not call nausea a pain is simply that it feels different; and it is just this business of things feeling different, looking different, sounding different, tasting different and smelling different that we are talking about when we use expressions like 'immediate' or 'private' experience. Similarly its being located in one's teeth is not the only or even the essential difference between toothache and other sorts of pain. It makes sense to say of someone that he felt a hot smarting pain in his tooth instead of the usual cold bony feeling of toothache.

Thus in the first of Wittgenstein's two cases where someone uses the word 'pain' to refer to a different experience each time, someone who used the word in this way would not be using it in the way we ordinarily use it, because the possibility of comparing one pain with another and with other experiences that are not pains with respect to the way they feel to the person who has them is built into our ordinary concept of 'pain'.

But can we say in the second case that Wittgenstein discusses in § 272, where it is suggested that everyone might have a different experience which he calls 'his pain' or 'his sensation of red', that the possibility of comparing one person's pain or sensation of red with another's is also built into the presuppositions of concepts like 'pain' or 'the sensation of red'? I think we can.

As I see it we know perfectly well that different people have similar experiences under similar circumstances; and when they do not, we usually know that they do not. The argument that we cannot know whether other people's experiences are like or unlike our own rests on the fallacious assumption that the only way to compare two experiences is to have both of them. We certainly cannot compare two experiences had by different individuals in the way we compare the appearances of two things we are looking at simultaneously. Nor can we compare them as we compare the appearance of something we are looking at now with the appearance of something we looked at on a previous occasion. But these are not the only ways in which we can compare things. We can compare the experiences of two different people, I suggest, in the sort of way that we might compare two towns with respect to their position in the economy of their respective countries, or two individuals with respect to the positions they occupy in different organisations. We can compare them, (a) with respect to the environmental conditions that normally prevail when the individual has an experience of the kind in question and which serve to characterise it, and (b) with respect to its likeness to and difference from other experiences of the same individual.

My toothache is like is like your toothache and unlike all other experiences of yours in that it is a sensation produced in bad cases of tooth decay and in the course of dental operations. You may say that in this respect it is only by definition that my toothache is like your toothache; but what is the force of 'only' here. In any case my toothache need not be like yours only by definition. It is true of my toothache that it is more like the aches that I feel in my muscles and joints and in my head, than the smarts and stings that I feel on the surface of my skin. It also bears a strong resemblance to the sensation of cold that I get. It may or may not be true of your toothache that it is related to other sensations of yours in this way. I should have to ask you to find out. But if it is, this is a respect in which it is not analytic to say that my toothache is like your toothache.

It may be objected that all we know from this is that two experiences had by different people when their sense organs are stimulated in the same way stand in the same sort of relationship of likeness and difference to other experiences that the same individuals have under other conditions of stimulation; it tells us nothing about the intrinsic likeness or difference of the two experiences. But what is this 'intrinsic' likeness and difference? Does it make sense to talk in this way? If two things are alike or unlike, they must be alike or unlike in some respect. In what other respect can an experience of mine be like or unlike an experience of yours? Similar to mine as mine is like other experiences of mine? But my experiences are like and unlike one another with respect to the way they feel to me. How can an experience of yours be like an experience of mine with respect to the way it feels to me, since I cannot feel it?

Let us suppose, however, that there is such a thing as this intrinsic likeness and difference between the experiences of different people, and that we just do not have any means of discovering whether two experiences of different peoples are similar in this respect. Does it matter for the purposes of the argument we are considering that we do not know whether or not two experiences are alike in this respect? The argument is that if we have no means of knowing whether or not two experiences are alike, there is no means of knowing whether the word used to refer to both of them refers to the same sort of thing. If we knew nothing about these two experiences except that they were experiences that someone was having at some time, this argument would carry weight. But, as we have seen, we can usually specify at least two respects in which the experiences are alike or different; and if two things are alike in the only respects in which they can be known to be alike, what is the point of saying that the word or phrase that is used to refer to the may refer to something quite different in the two cases? We can understand the word 'chair', and understand it in the same sense, when it is used to refer to items of furniture that we know differ in a great many respects. What, then, is the point of saying

that words that refer to experiences cannot be understood, because things to which they refer may differ in a respect in which it is logically impossible for us to know whether they differ or not?

To conclude, Wittgenstein's 'beetle' in the box (§ 293) has no place in the language game, because there is nothing that each person can say about his own 'beetle', except that it is a 'beetle'. "It would be quite possible for everyone to have something different in his box!". Sensations are not like this. In ordinary speech there are various things we can say about them, and thus compare our own with other people's with respect to those features that we can specify. At first sight the situation in which we refer to sensations by a name given to that kind of sensation instead of by description, seems parallel to Wittgenstein's example; but in his example there is only one 'beetle' in each box, which stays there all the time, whereas each of us has innumerable sensations that appear, disappear and reappear in a lawful and predictable relation to one another and the circumstances outside the box, and the principles governing this appearance, disappearance and reappearance are very much the same for all of us. It is this lawful and predictable relation of sensations to their publicly observable concomitants that makes the communication of private experience possible.

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COMMENTS

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When I was asked to comment on a paper by Putnam entitled "Psychological Predicates," I expected to find myself discussing a paper dealing with the problems of how far there is any characteristic or set of characteristics which distinguish psychological predicates from predicates of a non-psychological kind. I have always assumed, at least since first reading Ryle's *The Concept of Mind*, that mental or psychological predicates are an extremely heterogeneous collection and that any theory which purports to hold good for psychological predicates in general would be difficult to sustain.

I was therefore somewhat surprised to find not only that Putnam was confining his discussion to one very special kind of psychological predicate, namely 'pain' predicates, but also that he was apparently assuming that conclusions which are arguably true of pain statements can be readily extended to cover psychological predicates in general.

Putnam begins by distinguishing three typical questions which concern the philosopher of mind: "(1) How do we know that other people have pains? (2) Are pains brain states? (3) What is the analysis of the concept of pain?" He then says that he proposes to confine his discussion to the second of these questions. This is unfortunate. For had he devoted some time to the analysis of the concept of pain, he might have avoided discussing the relative merits of three theories about pains, namely that they are brain states, functional states, and behavioral dispositions, all three of which in my view are false—false because pains are not states and hence cannot be brain states, functional states, or behavioral dispositions.

Putnam refers to the theory he discusses according to which pains are brain states as a theory some philosophers have held. He does not say which philosophers; but one gathers from a reference to Smart at one point that he is referring to a view which I put forward in an article in the *British Journal of Psychology* in 1956 and which was defended by J. J. C. Smart in an article in *Philosophical Review* in 1959.¹ My thesis in that paper was not the thesis that statements

¹ U. T. Place, "Is Consciousness a Brain Process?," *British Journal of Psychology*, XLVII, 1956, pp. 44-50. J. J. C. Smart, "Sensations and Brain Processes," *Philosophical Review*, LXVIII, 1959, pp. 141-156. Both papers are republished in *The Philosophy of Mind*, ed. V. C. Chappell, Englewood Cliffs, New Jersey, 1962.

like "pain is a brain state" are logically defensible. I do not think they are and did not think so when I wrote the paper. The view I was defending and the view which Smart defends in his paper is that statements like "having a pain is a process in the brain" are logically defensible, and I emphasize the word 'process.' The theory as I understand it is a theory about mental processes, not a theory about mental states, and having a pain on this view is a mental process, not a mental state. And if it is not a mental state it cannot be a brain state.

It may be argued in Putnam's favor that there is a sense of 'state' in which having a pain is a state. We might say that being in pain is an unpleasant state to be in. Nevertheless we do not speak of having a pain as a state of mind. Being in pain can and usually does have devastating effects on an individual's state of mind, but it is not itself a state of mind. A state of mind is the sort of thing that Ryle² has called a short term tendency or disposition. Examples of states of mind are emotional states such as elation, depression, excitement, anger, fear, disgust, embarrassment, jealousy, boredom, weariness, and nostalgia; moods of various kinds, such as reflective, cheerful, irritable, joking, and garrulous; short term propositional attitudes such as expecting, doubting, and intending; and abnormal states of consciousness such as confusion, disorientation, and delirium. States of mind are like mental processes and unlike mental capacities, traits of character, and other long-term tendencies and dispositions in that it is possible to distinguish fairly clearly defined periods of time during which they are and are not the case. And as Wittgenstein³ has pointed out they share with mental processes the property of being continuously the case from their beginning to their end.

Mental states differ from mental processes, that is from sensations, experiences, thoughts, mental pictures, dreams, and the like, in that although they are continuously the case from their beginning to their end, they cannot be said to be continuously going on. It is this characteristic of being something of which it makes sense to say that it is going on continuously from its onset to its offset that differentiates mental processes⁴ from other mental occurrences and conditions. It is closely connected with another logical feature of

² G. Ryle, *The Concept of Mind*, London, 1949, pp. 95-97.

³ L. Wittgenstein, *Philosophical Investigations*, Oxford, 1953, p. 59, footnote (a).

⁴ It will be appreciated that the term 'mental process' is being used here in a technical sense. In its ordinary use, in so far as it has one, the term 'mental process' is roughly equivalent to 'thinking' in the activity sense of that term. The use of a technical term to characterize this particular variety of mental occurrences seems unavoidable. There are a number of other technical terms to be found in the philosophical and psychological literature which embrace approximately the same range of concepts—'experience,' 'consciousness,' 'conscious experience,' 'sensations,' 'raw feels,' etc. All of them are in one way or another misleading.

mental processes, namely their logical connection with mental activity verbs. Thus for every expression in which an individual is said to have a mental process there is a corresponding verbal expression in which he can be said to do what he otherwise has, and the doing is an activity kind of doing. I can both have thoughts and think, have dreams and dream, have a mental picture and visualize, have a sensation and pay attention to it, and my thinking, dreaming, visualizing, and attending are all things I can be engaged in doing. Most mental states, on the other hand, are expressed in an adjectival rather than in a verbal form. They are things people are said to be or to be in, rather than things they have or do. And in the case of propositional attitude states where we *do* use the verbal form, where one can both have intentions and intend, have doubts and doubt, have expectations and expect, the verb is not an activity verb. Expecting, doubting, and intending are not things one can be engaged in doing.

Another difference between mental states and mental processes is that mental states are in an important sense less private than are mental processes. They are shown and expressed in behavior in a way that mental processes are not. I can express my intention or my anger, or show my confusion, or what I expect, in what I say or do. Philosophers often talk about the behavioral expressions of pain, as if pain was expressed in behavior in the way that anger is expressed. We might say "he expressed the pain he felt at this disappointment," using 'pain' in a derivative sense in which it serves to characterize a state of distress; but we never say "he expressed the pain he felt in his big toe." Nor do we say that he showed the pain in his toe. That sort of pain can't be shown. What we show in our behavior is *that* we are in pain. We betray the fact, we do not express it. True we can express our thoughts, but we do not express them in our behavior or in what we say—we express them in words.

If mental processes cannot be expressed in what we say and do in the way that mental states can, by the same token mental states cannot be described by their owner in the way that mental processes can. I can describe what it is or was like to have a particular sensation or experience, what my after images, mental pictures, or dreams are or were like. It makes no sense to ask me to describe what it is like to have an intention or to expect something. It makes some sense to ask me to describe what it was like to be angry or confused, but if you ask me to do so, what I describe are the sensations and thoughts that I had at the time, not the anger that was expressed or the confusion that was shown in my thoughts, in what I said and in my behavior.

The distinction between mental states and mental processes may seem a fine one, but it is a distinction which is vital to the

theory of psycho-physical identity in the form in which I hold it. To explain why this is so, it may be helpful to say something about the reasons which originally led Smart and myself to formulate this view. I cannot speak for Feigl⁵ here who came to hold a very similar view independently by a rather different route.

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*. 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's⁶ attempt to reduce pain to pain behavior 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.

Admittedly we did not consider Putnam's functional-state theory in this connection, not merely, I think, because it was not then available, but because we did not think we needed a theory to do the job which in my view the functional-state theory does. As I see it, the functional-state theory is a theory designed to meet objections to a behavioral-disposition theory of mental states, capacities, and tendencies similar to those which Putnam outlines in his paper against a behavioral-disposition theory of pain. The objections to Ryle's dispositional theory of mental states, capacities, and tendencies are now well known, but in the early nineteen fifties they were only faint whispers and we did not seriously consider them. We were concerned not with the inadequacy of the dispositional theory in those cases where it appears at first sight to provide a reasonably plausible and convincing account, but with those cases where Ryle himself makes no attempt to apply it and, as in the case of sensation,⁷ has to apologize for falling in with what he calls "the official story." And the reasons which led us (and Ryle presumably) to reject the dispositional account in the case of sensations, mental images, and dreams, namely their episodic and describable character, would, I am convinced, have led us to reject the functional-

⁵ H. Feigl, "The 'Mental' and the 'Physical'," in *Minnesota Studies in the Philosophy of Sciences*, Vol. II, eds. H. Feigl et al., Minneapolis, 1958, pp. 370-497.

⁶ Wittgenstein, *op. cit.*, paragraphs 367, 370.

⁷ Ryle, *op. cit.*, p. 200.

state theory as applied to these concepts had we considered it at the time. Certainly nothing that Putnam has said convinces me that the objections which convinced us that the dispositional theory of sensations will not do, do not apply with equal force to the functional-state theory.

I am conscious at this point that I may be overstating my case in that what I mean by a functional-state theory may not in fact be what Putnam means by a functional-state theory. Indeed I am inclined to think that there are two functional-state theories or, as I should prefer to call them, a functional-state theory and a functional-process theory, and that what is wrong with Putnam's paper is that he confuses the two. He is led into this confusion, I suggest, partly by a sense of the word 'state' in which it can quite properly be used to refer to the condition of continuous process at a specific point in time, the sort of thing that is caught by a still photograph of a moving object, and partly by the discontinuous step-like character of the operations carried out by the sort of electronic hardware on which his theoretical model is implicitly based, and in which it differs markedly from the continuous stream-like character of such biological processes as consciousness or the circulation of the blood. This confusion is reflected in his presentation of what I should prefer to call a functional-process theory of pain as an alternative to and hence, by implication, as incompatible with the psycho-physical identity thesis.

As I see it, it is not the functional-process theory which is incompatible with the psycho-physical identity thesis, but another theory, the functional-state theory proper. The functional-process theory, which is the sort of theory, I think, Putnam is trying to develop, can in principle be made to yield a valid account of pain and other mental processes. This theory, I shall argue, is in no way incompatible with and is in fact complementary to the psycho-physical identity theory. The functional-state theory proper, which is incompatible with psycho-physical identity, provides an excellent account of mental states, capacities, and tendencies; but it fails as an account of pain and other mental processes. Since, however, the psycho-physical identity theory is not intended to cover mental states, capacities, and tendencies, there is no conflict between the two theories provided each is restricted to its proper domain.

Since I am not as familiar as Putnam is with Turing machines and probabilistic automata and how one ought to talk about them, I propose, in stating the difference between these two theories to use the analogy of a machine that I do know how to talk about, namely, the automobile. Automobiles lack a great many features which human beings possess, but like any functioning system they have what I want to call functional states or performance characteristics

and they have functional processes going on inside them, and these are different. A functional state in my sense is a performance characteristic like the car's horsepower. Performance characteristics like horsepower provide a very good conceptual analogy in my view not only for capacities like knowledge and intelligence, but also for tendencies like beliefs and motives. Like an individual's beliefs and motives a car's horsepower determines the way it behaves when driven in a way which it is not quite natural to describe as causal; and it is just about as implausible to suggest that horsepower statements are reducible to a complex set of hypothetical statements about how the car would behave in an indeterminate variety of situations as it is to say this about belief and motive statements.

It is less easy, perhaps, to find a convincing analogy for mental states in the automobile, since automobiles do not generally exhibit the phenomenon of spontaneous recovery from changes in their performance characteristics, apart from those, such as ease of starting, which vary with the weather. Nevertheless, it makes sense to talk of carbon deposits in the cylinder head or a dragging brake as altering the performance characteristics of the machine, even though these changes have no special names and cannot normally be reversed without recourse to surgery.

The important thing about functional states considered as performance characteristics of the machine is that they are characteristics of the whole functioning unit under consideration, and not of its individual parts. The performance characteristics depend, of course, on the physical dimensions and characteristics of the machine; but the horsepower is not the same thing as the constructional feature on which it depends. Clearly if we apply this analogy to mental states, capacities, and tendencies we do not want to say that they *are* the physical states of the brain microstructure. The most we could possibly want to claim is that they are characteristics of the individual as a functioning unit which he has by virtue of the current state of the microstructure of his brain.

Now there are some philosophers, and I am not altogether clear whether Putnam is one of these, who want to say that having a pain is a performance characteristic of the whole person and not of any one of its parts in the way that the horsepower of a car is a characteristic of the machine as a whole or at least of the engine as a whole and not of any of its individual parts. But if, as I have argued, having a pain is a process, this cannot be right. The only processes that can apply to the car as a whole are its actual movements, accelerating, turning corners, slowing down, etc. These surely correspond to the individual's overt behavior; and having a pain or a dream, with all due respect to the Wittgensteinians, is not primarily

a matter of overt behavior. Nor does Putnam want to say that it is.

But if having a pain is a process and is not the overt behavior of the system as a whole, the only sort of process it can be is a process involving some specific part or parts of the controlling machinery. In terms of the automobile analogy, it must be, to use an example which I owe to Putnam himself in conversation, something like the pumping process which occurs in the car's fuel pump. Now it is perfectly true, as Putnam, I think, would want to point out, that we can specify this pumping process in terms of its functional properties in the total system without saying anything about its physical realization. We can characterize the pumping process in functional terms without knowing anything about the size or other physical characteristics of the actual pump involved and its precise physical location within the machine as a whole. But this does not mean that we cannot go on to ask what form the physical realization actually takes and where it is physically located. It always makes sense to ask what the physical realization and physical location of a functionally defined process are in a given case, in a way that it does not make sense to ask for a specification of the physical realization and physical location of a performance characteristic such as horsepower.

Furthermore, the functionally defined process and its physical realization are not two independent causally related things in the way that a performance characteristic and the structural characteristics on which it depends are two independent causally related things. It is true that the functional description of a process is only contingently related to the description of its physical realization. Fuel pumps differ in design and in the details of their construction, although they all have the same functional description in relation to the machine as a whole, and no conclusions about the design or position of the fuel pump of my car follow from the statement that it has one. But this does not mean that the physical description and the functional description refer to two different things, and no one but a Platonist would think that they did.

I have a great deal of sympathy with Putnam's attempt to construct a machine model in terms of which it is possible to specify in functional terms what is involved in someone's having a pain. Where I cannot agree with him is in claiming that his theory is an alternative hypothesis which is somehow incompatible with the psycho-physical identity hypothesis. I would prefer to regard this type of enterprise as one of the essential steps in a program designed to give some empirically testable substance to the psycho-physical identity hypothesis. I have spoken in the past⁸ of the materialist

⁸ U. T. Place, "Materialism as a Scientific Hypothesis," *Philosophical Review*, LXIX, 1960, pp. 101-104.

thesis as a scientific hypothesis, and I still believe that in an important sense this is right; but as it stands it is more in the nature of a proposal or "schematon," to use Putnam's term, for the construction of hypotheses than an actual hypothesis. We can see this if we ask the Popperian question, "What evidence would count against it?" Clearly, as it stands, we should have to know all that there is to know about the brain before we could be certain that it contains nothing which satisfies the logical criteria that have to be satisfied in order for us to be able to say that this brain process is that mental process; and how would we ever know that we knew all that there was to know? Only when we can formulate hypotheses which assert the identity of specific mental processes with specific brain processes, do we have a genuine scientific theory which is susceptible to empirical disconfirmation. And it is only when we begin to specify in precise functional terms what sort of processes these might be, that it becomes at all possible to make concrete suggestions as to their possible physical realizations.

Our present situation is rather like that of a man who is trying to work out from the way it performs, from the noises that it makes, and from a superficial inspection of the working parts, how an automobile works. Above the din of the motor he hears from time to time what he identifies as a pumping noise and wants to know where and what it is that is doing the pumping. He cannot locate the sound because of the background noise and all he has to go on is the hypothesis that there is some kind of pump operating. So he follows Putnam and starts to construct a theory of how such a thing as an automobile might work and what function a pump might have in such a system. Once he hits on the notion that a system such as this would require a pump to pump fuel from the fuel reservoir to the fuel injection system and can locate the fuel tank and fuel injection system with a fair degree of certainty, he knows where to look to find the fuel pump. But if he followed Putnam's advice he would not attempt to locate the fuel pump for fear that his first hypothesis might turn out to be wrong. He would have to remain satisfied with the tantalizing knowledge that somewhere in the machinery there must be one.

Putnam argues that one of the virtues of his theory, as compared with the psycho-physical identity theory, is that it is consistent with any number of possible theories about the nature of the physical realization of pain conceived as a functional state, including dualism, which he interprets as the view that pains "qua" functional states have "transphysical realizations." I have two comments⁹ to make

⁹ I owe the suggestion that I should comment on this part of Putnam's paper to Professor R. N. Smart.

about this contention. In the first place the psycho-physical identity theory considered as a philosophical thesis is no less consistent with any hypothesis about the physical realization of mental processes than is a theory such as Putnam's. For the psycho-physical identity theory considered as a philosophical thesis is not the thesis that sensations, etc., are brain processes; it is the thesis that this statement makes sense, not the thesis that it is true. What is maintained is that this is a scientific hypothesis which, like any scientific hypothesis, may turn out to be false.

We have already seen that there are problems in specifying the evidence which would constitute a decisive disconfirmation of the hypothesis. Nevertheless, supposing for the sake of argument that we did have good reasons for thinking that we had examined all the possible physical realizations in terms of brain activity that could conceivably be suggested, and shown that none of them satisfied the relevant criteria which would enable us to identify them as the sensations reported by the subject, we would then be forced to conclude that the hypothesis is false. And if the hypothesis, although sensible, is nevertheless false and there are no other physical processes which could conceivably be identified as the mental processes in question, we should then have no alternative but to conclude that some form of dualism must be true. How we could ever hope to formulate a dualistic hypothesis in such a way that it would become empirically disconfirmable, in the way that I have suggested the brain process hypothesis can and should be made empirically disconfirmable, is beyond me. This, however, is a problem that can safely be left until we find ourselves forced by the empirical evidence into the situation of having to adopt such a theory, a situation which is not likely to arise in the foreseeable future, if it arises at all.

The fact that the psycho-physical identity thesis has the same implication in this respect as Putnam's functional-state or, as I should prefer to call it, functional-process theory strongly suggests that this theory is not so much an alternative to the psycho-physical identity thesis as another way of saying the same thing. But if so, and this brings me to my second comment, there is something wrong with Putnam's contention that the functional-state (process) theory is an empirical hypothesis. For it is only in the capacity of a philosophical thesis that the psycho-physical identity thesis is compatible with dualism, which would suggest that in so far as it is consistent with dualism the functional-state (process) theory is likewise a philosophical thesis rather than an empirical hypothesis. There is, in any case, something rather implausible about an alleged scientific hypothesis which is going to be right however the facts turn out. Immunity from empirical disconfirmation is not as

Putnam seems to think a virtue in a scientific theory, though it may be a virtue in a philosophical one.

What Putnam is doing, I suggest, is giving us an analysis or elucidation of the concept of pain in terms of a machine model. The facts which would count against his theory are not psychological facts or neurophysiological facts; they are logical or perhaps we should say linguistic facts, facts about the use of the word 'pain.' The theory he outlines in his paper is an account of what a machine would have to be like for us to be able to ascribe pain to it. And it is the contention implicit in this enterprise that machines are conceivable to which the concept of pain can be properly ascribed, which would appear to be logically equivalent to the contention of the psycho-physical identity theorist that statements like "having a pain is a brain process" makes sense.

For if it makes sense to ascribe pain to a mechanical system and the brain is such a system, as it clearly is, then it must make sense to ascribe pain to the brain. And as we have seen, to say that it makes sense to ascribe pain to the brain is not to say that pain actually *is* something going on in the brain, only that it may be.

The conclusion that Putnam is providing a conceptual elucidation of the concept of pain, rather than developing a scientific hypothesis, appears at first sight to have some embarrassing consequences. For if what he is doing in describing a machine to which the concept of "having a pain" could be properly ascribed, it would seem to follow that the only sense in which having a pain could be said to be the relevant functional state of the machine would be a sense in which this is analytically true. And to say this would be to say that the functional description means the same as the pain statement, which is plainly false.

I suggest that in order to defend the validity of Putnam's enterprise we need to draw a distinction between two things which I propose to call "a conceptual analysis" and "a conceptual elucidation." By "a conceptual analysis" I mean a set of statements which taken together jointly assert all that is asserted and only what is asserted by the *analysandum*. In this case the *analysans* is offered as a translation of the *analysandum*, and the meaning relation between them is symmetrical. The *analysans* expresses everything that the *analysandum* expresses and vice versa. It may be doubted whether there are any statements which are susceptible to conceptual analysis in this sense; but on any view there must be at least some that are not, and it seems very possible that pain statements are a case in point. It may nevertheless be the case that there are statements which are not susceptible to conceptual analysis, which are susceptible to what I want to call "conceptual elucidation." In doing what I call "conceptual elucidation" a piece of theoretical

apparatus is constructed in the Putnamian manner in terms of which it is possible to assert all that is asserted by the *elucidandum*. In this case, however, the *elucidans* does not assert only what is asserted by the *elucidandum*, since it will have implications deriving from the theoretical apparatus in which it is embedded which the *elucidandum* does not have. The *elucidans*, in so far as it is correct, expresses everything that the *elucidandum* expresses, but not vice versa. The meaning relation between them is asymmetrical.

If I am right in this interpretation of Putnam's enterprise, we have here another remarkable parallel between Putnam's theory and the psycho-physical identity thesis. It is sometimes argued in objecting to the psycho-physical identity view that if something *A* is identical with something else *B*, anything that is predicable of *A* must be predicable of *B* and vice versa. It is then objected¹⁰ that sensations cannot be identical with brain processes, since there are things which can be predicated of sensations that cannot be predicated of brain processes, and things that can be predicated of brain processes that cannot be predicated of sensations. Now it is not difficult to show that there are things predicable of brain processes—the number and location of the neurons, the nature of the physico-chemical processes involved, etc.—which are not predicable of mental processes. It is much more difficult to show that sensations have properties that brain processes could not have. I have argued¹¹ that there is no case for ascribing properties to sensations which brain processes could not have, provided we remember that the properties we are talking about are the properties of the process of having or experiencing a given sensation, rather than the properties of the sensations themselves treated as if they could somehow exist independently of someone's experiencing or having them; and I have yet to see a convincing refutation of this contention.¹² To show that there are properties predicable of having sensations which cannot in principle be predicated of brain processes would undoubtedly constitute a decisive refutation of

¹⁰ See for example James W. Cornman, "The Identity of Mind and Body," *Journal of Philosophy*, LIX, 1962, pp. 486-492.

¹¹ "Is Consciousness a Brain Process?" pp. 49-50 in the original article and pp. 108-109 in Chappell, *op. cit.*

¹² The most difficult objection to meet is that of Kurt Baier ("Smart on Sensations," *Australasian Journal of Philosophy*, XL, 1962, pp. 57-68), who argues that privacy is a property of mental processes that brain processes in principle cannot have. Baier's objection is best met, I suggest, by pointing out that the privacy of mental processes is not a property. It is merely the absence of a property (public observability) which is in some sense predicable of brain processes. Of the adjectives listed by Cornman, *op. cit.*, p. 490 only 'intense,' 'unbearable,' and 'fading' are predicable of the experience itself. I find no difficulty in predicating these of brain processes.

the thesis in the form in which I hold it, since the hypothesis that the experiencing of *this* sensation is *that* brain process could only be verified by showing that the relevant brain process has all the properties that the mental process has. It is not, however, an objection to the thesis in the form in which I held that the brain processes have, as they clearly do have, properties that the mental process does not have.

What many people who discuss the psycho-physical identity thesis seem to overlook is that the identity relation that is being asserted between brain processes and mental processes is not a symmetrical relationship of equivalence. The thesis is that mental processes are brain processes and nothing else, but not the thesis that certain brain processes are mental processes and nothing else. Clearly any brain process that might be identified as being a given mental process would have many other properties besides being that mental process, just as an electric discharge through the atmosphere has many other properties besides being lightning. We do not want to say that an electric discharge through the atmosphere is lightning and nothing else; nor do we want to say that the old packing case is his table and nothing else, although we do or might want to say the converse. For this reason it is somewhat misleading to talk about the putative relationship between mental process and brain processes as a relationship of identity, particularly when addressing oneself to those who are accustomed to the notion of identity used in formal logic. In my original paper on this subject I referred to the "is" that relates lightning to electric discharge and which I wanted to say could sensibly be said to relate consciousness and brain processes as an "is" of composition rather than as an "is" of identity,¹³ and this still seems to me a much better way of stating the thesis.¹⁴

¹³ "Is Consciousness a Brain Process?" pp. 45-46 in the original article and pp. 102-103 in Chappell, *op. cit.*

¹⁴ Professor J. J. C. Smart (personal communication) argues that once an identification of this kind becomes a matter of established scientific fact it becomes possible to apply to the original ordinary discourse concept all the predicates which are applicable to the scientific concept with which it has been identified, and that therefore the relationship is a genuine symmetrical identity and not, as I have argued, an asymmetrical relationship in which the predicates applicable to the ordinary discourse concept apply to the scientific concept, but not *vice versa*. Consideration of cases such as "lightning is an electric discharge through the atmosphere," "temperature is the amplitude of atomic motion," and "water is H₂O" suggests that Smart is right in his contention that once the identification becomes a matter of established scientific fact, there are no predicates predicable of the scientific concept which a scientist, at least, would be unwilling to apply to the ordinary discourse concept. I would maintain, however, that when and in so far as this state of affairs is reached, the ordinary discourse concept has undergone a definite change of meaning in the direction of assimilation to the scientific

To stress the asymmetry of the identity that is being asserted here is also to my mind a much better way than the method Putnam adopts of meeting the objection that to assert identity between pains and brain processes, or between pains and the functional states of a probabilistic automaton involves a change in the ordinary meaning of the word 'pain.' Putnam tries to dodge this objection, to which his theory is as much exposed as is the psycho-physical identity theory, by saying that we have no precise criteria for a change of meaning here. I am unhappy about this solution. For to say we have no precise criteria for deciding when a "change of meaning" or "an extension of usage" has occurred would appear to suggest that we have no means of deciding such issues, and hence that the very substantial part of linguistics and philosophy that is based on the assumption that such decisions can be reached is a complete waste of time. Now it may well be true that we do not have any precise criteria, which can be stated at the present time, for deciding whether or not we are using a word in the same or in different senses from one occasion to another. But it does not follow from this that we have no way of deciding such issues. People do not usually need to consult a rule book or a lexicon to decide whether a word or expression means the same thing in one context as it does in another. Nor do they have to learn any rules by heart to be able to do so. It may be helpful for certain theoretical purposes to talk as if people apply rules and criteria when they decide issues of this kind; but if so, it is important to remember that these rules and criteria are rules and criteria of a rather peculiar kind, which people can apply perfectly well without being able to state the rules and criteria they are applying. We can only state what the rules and criteria are by studying the way they are applied. The ability to make the relevant distinctions is logically prior to and presupposed by any attempt to state the criteria involved and hence no consequences about the possibility or impossibility of deciding such

concept with which it has been identified and that the identity relation has, by virtue of this process of assimilation, ceased to be a *synthetic* relation and become *analytic*. A liquid which had the appearance and all the commonly recognised properties of water would not now be called "water" by the chemist if its chemical formula was not H_2O . It would no longer be an exception to what was once an empirical hypothesis to the effect that what the layman calls "water" is always a substance with the chemical formula H_2O . I would contend that so long as the identity remains a matter of empirical hypothesis the relationship is asymmetrical in the sense that the predicates applying to the scientific concept can only be applied to the ordinary discourse concept on the assumption that the hypothesis is correct. To anyone who questions the hypothesis, they remain logically inapplicable or at least of doubtful application in the way that it must at one time have appeared logically inappropriate to apply the concept of "wave-length" to the ordinary concept "light."

issues follow from the fact that we cannot state criteria we apply in deciding them.

I should prefer to defend Putnam's theory, and my own in so far as it involves his, by saying that it is not an objection to a functional characterization of pain in terms of a machine model that this characterization involves (as we can surely agree it does) a change in the meaning of 'pain' in the sense of introducing new conceptual elements which are not implied by the current use of the term. This is not an objection to his thesis, because he is offering an elucidation of the concept of pain in terms of a machine model, not a translation. It is, however, an objection to such a characterization that it involves a change of meaning in the sense of failing to include some feature which is built into our current concept of pain. This must be evidence against any theory of what pain is, since "pain" is an ordinary discourse concept and hence any account of what we mean by 'pain' which is inconsistent with the way the term is ordinarily used is not an account of 'pain' as we ordinarily use the word.

Symposium : "Consciousness and Perception" by
U. T. Place

Mr. Watson's paper may be summarized in the following syllogism:—

Major Premiss:—"If psychologists wish to develop the kinds of explanations of behaviour they are, for the most part, in fact attempting to develop, then consciousness is not an item or process to which reference may legitimately be made."

Minor Premiss:—"The use of the concept of perception in psychological explanations of behaviour involves an implicit 'appeal to consciousness' in deciding what aspects of behaviour are to be attributed to perception."

Conclusion:—"There are reasons for suggesting a conflict between the theoretical programme of psychology and the use of the concept of perception in the explanation of behaviour."

I am not concerned to question the validity of this argument. Nor do I wish to dispute the conclusion. I disagree, however, with both the premisses from which Watson derives it. While I cannot dispute the fact that consciousness, once the official subject matter of Psychology, is a concept and a topic which has been almost completely abandoned by contemporary experimental psychology, I cannot agree with Watson that to use the concept and attempt to study the phenomenon is an illegitimate procedure by the standards of scientific method on which contemporary experimental psychology is based. Nor can I accept without reservations his contention that when the psychologist tries to explain behaviour in terms of perception, he is making an implicit appeal to introspective evidence.

Watson gives four arguments for his view that consciousness is not a concept which the experimental psychologist can legitimately employ.

1. For his purpose the psychologist must employ concepts which are equally applicable to animals and human beings; consciousness is only applicable to human beings.

2. Contemporary psychological theorizing is based on the presumption "that there are no causal processes antecedent to behaviour which could not be described within the range of the concept of physiology, chemistry, engineering and so on;" consciousness is a process which cannot be so described.

3. It is very doubtful if it is possible to investigate conscious processes "in an acceptable scientific manner."

4. Psychologists are reluctant to employ concepts which present "considerable philosophical problems"; consciousness is such a concept.

I shall argue as against this:—

1. That it makes sense to attribute consciousness to animals and that although the evidence at present is only circumstantial, there are good reasons for believing that it exists in the case of some of the higher mammals other than man.

2. That there are no good reasons for supposing that consciousness is a process that cannot be described in physical terms.

3. That although there are serious methodological problems involved in studying the phenomena of consciousness, they do not justify the conclusion that the phenomena are not susceptible to scientific investigation.

4. That although consciousness presents problems which are at present classified as philosophical, they are nevertheless empirical problems about the meaning of words in the subject's natural language.

I

Before presenting the arguments for these conclusions, something needs to be said about the concept of Consciousness. Watson defines Consciousness "as some kind of 'intervening event', intervening, that is to say, between the input, stimuli or cues which impinge upon organisms, both from without and within their bodies, and the behaviour which they exhibit in these circumstances." This intervening event or process, as he calls it elsewhere, differs from "those to which psychologists are apt to refer in attempting to explain behaviour," because "there is nothing theoretical about it." "Consciousness," he says, "is an intervening process the occurrence of which can be directly ascertained."

This definition clearly will not do as it stands. The view of consciousness as an event or process intervening between input

and output accords well with the traditional view. But to define it as an intervening process, the occurrence of which is directly ascertained, would on the face of it allow us to count as a conscious event or process any neurological process or event, resulting from sensory input and producing an output at the effector organs, the occurrence of which is directly ascertained by means of recording electrodes implanted in the nervous system and harnessed to a suitable amplifying and recording device. Clearly in order to define consciousness adequately we need to specify the special kind of direct ascertainment involved.

As traditionally conceived, the occurrence of consciousness is directly ascertained only by the individual in whom it occurs. For knowledge of the consciousness of other persons we are completely dependent on their introspective reports. Furthermore, whereas the occurrence of intervening neural events can be directly ascertained only when the necessary recording equipment is attached, the introspecting subject requires no recording equipment to ascertain his own conscious processes, and can, if required, give a running commentary upon them as long as he is awake.

If, as the traditional concept of consciousness implies, human beings can report the occurrence inside themselves of events and processes which play an important part in determining their behaviour, this is not a fact which a scientific psychology can readily ignore. If these processes are as important as most of their owners think they are, the information we can derive from the individual's description and reports of them ought to provide us with a kind of direct access to the intervening processes controlling behaviour which we cannot obtain at present in any other way. But even if the information to be derived from this source proves not very helpful for the understanding of behaviour in general, the verbal behaviour of the subject when asked to report these occurrences is a behavioural phenomenon in its own right for which some explanation is required.

Most human beings believe they can report and describe things that go on inside them that others cannot observe. It may be that this is a false belief and that when they think they are reporting inner processes and events, they are doing something quite different. But if so, it is the responsibility of the psychologist, as a student of human behaviour, to show that human beings do not in fact have this capacity they think they have and to explain how

they come to believe that they have. If, on the other hand, human beings have this capacity, then it is equally the responsibility of the psychologist to explain how this comes about.

The only argument which will excuse the psychologist from the obligation to study consciousness, in the sense defined, is a satisfactory explanation of the alleged introspective reports of human subjects which dispenses with the assumption that they refer to inner events and processes on which the behaviour of the individual is causally dependent. In other words, in order to justify abandoning the concept of consciousness, the psychologist needs positive evidence that no such events and processes exist. It is clear that Watson provides no such evidence in his paper. Let us, however, examine the reasons he gives for rejecting the concept.

II

The argument that consciousness is not acceptable as a scientific concept because it cannot be applied to animals in the way that it is applied to human beings, assumes, firstly, that the concept of consciousness has no legitimate application in the case of animals, and, secondly, that there is no place in a scientific psychology of behaviour for a concept which has application only in the case of human beings. I want to dispute both of these assumptions.

In the light of what we know about the evolution of the human species it is implausible to attribute the same behaviour, when it occurs in humans, to a different set of intervening processes from those to which it is attributed when it occurs in animals. But in so far as human beings do things that animals do not do, it is not inconsistent with the theory of evolution to use concepts which have no application to animals in explaining behaviour that is peculiarly human.

If we examine the behavioural functions commonly attributed to consciousness by noting the kinds of failure in performance that are attributed to the individual's failure to attend to and become conscious of the relevant stimuli and to other defects in the processes reported in the introspective evidence, we find that

many of the performance failures attributed to defects of consciousness involve the peculiarly human function of language. Thus the individual's failure to mention some feature of the environmental situation confronting him, either at the time or when required to recall it later, may be attributed to a failure to pay attention to the relevant features of the stimulus.

Performance failures are also commonly attributed to a failure to think carefully enough about the situation before engaging in action. Thinking, as it occurs in human beings, is an activity, which is closely bound up with the use of language. Not only does thinking frequently involve audible or sub-vocal speech, but even in those cases where the subject reports a thought that is unaccompanied by words or images, the thought can seldom be expressed in any way other than in terms of the concepts of a human natural language. Animals do not give descriptions of their environment, nor do they think in words, or have thoughts which can be legitimately expressed in terms of concepts of human natural language. Hence in so far as it is used to explain behavioural functions of this kind, there is no inconsistency between the principle of evolution and the fact, if it is a fact, that consciousness has no application in the case of animals.

On the other hand, there are some performance failures attributed to defects of consciousness which do not involve language, and which involve types of behaviour not radically different from those exhibited by animals. Thus failures in skilled performance are frequently attributed to a failure to pay the necessary attention to the relevant features of the stimulus. Performance suffers in this case, not necessarily because the individual fails to repeat the verbal maxims required to guide his behaviour appropriately, but because he fails to exclude from consciousness stimuli which are irrelevant to the successful performance of the task, and to give sufficient prominence in his consciousness to those features of the stimulus pattern which must control his response, if the behaviour is to be performed successfully.

Furthermore, although human thinking is typically a verbal process, many of the behavioural situations in which it is used are practical-problem-situations not involving the manipulation of verbal material, which do not differ in any important respect from problem situations which can be rapidly and efficiently

resolved by anthropoid apes. Since apes cannot be supposed to think in words, and yet can solve problems which in the case of a human subject would require some kind of verbal thinking, it follows either that the thinking which the human subject reports in such cases is redundant, or, if it is not redundant, that it is possible to think without words, and apes, if not other animals, have this capacity.

As it happens, there is evidence from the introspective reports of human subjects of a form of thinking, namely mental imagery, which, although it is usually accompanied by verbal thinking, does provide the individual with a means of representing to himself situations not present to his senses without using words. If thinking, as applied to the solution of problems, is a matter of representing to oneself by means of some symbolic or pictorial replica the results of various possible courses of action and selecting an appropriate response before engaging physically with the environment, it is conceivable that an organism with the capacity to form mental images, but without the capacity to use language, could use its mental imagery in this way.

Thus there are some things that animals do, which, when done by humans, are commonly attributed to conscious processes, not necessarily involving language. In order to reconcile this fact with the principle of evolution, we must either suppose that some kind of conscious process is involved when animals do these things, or we must give up the assumption that conscious processes are as necessary to successful performance as they appear to be in the case of human beings.

Is there any reason to suppose that the concept of consciousness has no application in the case of animals? Clearly, since animals have no properly articulated language, they cannot provide us with the introspective reports which constitute our evidence for the conscious processes of human beings. But because we do not have any sort of direct evidence of the occurrence of such intervening processes in the case of animals, it does not follow that such processes do not occur. What it does mean is that, when applied to animals, conscious processes become hypothetical constructs like "those to which the psychologist is apt to refer in attempting to explain behaviour."

As such, explanations of animal behaviour in terms of conscious processes must take their place alongside alternative explanations of the same behaviour in terms of other hypothetical

constructs based on different considerations and explanations which avoid all reference to hypothetical intervening processes of any kind. All such explanations must stand or fall by their fertility in explaining the observed facts of behaviour, and in making possible the integration of the facts of behaviour with evidence derived from other sources such as neurophysiology and (dare one say it?) introspection.

As Lloyd Morgan pointed out, the scientific principle of parsimony requires that the internal processes postulated to account for animal behaviour be the simplest that will account for the observed facts. And as the behaviourists have undoubtedly shown, it is possible to give a plausible account of most animal behaviour without postulating intervening processes of any kind, conscious or otherwise. Nevertheless, there is at least one piece of evidence from the experimental study of animal behaviour for which it is difficult to give a plausible explanation without postulating the occurrence of a conscious process.

In a recently reported study by Vaughn¹ Rhesus monkeys were trained to avoid an electric shock by pressing a bar attached to the hand whenever any one of a variety of images was projected on to a screen which provided the only source of visual stimulation. After this response had become well established the animals were placed in conditions of sensory deprivation which caused them to fall asleep. From time to time during sleep the animals suddenly began pressing the bar at the same rate as they had previously learned to do; and these bursts of bar-pressing were found to coincide with the rapid eye-movement phase of sleep.

Rapid eye-movement sleep is a distinct physiological condition found in many of the higher mammals which, in the case of human subjects woken during one of these periods, is associated with reports of vivid dream imagery. This is in marked contrast to the vague imageless thoughts reported by subjects woken from

¹ Vaughn, C. J. "The development and use of an operant technique to provide evidence for visual imagery in the rhesus monkey under 'sensory deprivation'", Doctoral dissertation, University of Pittsburgh, 1964. Quoted in Luce, Gay G., *Current Research on Sleep and Dreams*, U.S. Department of Health, Education, and Welfare: Public Health Service Publication No. 1389, 1965, pp. 85-86

I am indebted to Dr. Allen Rechtschaffen of the University of Chicago, Sleep Laboratory, for drawing my attention to this report.

the deeper phase of sleep in which the rapid eye-movements and other associated physiological characteristics are absent. It is, thus, very tempting to suppose that the bar-pressing, observed in this experiment during the rapid eye-movement phase of sleep, was due to the occurrence of internally generated replicas of the visual stimuli to which the animals had been trained to make this response.

If these results can be repeated, and can be shown to occur when the animal has been trained to respond in this way to visual stimuli and only to stimuli of this kind, the conclusion that the sleeping animal is responding to visual dream imagery will be the only hypothesis that will conveniently fit the empirical facts. This conclusion, if it is substantiated, would not only provide very strong evidence for the occurrence of visual dream imagery in monkeys; it would also provide very strong grounds for suspecting the existence of other forms of consciousness in sub-human primates. For it is hardly likely that monkeys would have developed the capacity to form visual images only for the purpose of dreaming. However, until we have some more precise way of determining which behavioural functions do and do not depend on the occurrence of conscious processes in man, or some means of detecting these processes physiologically, the problem of the nature and existence of animal consciousness will remain largely a matter for speculation.

III

There can be no doubt, to my mind, that Watson is right when he argues that there is no place in contemporary scientific psychology for concepts which cannot readily be integrated into the fabric of scientific thinking as a whole.

Where I do not agree with him is in supposing that there is any necessary incompatibility between the assumption that behaviour is in part causally determined by conscious processes, and the assumption "that there are no causal processes antecedent to behaviour which could not be described within the range of the concepts of physiology, chemistry, engineering and so on."

I have argued elsewhere² that the view that consciousness, in the sense in which we are using it for the purposes of this symposium, is a process in the brain is a reasonable scientific hypothesis which cannot be dismissed on logical grounds alone. It is not clear whether Watson thinks there is some logical contradiction in supposing consciousness to be a process in the brain. But if he does, the only argument he gives which can conceivably be construed as supporting this conclusion is the argument in which he maintains that consciousness is an intervening process quite different from those postulated by psychologists, because its occurrence is directly ascertained.

Treated as an argument against the mind-body identity thesis, this argument has consequences which I do not think Watson would want to accept. For if something which is directly ascertained cannot be the same thing as something whose existence is postulated on the basis of theoretical considerations, it follows that the planet Neptune, now observed by astronomers, cannot be the same planet as the planet whose magnitude, orbit and position were independently calculated by Adams and Le Verrier before it was discovered in 1846. Nor will it ever be possible for a neurophysiologist to observe any of the brain processes currently postulated by the theoreticians, or any they may postulate in the future, since, if their occurrence were directly ascertained, they would not, on Watson's view, be the same processes.

I conclude that Watson has not provided any convincing reasons for holding that there is a logical contradiction involved in supposing consciousness to be a process in the brain. But if there is no logical contradiction involved, there is certainly no empirical evidence which is inconsistent with the hypothesis, and much that is difficult to account for on any other assumption. And if there are no logical or empirical considerations which make the hypothesis untenable, there need be no inconsistency involved in holding both that an individual's consciousness determines his behaviour, and that "there are no processes causally antecedent to behaviour which could not be described within the range of the concepts of physiology."

² U. T. Place, "Is consciousness a brain process?", *British Journal of Psychology*, XLVII (1956), 44-50.

IV

It cannot be denied that the scientific investigation of consciousness presents serious methodological problems, but it is not at all clear that these problems are such as to put the phenomenon entirely beyond the reach of scientific investigation. If there is sufficient empirical evidence to warrant the conclusion that a phenomenon exists, there must be at least some acceptable empirical evidence concerning its properties, since we cannot have evidence of the existence of something, unless we have evidence that there exists something having the properties in terms of which the thing in question is defined. And if we have acceptable empirical evidence about at least some of the properties of consciousness, it is difficult to see how the phenomenon can be wholly unsusceptible of scientific investigation.

Watson's argument seems to imply that there are some ways of investigating natural phenomena which are intrinsically acceptable from a scientific point of view, while other methods are intrinsically unacceptable. But this is surely misleading. The method of investigation that is scientifically acceptable depends on the nature of the phenomenon under investigation. A method which is quite unacceptable in investigating one phenomenon, because other methods less liable to yield erroneous conclusions are available, may be scientifically acceptable in investigating another phenomenon, because it is the only or best possible method available in the circumstances. Conclusions drawn on the basis of a method which has a large margin of error, must necessarily be correspondingly tentative, but it is usually better to draw conclusions on the basis of unsatisfactory empirical evidence than none at all.

The methodological problems involved in the study of consciousness derive from the incurably 'subjective' character of the reports on which we depend for our knowledge of the process. Introspective reports are almost invariably made some time, even if only a matter of seconds, after the events they report, and are, therefore, almost certainly subject to the distortion which, as has been repeatedly demonstrated by psychological experiment, normally occurs when an individual attempts to reproduce from memory material of any complexity. But since, as things stand, we have no means of checking the accuracy of introspective reports

against the reality they purport to describe, we have no basis for discriminating between what is distorted in the report and what is not, and can only assess the probable amount of distortion likely to be present by analogy from the amount of distortion present when the individual reports similar events where the accuracy of his report can be checked.

This is a serious methodological problem, but it is by no means unique to the study of consciousness. Similar problems arise in any situation where the scientist is dependent for his information on the retrospective reports of untrained human observers. Yet I do not think many psychologists or sociologists would argue that we ought to ignore such questions as the incidence and frequency of different types of sexual behaviour over the past fifty years, because we are completely dependent for our information on this topic on the retrospective reports of untrained human observers on matters about which they have strong motives for misrepresentation. Scientific prudence requires that any conclusions drawn on the basis of such evidence be treated with the utmost caution; but it is surely better, and more consistent with aims and the methods of empirical science, to base conclusions on the best empirical evidence available, than to refuse to investigate a problem on the grounds that it cannot be studied in an acceptable scientific manner.

If conscious processes could not be investigated in an acceptable scientific manner, there would not exist, as there clearly does, a substantial body of information about them based on systematic empirical investigation. During the latter part of the nineteenth and the early years of the present century a great deal of information was accumulated about the effects of various stimulus conditions on the resulting conscious processes as reported by introspective observers, which laid the foundation of our present knowledge of the physiology of the sense organs. In the medical field there exists a large, if relatively unsystematized, body of knowledge about the effects of various pathological conditions, physical as well as psychiatric, on conscious processes reported by the patient which, in spite of the development of more precise and objective methods, still plays an important part in diagnosis and in assessing the effects of treatment. The evidence collected, notably by Galton, on individual differences in mental imagery and other purely subjective aspects of thought processes represents a substantial, if neglected,

contribution to empirical knowledge in psychology, and whatever we may think about the curious theoretical apparatus of psychoanalysis, Freud's contribution to our knowledge of dreams at a purely descriptive level can hardly be denied.

The reason why psychologists have virtually ceased to add to this body of knowledge, is not that they have now discovered that all the conclusions drawn on the basis of introspection in the past can no longer be accepted. What was discovered at the beginning of this century is that it is impossible to resolve theoretical issues by appeal to introspective evidence alone. For if one theoretical position predicts a given conscious phenomenon and another theory predicts the opposite, and if one set of introspective observations is consistent with one theory and another set of observations is consistent with the other theory, it is always possible to argue that the observations that are inconsistent with the theoretical position of one's choice are unreliable; and in the absence of an independent check on the reliability of the introspective reports, there is no way of resolving the issue.

As long as psychologists were content to assemble empirical information at a descriptive level, this problem did not arise. But when the stage was reached where further progress required the resolution of theoretical issues which could not be resolved on the basis of the only kind of evidence available, the scientific investigation of consciousness ground rapidly to a halt.

It follows that the only way to overcome this obstacle and revive the interest of psychologists in the scientific investigation of consciousness, is to find some way of providing an independent check on the reliability of introspective reports. On a dualistic theory this is impossible, since, on this view, introspection is the only kind of evidence one can have of the nature of conscious processes. But if, as I have argued, consciousness is a process in the brain, it may eventually become possible to check the reliability of introspective reports against electro-physiological recordings of the processes they report, once these have been identified. Needless to say the implications of such development from the standpoint of the psychology of consciousness are as exciting as its social implications are alarming.

V

The philosophical problems that arise concerning the concept of consciousness would not worry the psychologist, if he did not

find himself inescapably involved in them whenever he tries to use the concept. If he could use the concept of consciousness, as he uses concepts like Time and Cause, without feeling that he needs to consult what the philosophers have to say on the matter, there would be no problem.

That the psychologist should find this situation embarrassing is understandable. It is not just that he finds himself involved in matters that fall within the competence of specialists from another discipline. After all psychologists are quite happy to defer to neurophysiologists in matters of brain function, and even to engineers in matters of psychological theory. But to have to defer to philosophers in matters of consciousness is a very different matter.

It is not only that the psychologist is trying very hard to secure and maintain the reputation of his discipline as a natural and empirical science, and is, therefore, reluctant to become involved with a discipline that claims to handle its problems without recourse to empirical evidence at any point, and is not, like mathematics, recognised as an indispensable tool of scientific research. More important than this is the view, widely held by scientists, that there is no way of reaching a final and agreed conclusion in a philosophical argument. It is a consequence of this view that, if the psychologist is foolhardy enough to use the concept of consciousness, he becomes inescapably involved in problems to which he can never hope to obtain a final and agreed solution.

In order to meet this objection, we need to consider why the psychologist cannot use the concept of consciousness without becoming involved in philosophical problems. The reason for this is that you cannot say anything about consciousness from a scientific point of view, without raising the question whether we have any scientifically acceptable evidence for the existence of such a process. Consciousness, as we have defined it, is a process intervening between input and output, the occurrence of which is directly ascertained by the individual in whom it occurs, but which cannot, as things stand, be observed by anyone else. It follows from this definition that the only evidence we can have of the existence of such a process comes from the introspective reports which the individual gives about it. There is no doubt, of course, about the existence of these reports. It is a matter of empirical fact that people frequently make statements which, so they claim,

are reports of events and processes inside them that others cannot observe. But are they really doing what they claim to be doing? Can we account for this verbal behaviour without postulating some inner process to which the alleged introspective statements can be taken to refer?

These are questions which we can only answer by introducing considerations which are currently classified as philosophical. In order to decide whether an alleged introspective statement can be accounted for, without assuming that it refers to an inner process or event, we need to examine the logical implications of the words and expressions used in making the statement. In other words we can only decide whether the introspective reports are what they purport to be, by studying what Professor Ryle has called 'the logical geography' of the words and expressions involved in giving, asking for and talking about them, and seeing whether the assumption that they refer to inner processes is the only hypothesis that will fit the logical facts.

The facts of logical geography with which we are here concerned are logical facts about words and expressions in the natural language of the introspective observer, for our purposes, English. But because they are logical facts, it does not follow that they are not at the same time empirical facts about the English language.

It is true that the native English speaker requires no empirical evidence to tell him that if something is red all over, it cannot be green all over. The fact that something cannot be both red and green all over at the same time is not an empirical fact; it is a logically necessary truth. It is nevertheless an empirical fact about the English language that the words 'red' and 'green' are used in such a way that the sentence 'something cannot be red and green all over' expresses a logical necessary truth, and in such a way that a native speaker is justified in inferring 'X is not green' from the statement 'X is red all over'. It is with these empirical meta-language statements about the logically necessary relations holding between the words and expression of a given natural language that we are concerned, when we study the logical geography of the words and expressions used by the subject in giving and talking about his introspective reports.

As I see it, it is an accident of the present stage in the evolution of human thinking that this particular branch of empirical inquiry happens to be the responsibility of the philosopher. In

the past, philosophy has given birth to a number of empirical sciences, from physics in the 17th century to psychology in the 19th century, and there is no particular reason to suppose that its child-bearing days in this respect are over. Indeed there is more than a little evidence that philosophy is at the present time heavily pregnant with an empirical scientific discipline concerned with the functional or meaning aspects of language.

If this development takes place and the notion of 'logical geography' becomes something more than a metaphor, the problem of deciding whether or not introspective reports refer to inner processes, will cease to be a philosophical problem. It will be recognised as an empirical problem, falling within the competence of the empirical science of linguistics, and therefore, as a problem to which we can reasonably expect to find a definite solution, and concerning which the experimental psychologist need have no inhibitions about consulting the relevant specialist.

VI

The arguments I have presented are designed to undermine what I take to be the major premiss of Watson's argument, namely that the use of the concept of consciousness is incompatible with the aims and methods of experimental psychology. I have tried to show that consciousness is a process for the existence of which we have considerable empirical evidence in the case of humans and strong circumstantial evidence in the case of the higher mammals, that in spite of the methodological problems involved, consciousness is a phenomenon susceptible to scientific investigation, and one which does not require any supernatural or extra-physical explanation.

Watson, however, is not primarily concerned with the investigation and explanation of consciousness as a phenomenon in its own right. He is concerned with the use of this concept in explanations that are given by psychologists of the overt behaviour of organisms. Now, although the arguments I have presented provide a case for retaining, or rather reviving consciousness as a proper subject of scientific research in psychology, they do

not provide any very convincing support for the use of this concept in explaining behaviour, whether human or animal, at the present time.

If consciousness exists and is causally related to behaviour in the way it appears to be, it follows that an explanation of behaviour that takes account of all the intervening processes on which the occurrence of behaviour depends, must include consciousness among them. But this is true only of the final and complete explanation which it is the object of scientific research to achieve, but which is seldom achieved in practice, and is certainly a very long way off as far as the behaviour of organism is concerned. But because we cannot yet fit all the pieces of jigsaw together, it does not follow that we cannot at the present time provide perfectly satisfactory explanations of many aspects of behaviour without mentioning consciousness, or any other kind of intervening process.

An explanation is what it is, only in so far as the *explicans* is initially better understood than the *explicandum*. There can be no point in trying to explain behaviour in terms of intervening processes, if we already understand the behaviour by itself better than we understand the intervening processes. And whatever may be true of the intervening processes postulated by the neurophysiologist and the cybernetician, it is surely the case that our knowledge and understanding of consciousness is very much less than the knowledge and understanding that we have of the overt behaviour of the organism.

It would seem, therefore, that although Watson's contention that any reference to consciousness is incompatible with the aims of experimental psychology is unacceptable, we have to concede that our knowledge and understanding of this process is far too poorly developed at present to justify an attempt to make anything but the most tentative use of what we know about it in giving a scientific explanation of behaviour.

VII

If we have to concede that there is some substance in the major premiss of Watson's argument, in so far as the explanation of behaviour in terms of consciousness is concerned, we cannot

avoid conceding the substance of his conclusion, namely that the use of the concept of perception in the explanation of behaviour cannot be easily reconciled with the aims of experimental psychology, unless we can upset his minor premiss which holds that the concept of perception as used by psychologists is really the old concept of consciousness in disguise. For if Watson is right in thinking that Perception is old Consciousness in disguise, the object of the camouflage, presumably, is to enable the psychologist to introduce considerations derived from introspection into his theoretical formulations, without making it obvious what he is doing either to himself or to those of his colleagues who would disapprove of such a procedure. Such a device, if this is what it is, is indefensible by any intellectual standards. It would be far better to recognise the fact that, in using perception in this way, the psychologist is making use of evidence derived from introspection, and face up to the methodological and theoretical problems involved in using such evidence and relating it to evidence from other sources.

In examining the case for what I take to be the minor premiss of his argument, I do not propose to follow Watson in his attempt to see whether genuine empirical substance can be given to the concept of perception, considered as an intervening process on the input side of the input to output channel, without making use of considerations derived from introspection.

It seems to me that we cannot hope to make sense of the concept of perception, as it is used in the explanation of behaviour, if we construe it as an intervening process in the input-output channel, whether we think of it as a theoretical construct for which the overt behaviour of the organism is our only evidence, or as a conscious process available to introspection. To construe it in either of these ways involves a radical misunderstanding of the logic of the concept, and Watson's discussion provides ample evidence of the conceptual confusion that results from this misunderstanding.

When a psychologist talks of explaining behaviour in terms of perception, I take it that he has in mind a situation such as the following.

Let us suppose that a man whom we may call Mr. *A* encounters another man, Mr. *B*, and let us further suppose that Mr. *B* happens to be a valued customer of the firm for which Mr. *A* works, one who places large orders and pays his bills promptly

and in full. Now let us suppose that Mr. *B* happens to resemble another man, Mr. *C*, who also has dealings with Mr. *A*'s firm, but has always been a bad payer and at present owes the firm a considerable sum of money which has been outstanding for a long time. Let us also assume that Mr. *A* is aware of the facts about both Mr. *B*'s and Mr. *C*'s financial dealings with the company and that he knows Mr. *C* by sight, but has not previously met Mr. *B*, and has not been told of the similarity in the appearance of Mr. *B* and Mr. *C*.

In these circumstances there is, clearly, a danger that Mr. *A* will mistake Mr. *B* for Mr. *C* and will, consequently, behave towards Mr. *B* in a way very different from the way he would have behaved had he realised that it was Mr. *B* and not Mr. *C* with whom he was dealing.

In terms of the concept of perception, as the psychologist would use it in this context, the pattern of behaviour which Mr. *A* adopts depends on whether he perceives Mr. *B*, correctly, as Mr. *B* or, incorrectly, as Mr. *C*.

Now if I am right in thinking that this is a typical example of an explanation of a piece of behaviour in terms of the concept of perception, it is evident that this is not an explanation in terms of any intervening process in Mr. *A*'s input-output channel, whether introspectible or otherwise. There is only one point in this account of Mr. *A*'s behaviour where it can be plausibly argued that there is an implicit reference to Mr. *A*'s conscious processes. This is contained in the statement that Mr. *B* resembles Mr. *C*. This statement might be held to imply that the visual experience that results when Mr. *A* looks at Mr. *B* is similar to the visual experience that results when he looks at Mr. *C*. But since in this case the similarity of the visual experiences in the two cases is a simple function of similarity of the physical stimulus they project on to the retina under normal conditions of viewing, it is this physical similarity of the two men that is mentioned in the explanation of Mr. *A*'s behaviour.

But even if we allow that there is an implicit reference to Mr. *A*'s visual experience in the mention that is made of the resemblance between Mr. *B* and Mr. *C*, it is clear that the similarity between the visual experiences in the two cases does not by itself explain Mr. *A*'s behaviour. What it explains is why Mr. *A* is liable to perceive Mr. *B* as Mr. *C*. It is the way he perceives

Mr. *B*, not the visual experience which leads him to perceive Mr. *B* in this way, that explains his behaviour.

It is clear from this that the way Mr. *A* perceives Mr. *B* is not the same thing as his visual experience of Mr. *B*. Nor is it an additional inner process conjured up by his visual experience of Mr. *B*. It is simply the way Mr. *A* interprets the situation confronting him on the basis of his visual experience. In other words, it is a matter of what he comes to believe is the case as a result of this particular sensory input and the experience it generates. It follows from this that when we explain behaviour in terms of the way an individual perceives a situation, it is what he believes that explains his behaviour, not the visual experience that is instrumental in creating that belief. Furthermore, when we explain behaviour in terms of the way the individual perceives the situation, we are not explaining it merely in the terms of the beliefs generated by the immediate sensory input. For in our example, it is not just the fact that Mr. *A* perceives Mr. *B* as Mr. *C* that explains his behaviour. What explains his behaviour is the fact that he mistakenly perceives Mr. *B* as a customer who does not pay his bills. Built into the description of Mr. *A*'s perception of Mr. *B*, there are other beliefs, beside the belief based on sensory input that Mr. *B* is Mr. *C*, beliefs about Mr. *C*'s financial relations with the company based on what Mr. *A* has been told or discovered himself from an examination of the company's books.

When the psychologist explains behaviour in terms of the way the individual perceives a situation, he is explaining behaviour in the way we explain human behaviour in every-day life, in terms of what the individual believes about the situation and what it is that he wants to achieve or avoid.

For the purpose of every-day life such explanations are perfectly satisfactory. They enable us both to understand behaviour *ex post facto*, and to make reasonably reliable predictions, in advance of the event. Although they are quite properly avoided by psychologists in explaining animal behaviour, and have been largely displaced by what are felt to be more scientific explanations in those areas of human behaviour that have become the special province of the experimental psychologist, there are important areas of human social behaviour where no effective scientific alternative to explanations of this type has yet been devised. And when social psychologists, like Murphy, defend the

use of the concept of perception in the explanation of behaviour it is, I suggest, their scientific right to use explanations in terms of the individuals beliefs and motives that they are really concerned to defend.

But if those who defend explanations of behaviour in terms of the concept of perception are really defending explanations in terms of beliefs and motives, it follows that they are not in spite of appearances, defending an explanation of behaviour in terms of consciousness. For to explain behaviour in terms of an individual's beliefs and motives does not, as such, involve any reference to his conscious processes. Nor does our information about an individual's beliefs, about how he interprets the situation confronting him, come from introspective reports in any ordinary sense of the term.

One kind of information that we obtain from introspective reports, and which can be obtained only from this source, is information about *when* a particular interpretation of the environmental situation confronting an individual actually occurred to him. But this is a piece of biographical information which is of no immediate relevance to the explanation of his behaviour. We are not interested in information of this kind when we inquire about an individual's beliefs in order to understand his behaviour. What we want to know is not *when*, but *how* the individual interprets the situation. Again there are some cases where our only source of information about how the individual interprets the situation confronting him is his introspective report. But this applies only in those cases where the individual changes his interpretation before it affects his overt behaviour, and such interpretations, it goes without saying, are of no relevance for understanding the overt behaviour he does exhibit.

If, on the other hand, the interpretation the individual makes does affect his behaviour, whether it be what he says or what he does, we are no longer solely dependent on his introspective report in drawing conclusions about what has now become his belief.

In some cases where we do not understand why an individual says what he says or does what he does, we may ask him to explain his reasons for doing or saying this, and in giving his reasons he may preface his remarks with the words 'I think' or 'I believe so-and-so'. But he may equally not mention himself at all, and simply make statements about the situation confronting him. It

is true that, in making these statements, he can properly be said to be expressing his belief, and to imply that he believes what he says. And, although he may very well be mistaken in his beliefs, he cannot properly be said to be mistaken in saying or implying that he so believes, though he may be lying or even deceiving himself.

The fact that one cannot be mistaken in saying that one believes something, the fact that belief statements have what has been called 'private logic,' has lent colour to the idea that belief statements are a kind of introspective report, since having a private logic in this sense is one of the distinguishing marks of the statements people make about the events and processes that make up their consciousness. But to say that someone who makes a statement about matters of fact which may be quite unrelated to himself or his circumstances is making an introspective report, simply because he happens to mean what he says, is surely to stretch the notion of introspection to a point where it ceases to have any meaning.

In the vast majority of cases we do not have to question the individual in order to find out what he believes. Nor do we require any assurance from him that he believes what he says. He shows what he believes in what he says about the situation and in the congruence between what he says and what he does. To believe something is simply to be disposed to make the statement believed under appropriate circumstances, to draw the conclusions that follow, or appear to follow, from it, and to act accordingly. If we know from observation that someone has made a given statement, has drawn the conclusions that follow from it and has acted accordingly, we have all the empirical evidence we require for the conclusions that he believed what he said, better evidence in fact than we would have, if all we knew was that he said that he believed the statement in question.

Another reason why beliefs do not qualify as consciousness, in the sense we are using the terms for the purpose of this symposium, is that they are not events or processes. A process is something that is extended in time and of which it makes sense to say that it is now going on. An event, in the sense we are using it here, is something that occurs at a particular point of time, but is not extended in time. Beliefs are extended in time and therefore are not events, although the acquisition of a belief, which is not extended in time, is an event. But though they are extended

in time, beliefs are not things of which it makes sense to say that they are going on now. Hence they are not processes.

It would appear to follow from the fact that beliefs are not events or processes that they are not the sort of things that can enter into causal relationships with processes and events. We can think of beliefs and motives as performance characteristics like the horse-power of a car. Knowledge of the horse-power of a car can be used to predict and hence explain its behaviour, just as we can use knowledge of an individual's beliefs and motives to explain and predict human behaviour. But such explanations are not causal explanations in the sense that an explanation of the movement of a car in terms of the explosion of gases in the cylinder is a causal explanation. An individual's beliefs do not push him into behaving as he does, any more than a car's horse-power forces the crankshaft to revolve.

When we explain an individual's behaviour in terms of his beliefs and motives we are not explaining behaviour in the way the scientific psychologist wants to explain it, in terms of a flow of energy or information from input to output, from stimulus to response. This is not, even in the most extended sense, a stimulus-response explanation of behaviour. Still less is it, as it has been represented, a stimulus-stimulus explanation of behaviour. It is a response-response explanation in which the subsequent verbal and non-verbal behaviour of the individual is predicted, and hence explained, from a knowledge of his present and past verbal behaviour and the relationship between this and his non-verbal behaviour, but with no implication that the antecedent behaviour from which the subsequent behaviour is predicted is the cause of the subsequent behaviour.

There is no reason to suppose that this type of explanation is in any way incompatible with a causal input-output type of explanation, any more than there is an incompatibility between explaining a motor-car's behaviour on the road in terms of its horse-power and explaining it in terms of the mechanical processes that occur under the bonnet, or in terms of the way the driver manipulates the controls. But only confusion results if we try to treat belief-motive explanations as if they were causal input-output type explanations.

For some reason psychologists have found it almost impossible to resist the temptation to do exactly this. Indeed one of the many reasons for the psychologist's disillusionment with the

concept of consciousness in the early days of the psychology of behaviour seems to have been that if you interpret an explanation of an individual's behaviour in terms of his beliefs as a causal explanation, this seems to require that immediately before he performs an action the individual should recite to himself all the statements which he believes, which are relevant to the performance of the action in question. In fact, the introspective evidence shows quite categorically that such recitations, if they occur at all, seldom include more than a tiny fragment of the beliefs which are relevant to the explanation of the action in question.

The phenomenological concept of perception which was introduced into psychology in the nineteen-twenties by the Gestalt psychologists seems to have been substituted for the traditional concept of consciousness at this point in order to reconcile the belief-motive explanation of behaviour with the input-output model in a way which is not so obviously exposed to refutation by the evidence of introspection. By representing the individual's beliefs as a set of relationships holding between a collection of ghostly phenomenal objects in a phenomenal environment, known as the 'field' or 'life-space', which is supposed to reside inside the subject's head, beliefs can be made to exert a continuous causal effect on behaviour, at the expense of turning every factual statement that the individual makes about any topic, however remote from himself and his own concerns, into a report of an inner process.

If this diagnosis of the rôle played by the concept of perception in psychological explanations of behaviour is correct, Watson's view that it is just the old concept of consciousness in disguise is clearly an over-simplification of a very complex relationship between the two concepts to which it is impossible to do full justice here. Enough has been said, however, to show that the objections that can be raised to the use of the concept of consciousness in the explanation of behaviour cannot be applied *pari passu* to explanations of behaviour in terms of the concept of perception. For in so far as explanations of behaviour in terms of perception are explanation in terms of the individual's beliefs, they are not explanations in terms of conscious processes; not do they depend in any intelligible sense on the evidence of introspection.

On the other hand these considerations do not provide any very convincing case for the continued use of the concept of

perception in the scientific explanation of behaviour. Whatever we may think of the propriety of explaining behaviour in terms of an individual's beliefs and motives in a scientific context, to present such explanations in terms of the phenomenological concept of an intervening introspectible perceptual process is indefensible. To do so, involves a radical misunderstanding of the logic of these explanations and the introduction of a fictitious intervening process whose properties cannot conceivably be reconciled with any physical process known or unknown, a process the postulation of which is not required by the empirical evidence, whether it be from objective observations of behaviour or from introspection.

BURT ON BRAIN AND CONSCIOUSNESS

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A substantial part of Sir Cyril Burt's reply (Burt 1969) to Powell's (1969) criticism of his paper (Burt 1968) on the problem of the relationship between brain and consciousness is devoted to a criticism of the thesis that consciousness is a process of the brain which I suggested could be regarded as a reasonable empirical scientific hypothesis in a paper published in the British Journal of Psychology some years ago (Place 1956). I would like to take this opportunity of answering some of Burt's criticisms and of correcting some of the logical and factual mistakes which his paper contains. At the same time, in order to rebut his contention that the so-called mind-body identity theory does not and was not intended to have any experimental or empirical implications, I shall attempt to define more precisely than I have done hitherto, what sort of a brain process I take consciousness to be, and to indicate whereabouts in the brain such a process is likely to be found.

Burt maintains quite correctly that in order to show that consciousness is a brain process we need to know what criteria we ordinarily employ in deciding that two apparently different things are really one and the same thing, and then find out whether these criteria are, or could conceivably be satisfied in the case of consciousness and a particular brain process. He claims, however, that the advocates of the mind-body identity thesis have omitted "to enlighten us as to what criteria, if any, we are to apply in order to demonstrate a suspected identity". This statement is false. I discussed this matter specifically in my 1956 paper in connection with the case where we say that lightning is the same thing as an electric discharge through the atmosphere and came to the conclusion

"that we treat 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". I discussed this matter further in a subsequent paper (Place 1960) in which I added " the rather obvious 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".

From his criticism of my use of the lightning-electric discharge analogy, it is clear that Burt has read the relevant section of my 1956 paper and it is difficult to believe that he did not realise that in that section I was attempting to specify what he calls a criterion of identity. Be that as it may, he clearly rejects the criterion I have suggested and attempts to replace it by two of his own. His criteria of identity are (1) that the two things in question must be so alike as to be indistinguishable and (2) that they must be located at the same point in space. He then tries to show that neither of these criteria apply in the case of consciousness and a brain process.

As against this I shall argue, (1) that indistinguishability is not a criterion of the identity of two things in the sense in which I or any other advocate of the mind-body identity theory has used them, (2) that even if we accept his indistinguishability criterion, Burt has not shown, as he thinks he has, that consciousness and a brain process are obviously different in appearance, (3) that his reasons for thinking that conscious experience is located at some other point in space than in their owner's head are unsound.

(4) that his reasons for rejecting my 'explanation of observations' criterion are fallacious and (5) that if we accept this criterion and apply it to the case of consciousness and brain process, a good case can be made out for the view that a brain process satisfying this criterion occurs in the sensory areas of the cerebral cortex and only in this part of the central nervous system.

Indistinguishability as a criterion of identity

Although the view which I had put forward in my 1956 paper is commonly referred to by philosophers as the theory of mind-body identity, I did not in fact use the term 'identity' in my paper. I avoided using the word, because I wished to avoid certain ambiguities which arise when it is used in this connection. One of these ambiguities is well illustrated in Burt's paper. To say that the relationship between brain processes and consciousness is one of identity, may suggest, as does to Burt, that what we are saying is that consciousness is identical with a brain process in the sense that two pins from the same packet can be said to be identical. It is in this sense that "two things may be regarded as identical if they are so much alike as to be indistinguishable". But this is not the sense of 'identical' that I or any other proponent of the identity theory would apply to the case of consciousness and brain process. Identical in this sense implies that there are two separate things that are so alike that it is impossible to distinguish one from the other except by the fact that they occupy two distinct and separate positions in space. What we are saying is that consciousness and a particular brain process are one and the same thing, occupying the same position in space and time. Two 'things' that are really one and the same thing are seldom in fact so alike as to be indistinguishable from one another. A house viewed from the back or the inside will look quite different from the way it looks from the front, yet this does not in any way prevent it from being the same house.

Were it not for this difference in appearance when viewed from different points the possibility that there might be more than one thing here would not arise.

Burt, of course, recognises that the analogies I have in mind are more like the case of the same house viewed from different points than the case of the two identical articles from the assembly line, but this, he contends, makes my view a double aspect theory like that of Fechner rather than a true identity theory. Personally I have no objection to calling my view a double aspect theory provided it is recognised that there are some respects in which the analogy of the same house seen from the inside and the outside is misleading when applied to the brain process/consciousness case. It is misleading in so far as it suggests that we observe our experiences in the same way that we can observe the pen on the EEG writing out the change of electrical potential on the scalp. We may also be misled by this analogy into supposing that the brain process and the experience are to be thought of as two separate parts of some other thing in the way that the front elevation and the interior of the living room are two separate parts of the same thing, the house.

But even if we were to concede that two things have to be indistinguishable in appearance to be one and the same thing, I cannot see that Burt has made out a case for saying that consciousness and brain activity are quite obviously different in their physical appearance. He seems to think that we can look at brain processes and conscious experiences and see that they are different in a simple sense perceptual sense. This must surely be wrong for the reason that neither brain activity nor conscious experience are things we can look at and see in the literal sense-perceptual sense. We cannot look at brain activity because it is an electro-chemical process which cannot be made visible even under the most powerful microscope.

We can look at brains, we can look at theoretical models of brain activity expressed in either algebraic or geometrical terms and we can look at the marks on paper made by a pen that is moved by the amplified electrical potentials generated by brain activity. But we can never look at the brain activity itself.

Nor for a different reason can we look at a conscious experience in the literal sense-perceptual sense. When we look at something in the literal sense, light emitted, transmitted or reflected from some object in the physical environment impinges on the retina and produces a characteristic visual experience. On the basis of that visual experience we are able to describe the object from which the light is being emitted, transmitted or reflected. We can also say something, though not usually very much, about the visual experience that is produced when we look at something. But we do not need to and, indeed, we cannot look at the experience in order to describe it, since our ability to describe the experience does not depend, as does our ability to describe the object in our environment, on light impinging on the retina.

Spatial Location as a Criterion of Identity

Whereas indistinguishability is not in my view a relevant criterion in deciding the empirical identity of two separately conceptualised 'things', I do accept identity of location in both space and time as a criterion of this kind of identity (Place 1960). Hitherto, however I have not thought it necessary to defend my view, which I took to be obvious, that conscious experiences, in so far as they can be said to have a spatial location, occupy some not very precisely determined position beneath the skin of their owner and that there is nothing in our description of them that is inconsistent with, and a considerable amount of empirical evidence to support the hypothesis that they are actually located inside the skull.

Burt, however, seems to think that it is equally obvious that they are not so located. In support of this contention he gives three examples of alleged experiences of which, he says, that "no one... unless he had some preconceived theory to maintain, would think of assigning to them the locus and status of processes within my head"; his three examples are (1) the pain he (Burt) feels in his toe, (2) the blueness he sees in the sky, (3) the pulsating bulge he takes to be the soldier's brain. The argument here I take it, is (1) that the pain cannot be in his head because it is in his toe, (2) that the blueness cannot be in his head because it is in the sky, (3) that the soldier's brain cannot be in his (Burt's) head because it is in the soldier's head. Taking these examples in the reverse order, I would certainly agree that in the case where Burt is looking at the exposed brain of the soldier, the soldier's brain is in the soldier's head and not in Burt's head. What is in Burt's head, in my view, is the visual experience which Burt has when he looks at the soldier's brain. But the visual experience that Burt has when he looks at something, is not the same thing as the thing he is looking at and no-one but a phenomenalist would think that it was. If Burt or anyone else is not convinced by Dr. Johnson's well known refutation of phenomenism, I would refer him to the posthumous publication of Austin's 'Sense and Sensibilia' lectures (Austin 1962), or to my own discussion of the so-called 'phenomenological fallacy', (Place 1956 and 1959).

The same principle applies to the slightly more complicated case of the blueness of the sky. I certainly have no temptation to say that the blueness is in Burt's head. If the sky is blue, it is blue, whether or not Burt or anyone else is looking at it. The only difficulty is that there is something rather odd about saying that the blueness is in the sky. For one thing the sky is a very indeterminate physical location. Anything that is more than a few feet above the surface of the earth can be in the sky, even if it is several

million light years away. Furthermore, we cannot say that the blueness, or the greyness, or the pinkness or the blackness of the sky is located at any particular point in this vast expanse. Strictly speaking the colour of the sky has no physical location because there is no such thing as the real or actual colour of the sky in the way that there is a real or actual colour of such things as a policeman's uniform, a sapphire or the flame of a bunsen burner. We cannot say that the sky is really blue, but sometimes appears black, pink grey or yellow. There is no distinction in the case of the sky between its apparent colour and its real colour. One might say that the colour of the sky is always apparent and never real. But this should not be taken to imply that the colour of the sky exists only in the observer's experience. The apparent colour of the sky is determined by purely physical and optical factors which determine the wave length of the light projected on to the retina of any actual or potential observer who is, or might be, looking upwards from any point on or above the earth's surface.

The case of the pain in Burt's toe is quite different. Here I clearly do want to say that the pain is an experience of Burt's which is physically located in his head. But to say that the pain is physically located in Burt's head is not to deny that there is a perfectly good sense in which the pain is located in his toe. The argument that something cannot be in two places at once is deflected in this case by pointing out that the word 'in' in the sentence 'Burt feels a pain in his toe' functions in a different way from the way it functions in the sentence 'Burt has a stone in his shoe'. If Burt's pain were in his toe in the sense that the stone is in his shoe, it would be possible to remove the pain from Burt, though not perhaps from his toe, by the simple expedient of amputating his toe. In fact 'a pain in ^{the} toe' is a port-manteau phrase that we use to describe an unpleasant experience that results typically from intense stimulation of the nerve endings in the toe, but which may equally well be produced by the stimulation of the relevant afferent pathway at any point between the extremities and the

sensory cortex or by the stimulation of the relevant part of the cortex itself. This shows that the experience we call 'a pain in the toe' is not in the toe in the sense of being physically located in that part of the body. If it can be said to be physically located anywhere, the evidence suggests that it is in the sensory cortex.

The Explanation of Common Observations as a Criterion of Identity

Although Burt has not given any convincing reasons for thinking that conscious experiences are not located in the subjects' head, this only shows that their physical location, in so far as it is at all determinate, is consistent with the hypothesis that they are processes in the brain. We certainly cannot claim that the positive evidence as to their precise physical location is such as to preclude any other possibility. Hence in order to show that consciousness is a process in the brain we need a further criterion of identity to which we can appeal in providing evidence for this claim. Reasons for thinking that Burt's indistinguishability criterion is not acceptable as a criterion of identity in this connection have already been given. We have now to consider the reasons that Burt gives for rejecting the explanation-of-common-observation criterion of identity which I proposed in my paper. His argument here is that in the lightning-electric discharge example, which I used in deriving this criterion, the electric discharge causes the visual sensation experienced by the observer and that therefore these two events, the electric discharge and the visual sensation are two separate causally related events and not one and the same event. From this he concludes that the lightning/electric discharge case is not an example of two apparently separate things being found to be one and the same thing, and that, consequently, no relevant conclusions can be drawn from this example.

I would of course agree completely with Burt when he says that the electric discharge and the visual sensation experienced by the observer are two separate causally related events. But I do not consider that this in any way invalidates my argument. For unlike Burt I do not want to identify lightning with the visual experience of the observer. As I understand the ordinary usage of this word, lightning is a physical event in the environment of the observer which occurs whether or not any one happens to be there to observe it. We can say that lightning causes the observer's visual experience, just as we can say that the electric discharge through the atmosphere does. It is this physical event - lightning - that we ordinarily identify with the electric discharge not the observer's visual experience. As I understand the matter, the observer and his visual experience enter into the matter only when we come to account for the fact that these two separate descriptions are said to be descriptions of one and the same physical event. The point here is that the word 'lightning' is used in ordinary language as the name for the physical phenomenon (nature unknown or at least unspecified) seen by the observer on a stormy night; whereas the electric discharge is the name of a theoretical event whose occurrence in the atmosphere under certain meteorological conditions is established by inference from experimental studies such as those of Benjamin Franklin and his kite. Each description is thus based on or defined in terms of a particular kind of observation or set of observations. It follows from this that in order to show that the two descriptions refer to the same event, what we have to do is to explain how it comes about that we have these two separate descriptions, when in fact there is only one event being described. And, in order to do this, what we have to do is to explain in terms of one description, which is always in such cases the more complex scientific description, how it comes about that when such a physical event occurs an ordinary observer in the street who happens to be around should have the sort of visual or

other experience he does have and should be tempted in consequence to describe the physical event he observes (not his visual experience) in the way he does.

Generalising from this example of lightning and the electric discharge, I argued in the 1956 paper that 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 in 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 and temporary state 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 are one and the same thing.

The empirical implications of the Identity Theory

I did not attempt in the 1956 paper or in the subsequent discussion in 1960 to take the matter any further than this.

Logically the next step to be taken in finding whether there is such a process in the brain is to construct a theoretical model of a brain process which would have the property of being introspectible, find out from the model what other properties

such a brain process would be expected to have, and then see whether there is any evidence for the existence of such a process in the brain, and, if so, where it might be located.

I did not feel when I wrote the 1956 paper, nor do I feel now, that my competence in the field of neurophysiology and cybernetics is sufficient to allow me to do justice to this task. I must state quite categorically, however, in view of Burt's statement that I did not propose the theory in the first place for its "explanatory value or as a guide to experimentation", that although I did not feel competent to undertake it myself, I clearly envisaged the development of a programme of theoretical and experimental research along these lines as a consequence of my paper. This is implied (a) by the explicit statement that I regarded the view that consciousness is a process of the brain as an empirical scientific hypothesis and (b) by the fact that although the arguments in the paper were of a logical and philosophical nature, the paper was published in the British Journal of Psychology and not in a philosophical journal where the force of the arguments would have been better appreciated, as they subsequently were when the case was presented to a philosophical audience by Professor J.J.C. Smart (1959).

A Psychophysiological theory of Introspection

The failure of my paper to arouse the sort of interest on the part of the psychologists, and neurophysiologists that it has aroused amongst philosophers, together with my own failure to pursue the matter in this direction has meant that the empirical implications of the materialist hypothesis have remained largely unexplored. The only significant development that I know of in the direction of providing a neurophysiological explanation of introspection that has occurred in more than a decade is Putnam's (1960) description of a theoretical machine which detects and records its own states from moment to moment.

I cannot myself accept Putnam's proposals as a satisfactory account of introspection even at the theoretical level for two reasons. Firstly because when it is interpreted in terms of the physiological hardware it implies the existence of receptor organs or specialised nerve endings whose only function is to detect the activity of other nerve cells or groups of nerve cells. I can find no evidence of any such receptors or specialised nerve cells in the central nervous system. The second reason is that Putnam's theory provides no explanation of why only a very limited part of the total control activity of the brain can be detected in this way, or why the descriptions themselves are as meager and puzzling in their import as they actually are. It is only fair to add that Putnam has since expounded a revised theory of introspection which is very close to the one developed below (Putnam 1966). His original conception of introspection in terms of an internal scanning process has, however, been revived in a recent book by Armstrong (1968).

Although to my knowledge Putnam's is the only important contribution to the theory of introspection in terms of brain activity that has emerged, it would not be true to say that there have been no important developments in the neuropsychology of consciousness since 1956. One has only to think of the remarkable escalation of research into the physiology of dreaming which has resulted from the discovery by Aserinsky & Kleitman (1955) of the rapid eye movement phase of sleep and its association with dreaming. So far, however, this research has shown no sign of providing an answer to such questions as where precisely in the brain the process of dreaming occurs (as opposed to the areas from which it is controlled), and how the individual comes to have this remarkable ability to describe what is presumably some part of the complex pattern of neural activity that is observed during REM sleep.

A more important development from the standpoint of the theory of introspection is the work of Broadbent (1958) who has developed a theory of attention in terms of a filter mechanism controlling the input to a limited capacity channel. Broadbent is concerned with the problem of accounting for the selective perception and retention of two or more simultaneously presented auditory messages rather than with the problem of conscious experience and the subject's ability to describe it. It is clear, nevertheless, that the mechanism he describes is essentially the same process as the one we ordinarily refer to by such phrases as 'paying attention to something', 'concentrating on it', 'looking at it', 'listening to it', etc.

In an earlier paper (Place 1954) criticising Ryle's (1949) behaviourist account of 'attending' or 'heed paying', as he calls it, I gave the following account of the concept of attention as ordinarily understood.

"The expression 'paying attention' refers to an internal activity of the individual presumably of a non-muscular variety, whereby he exercises a measure of control over the vividness or acuteness of his consciousness of (a) the sensations to which he is susceptible at the moment, or (b) such features of the environment as are impinging on his receptors, without necessarily adjusting his receptor organs or their position in any way. In paying attention to something the individual is regulating the vividness of his consciousness of the object or sensation in question and hence the number of its features of which he is conscious. The expression 'being conscious of something' refers to a peculiar internal state of the individual which normally accompanies any reasonably intense stimulation of his receptor organs, the particular form assumed by the individual's state of consciousness at a given moment being determined by the pattern of physical energies impinging on his receptor organs at the time.

"Being conscious of something is by definition a necessary condition of the individual's being able to give a first hand report on that something either at the time or later. It is not, however, a sufficient condition of the individual's ability to make such a first hand report, since it is possible for someone to be conscious of things which he cannot put into words, without his capacity to verbalise being in any way disturbed. Likewise, though here the relationship is probably contingent rather than necessary, the successful performance of any skilled activity depends to a greater or lesser extent on the individual paying attention to, i.e. maintaining a vivid consciousness of, relevant features of the situation and his own activity, with respect to it". (op.cit.p.244).

If this is a correct account of the relationship between attention and consciousness as ordinarily understood, it is clear that while the 'non-muscular activity' of attending is equivalent to the operation of Broadbent's filter mechanism, the resulting consciousness is equivalent to the filter output, the limited capacity channel which it is the function of the filter to protect from overloading. The question that arises, therefore, is whether it is possible in terms of Broadbent's model to explain how human beings might be supposed to acquire the ability to report and describe what is going on in the limited capacity channel at any given moment and why the activity in this particular part of the system should be so describable and not other parts.

As I see it, the answer to this question is to be found in the suggestion, which I hinted at in my 1956 paper, that the ability to report and describe conscious experience is a by-product of the ability to describe what is going on in the environment. In learning to describe what is going on in the environment, we learn among other things to respond to characteristic patterns of sensory stimulation by using or becoming ready to use certain words which are said to refer to or describe the objects and phenomena in the environment from which the distinctive stimulus pattern in

question emanates. In the light of the considerations presented above, however, it is apparent that the immediate stimulus that determines the descriptive response of an individual is the neural input after it has successfully passed through the filter mechanism, in other words, the activity in the limited capacity channel. Since the pattern of activity in the limited capacity channel under normal waking conditions is presumably controlled by the pattern receptor stimulation at that part of the sensorium from which the filter is accepting information at the time, there will normally be a consistent relationship between the occurrence of a particular pattern of activity in the limited capacity channel and the existence of a particular state of affairs in the individual's stimulus environment. When this is the case the individual will be able to learn a descriptive response to the relevant pattern of activity in the limited capacity channel which, in terms of the conventions of the language he is learning, will be an appropriate description of the current state of the stimulus environment.

In some cases, however, the pattern of neural activity in the limited capacity channel which elicits a particular description may occur under conditions where there is no corresponding state of the environment, either because the stimulus at the receptors is very similar to that normally required to produce the relevant pattern of activity in the higher centres of the central nervous system, as in the case of an illusion, or because ~~of~~ some internal factor acting, presumably, on the filter mechanism ~~which~~ produces a pattern of activity in the limited capacity channel that is quite unrelated to the pattern of stimulation at the receptors, as in the case of a mental image, a dream or a hallucination.

On most occasions when such a discrepancy occurs between the individual's descriptive reactions and the actual state of the environment there is a cue in some other part of the sensory input which, if it is filtered into the limited capacity channel, can act as a discriminative stimulus which the individual can use in learning

to inhibit his immediate descriptive responses, as well as other impulsive reactions to the stimulus based solely on the way it looks, sounds, tastes, smells or feels. However, once he has learned to inhibit these possible or actually inappropriate descriptive responses when attempting to give an accurate description of the state of affairs in the environment, the individual can also learn to reissue them with an appropriate qualificatory phrase 'it appears to me', 'it looks to me', 'it sounds to me', 'it feels to me like' or 'as if it were so and so' which serve to warn the audience that this is not intended as a descriptive statement about an actual state of affairs in the environment.

Such statements are introspective in the sense that they provide information, not about the environment, but about the individual's own otherwise unobservable reactions to the stimulation impinging on his receptors. They give information primarily about the speaker's immediate unconsidered descriptive temptations that he is able to suppress. But they also provide information about the immediate source of those descriptive temptations, the individual's conscious experience, which on the present hypothesis is to be identified with neural activity in Broadbent's limited capacity channel.

In my view this explanation accounts for the majority of those introspective statements made by human subjects which can properly be said to refer to conscious experiences. The only statements referring to the individual's own conscious experience, in the strict sense (i.e. 'consciousness of' as opposed to 'consciousness that') which remain unaccounted for are those in which the particular somatic sensations such as pains, tickles, itches, etc., are referred to by name. I do not propose here to enter into a discussion of the thorny problem of how we learn to give names to this small group of conscious experiences for which we do have proper names. Nor do I propose to discuss other varieties of introspective statement such as those which mention the various interpretations or constructions that

an individual is or was tempted to put on an actually or symbolically presented situation, or those which describe the individual's feelings or emotional reactions to his experiences. Suffice it to say that in my opinion whenever an individual makes what is misleadingly called an introspective statement or report, he is either (1) expressing his otherwise suppressed verbal temptations or (2) expressing in words his suppressed temptations to behave in some non-verbal way, or (3) making a statement whose meaning can only be learnt and explained by reference to statements which express such temptations.

If I am right in thinking that this theory can be developed so as to account, not only for all the information that human beings can provide about events and processes inside themselves that control their behaviour, but also for the fact that no other kinds of information about the process controlling behaviour is forthcoming from this source, and can do so without postulating an entity, the individual's conscious experience, which is something over and above Broadbent's limited capacity channel, we have, I suggest, on the analogy of the case of lightning and the electric discharge, all the evidence we need to satisfy us that consciousness and Broadbent's limited capacity channel, are one and the same thing. Broadbent's limited capacity channel, however, is nothing more than a unit in a particular cybernetic model of how the brain must be supposed to function in order to account for certain features of human performance. It is not as it stands the name of any anatomically specifiable brain process. Nevertheless the fact that Broadbent found it necessary to introduce into a theoretical model of brain function designed to account for certain facts of human performance, an element which has or can readily be supposed to have all the properties commonly attributed to human consciousness, makes it at least highly probable that there actually exists a part of the brain which is specialised to perform this particular function.

The Physical Location of Consciousness

In fact it is not very difficult, even for someone with as limited knowledge of such matters as myself, to indicate the general area in which a process answering to this description is likely to be found. The first point to be made in translating Broadbent's model in terms of the physiological and anatomical hardware is that the limited capacity channel, and hence, on the present argument, consciousness, is going to consist, not as Burt seems to think, in some special kind of electro-chemical process at the molecular, atomic or sub-atomic level of analysis, but in a complex pattern of activity involving the excitation and inhibition of a very large number of individual neurons. This pattern of activity is going to be distinguished not so much by any special peculiarity of the way the neurons in question interact, but by the function it performs in the process whereby information is transmitted from input to output. Since, as we have seen, the limited capacity channel appears in the flow diagram with its input end at the output end of the filter mechanism, and since one of its important functions is to select appropriate verbal behaviour on the output side, we would expect to find these relationships reflected in the anatomical lay-out of the brain.

Now there is considerable body of evidence that has accumulated in recent years which suggests that the functions attributed by Broadbent to his hypothetical filter mechanism are in fact performed in the brain by the reticular formation. We also know that the reticular formation plays an important part in the control of the general level of consciousness particularly the process whereby the individual is aroused from sleep. The evidence relating to the functions of the reticular formation has been reviewed by French (1960) and Lindsley (1960). It seems unlikely, however, that consciousness will turn out to be a process in the reticular formation itself. Consciousness we have suggested is the output from the filter mechanism, not the mechanism itself. It is something that is regulated by ^{the} reticular formation rather than something that takes place in that part of the brain. The reticular formation as

a whole appears to perform a regulative function with respect to many parts of the nervous system, but in its capacity as a filter mechanism it is the control it exercises over the activity of the sensory areas of the cortex that is of most obvious importance.

Furthermore, if we consider the output side of the flow diagram our attention is again drawn to the sensory projection areas of the cortex by the fact that the part of the brain most commonly implicated in speech and language disorders resulting from brain injury is part of the dominant hemisphere of the cerebral cortex which lies roughly midway between three important sensory projection areas, the visual area in the occipital lobe, the auditory area in the temporal lobe, and that for somatic sensitivity in the parietal lobe. One is tempted, no doubt naively, to think of consciousness as a wave of neuronal excitation converging on this critical area for the interpretation and production of speech from the sensory projection areas.

It may well be that future research will show both that the theory of introspection I have outlined and the tentative identification of consciousness with neural activity in the sensory areas of the cerebral cortex is wrong. It may be that evidence contradicting either or both theories already exists. This by itself would not prove that the mind-body identity thesis is false. For it would not preclude the possibility that some other physiological theory of introspection is true, or that consciousness is a process in some other part of the brain. Nor would it defeat my primary objective in developing these theories namely to show that the so called mind-body identity hypothesis is something more than an elegant piece of logical sophistry attractive only to philosophers, that it is capable of generating empirically testable hypotheses which can be tied into relevant anatomical, physiological, psychological and logical facts more closely than any dualistic theory, such as the one advocated by Burt, could ever hope to be.

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In arguing against what he calls "the identity thesis" Munsat ¹

¹S.Munsat "Could Sensations be Processes?" Mind lxxvii (1969) 247-251

has selected for special consideration the thesis that sensations cannot be shown by logical argument not to be, what the empirical evidence by itself would lead us to suppose that they were, namely processes in the brain. As he points out the thesis in the form in which he discusses it was originally proposed by J.J.C.Smart².

²J.J.C.Smart "Sensations and Brain Processes" Philosophical Review lxviii (1959) 141-156.

Smart's thesis, however, as he himself acknowledges, was based on a thesis which I had proposed some years earlier ³ to the effect that

³U.T.Place "Is consciousness a brain process?" British Journal of Psychology xlvii (1956) 44-50

consciousness could not be shown on logical grounds alone not to be a brain process. As Munsat correctly points out, the term 'consciousness', as I used it, was intended to embrace sensations. It was also intended to include certain other mental phenomena such as after images, mental images, dreams and trains of thought, while at the time excluding other kinds of mental phenomena, mental events like noticing, recognising, remembering, and comprehending, mental states like being pleased, angry, unhappy, afraid, embarrassed or confused or like wanting, intending and expecting, mental capacities like understanding and knowing, and a wide range of mental attributes from intelligence and stupidity to arrogance and humility.

The mental phenomena which the term 'consciousness' was intended to embrace were those mental phenomena and only those which, in my view, could be properly described as processes. It was precisely for this reason that I proposed the identification of this group of phenomena with processes in the brain rather than with brain events, brain states or with performance characteristics of the cerebral machinery.

I have thus no hesitation in agreeing with Munsat when he says that I need "to show that sensations and brain processes are of similar or the same logical type" (i.e. that they are both processes) if I am to sustain my particular form of identity thesis. Munsat tries to ensnare me at this point, however, (a) by purporting to show that sensations are not processes and (b) by trying to close the only escape route open to me, were I to concede that sensations are not processes, by arguing that sensations are not events or states either, but fall into a unique logical category of their own of which there are no examples in the world of things physical and physiological. This stratagem fails in my view, because the reasons Munsat gives for thinking that sensations are not processes do not carry conviction.

In order to decide whether or not sensations are processes we need to begin by agreeing on a logical taxonomy, a set of logical criteria which will enable us to decide whether something is or is not a process, and, if it is not a process, to what other logical category it belongs.

The logical taxonomy which I am accustomed to using when discussing mental concepts is one which derives, as does that which Munsat uses, from Ryle¹. The fundamental distinction is between

¹ G. Ryle "The Concept of Mind-" London, Hutchinsons, 1949.

occurrences on the one hand and states on the other. A state is something that is the case for a specifiable period of time, but which cannot like an occurrence be said to occur at a specific point in time. The onset and termination of a state are, however, occurrences in this sense.

The onset or termination of a state is an event, and events together with processes make up the category of occurrences. Events are distinguishable from processes by the fact that though they can be said to occur at a particular point in time, they are not, unlike processes, extended in time. By these criteria therefore a process is an occurrence which is extended in time, something of which it makes sense to say both that it occurred, or more correctly, that it was occurring at a specific point in time and that it was the case (was going on) for a specific period of time.

Corresponding to this distinction between states and two types of occurrence, events and processes, which applies equally to things inorganic and things organic, we have a distinction between three kinds of verbs expressing three kinds of things that a person or personalized agency can be said to do. Corresponding to nouns referring to states we have dispositional verbs like 'know' 'govern' 'own' etc., which someone can be said to do for a period of time but cannot be engaged in doing at any one moment of time. Corresponding to events we have act verbs, of which Ryle's 'achievement verbs' are a sub-class, where one can say of someone that he did it at a specific point in time, but not that he did it or was doing it for a period of time; and corresponding to processes we have activity verbs where one can say of someone that he was doing something both at a particular point in time and for a period of time.

Munsat appears to be employing a similar logical taxonomy when he argues, if I have understood him correctly, (a) that the noun 'sensation' is the noun of the verb 'to feel' and (b) that the verb 'to feel' in the sentence "He felt the blood starting to circulate" is an achievement verb. Clearly, if I were to accept his initial premiss that the noun 'sensation' is the noun of the verb 'to feel' as it is used in the sentence "he felt the blood starting to circulate", I would have to concede. by the logical

criteria I have stated that the verb 'to feel' in that sentence is an achievement verb and thus a variety of what I call an act verb, and that the act referred to is an event and not a process. For while it makes sense to say "he felt the blood starting to circulate at 3.51 p.m.", it does not make sense to say "he felt the blood starting to circulate for half an hour". If I want to maintain, as I do, that sensations are processes, I should have to say that in so far as the noun "sensation" is the noun of the verb 'to feel', whatever that may mean, it is the noun of the verb 'to feel' as used in sentences like "he felt a tingling" where it makes good sense to say both that he felt the tingling continuously for half an hour and that he was feeling it at 3.51 p.m. In this case the verb 'to feel' is operating, on the logical criteria I have stated, as an activity verb, and by those criteria the activity referred to by such a verb qualifies as a process.

The word 'sensation' as used by Smart is, like my own term 'consciousness', a technical philosophical term, and, as such is susceptible to different interpretations by different philosophers. Munsat's interpretation of it as the noun of the verb 'to feel' is one such interpretation, which is not necessarily the interpretation intended by Smart, and is certainly not the way in which I would use the term. Nevertheless we can probably all agree that whatever technical use we choose to give to the word 'sensation', any technical use of the term must embrace the sort of thing that we refer to as sensations in ordinary language, namely things like pains, itches, throbbings and tinglings. Thus it can hardly be denied that the sentence "he felt a tingling", for which we can substitute quite idiomatically and without change of meaning the sentence "he felt a tingling sensation" is a much stronger candidate for the status of a sentence referring to a sensation than is the sentence "he felt the blood starting to circulate". Consequently, provided I stipulate that when I use the term 'sensation' I am referring to what is referred to by sentences like "he felt a tingling sensation", which contains what, by the criteria I have stated, is an activity verb, and

am not referring to what is referred by sentences like "he felt the blood beginning to circulate", which contains what by my criteria is an act verb, my contention that sensations in this sense are processes can only be defeated by showing that the criteria I have suggested for identifying activity-verbs and process-nouns are unacceptable.

Munsat does not in his paper give any reasons for rejecting the logical criteria I have stated here for determining whether or not something is process, since he does not consider them. He does, however, offer some alternative criteria of his own which merit some consideration. "Processes", he says "unlike sensations, 'go on' and things of various kinds can undergo them. Processes or at any rate particular examples of them, can proceed at a normal or abnormal rate, but not so with sensation. Processes can be interrupted or completed but sensations can only cease (or stop or go away) or come back or continue Processes, usually, if not always, have a direction, whereas sensations do not, at least not in the same sense". 1

1. Munsat op.cit. p.250

To what extent do these features form an essential part of the concept of 'a process'? It is, I suppose, inevitable that the answer I am inclined to give to this question should be determined by the logical criteria I have already given for distinguishing processes from other ways in which things can occur or be the case. I shall try nevertheless to support my contention that some of the criteria which Munsat has suggested are not as he himself partly concedes, essential characteristics common to all processes by means of examples of processes which are not sensations. but nevertheless fail to exhibit the characteristics in question. In those cases where I am compelled to concede that the

that the characteristic is an essential feature of a process on the other hand, I shall try to show that Munsat is mistaken in thinking that they do not apply in the case of sensations.

I have suggested that the defining characteristic of a process is that it is something that can be said both to occupy a period of time and to be occurring at any point of time during the period of its operation. If we now compare processes with states which also occupy periods of time but which cannot be described as occurring at any particular point of time during that period, it must be conceded that processes are distinguished by the fact that there is something going on throughout the period during which the process is in operation. It must also be conceded that if it is the case that there is something going on throughout the period during which a process is in operation, it must also be the case that a process is something that is subject to continuous change or movement during the period of its operation. Furthermore if continuous change or movement is an essential feature of a process there must always be something that undergoes the change or movement in question, and it must always make sense to ask of a process how fast it is changing or moving. Any change or movement must also be in a particular direction. In the case of movement this must have a direction in the literal spatial sense. In the case of processes involving some change in the properties of something without any change in physical location, e.g. the process whereby the colour of something gradually changes, the change involves direction only in the metaphorical sense in which changes of intensity, for example, must be in the direction of greater intensity or in the direction of lesser intensity.

Apart from this qualification with respect to the application of the concept of direction to processes, it is clear that I, compelled by my own logical criteria of what constitutes a process to accept all the characteristics listed by Munsat as essential features of a process with one exception, namely, the stipulation that it must always make sense to talk of a process being interrupted or completed

where this more than is implied by saying simply that it has ceased or stopped. As I see it, this stipulation applies only to a special variety of process namely those which involve a change or transformation of something from one state to another. Such processes, which we may call 'productive', are certainly very common. They include such processes as chemical reactions, biological processes like growth and digestion and processes controlled by human agency such as the processes involved in manufacture. But there are other processes, those involved in maintenance rather than production, like vibration, rotation or the negative feed-back process whereby a system is maintained in a state of equilibrium, where there is no end state whose attainment marks the completion of the process. In such cases, as in the case of sensations, to say that the process has been interrupted says no more than is said by saying that it has stopped.

Since I accept most of the features mentioned by Munsat as essential features of a process, and since I remain convinced despite his arguments that sensations are processes, it follows that in my view it makes perfectly good sense to talk of a sensation going on, being undergone by something or rather by someone, changing at a certain rate, and changing in a specifiably direction such as intensity. What makes Munsat think that it does not make sense to say these things?

My diagnosis is that he is misled by two logical incompatible conceptions of what constitutes a sensation based on the naive assumption that the word 'sensation' is to be understood as the nominalization of the verb 'to feel' in all uses of that verb regardless of the fact that this verb is used in two logically quite different ways in the two sentences he takes as examples of its use. If a sensation is something like 'feeling the blood starting to circulate', it clearly does not make sense to talk of someone's feeling the blood starting to circulate going on, nor is it something that someone can properly be said to undergo; nor yet is it something that can change whether in rate or direction. If, on the other hand, we consider the case of feeling a tingling,

it makes perfectly good sense to talk of the tingling going on. A tingling sensation is something that someone can quite properly be said to undergo. It can be said to increase or decrease both in its intensity and, I suspect, in the firing rate of the individual 'pin pricks' that go to make up this particular variety of sensation. There is also a perfectly good, if metaphorical sense in which such changes can be said to occur either in one direction or the other.

From what he says one can perhaps anticipate an objection that Munsat might raise to this answer. Munsat might argue that in comparing 'feeling the blood starting to circulate' with 'feeling a tingling sensation' I am comparing the feeling in the first case with what is felt in the second. Now although it may be conceded that what is felt in the second case (the tingling) is a process, feeling it is an achievement and therefore an event. There are, of course, plenty of cases where the object of an achievement verb is a process. We can generate such a case from Munsat's first example by substituting 'the blood circulating' which is a process for 'the blood starting to circulate' which is an event thus deriving the sentence 'he felt the blood circulating'. or, in order to emphasize the achievement character of the verb, 'he noticed the blood circulating'. Similarly, one might argue, the verb 'to feel' sometimes functions as an achievement verb in the sentence 'he felt a tingling sensation', as shown by the fact that in some contexts one can substitute the undoubted achievement verb 'notice' for the verb 'feel' in this sentence without changing the meaning, viz: 'he noticed a tingling sensation'. On the face of it the conclusion that the verb 'to feel' in the sentence 'he felt a tingling sensation' is sometimes an achievement verb and therefore an event rather than a process would not seem to have much bearing on the thesis that sensations are processes. For as we have seen there is no reason why an achievement verb should not have a process as its object and therefore no reason why the tingling, which has a much better claim to the title of 'sensation' than has the feeling of it, should not be recognised as a process, as all other criteria suggests it is. However as Munsat points out

there are good reasons for thinking that in cases like 'he felt a tingling', the verb and its object do not refer to two separate things in the way that the circulation of the blood and someone's feeling it or noticing it refer to two separate things in sentences like 'he felt his blood circulating'. For whereas in the blood circulation case the blood continues to circulate whether or not the individual concerned happens to feel it or notice it, there is something decidedly odd about the notion of an unnoticed or unfelt tingling sensation.

These considerations lead Munsat, as I have been led myself in the past ¹, to conclude that a sensation and the feeling of it

¹ U.T.Place "The Concept of Heed", British Journal of Psychology xlv (1954) 243-255. The reference is to pp. 250 & 252.

are one and the same thing, that the distinction between the verb and its object in this case is a matter of grammatical form with no substance in the reality to which the phrase refers. But if this is so, how do we account for the fact that whereas the noun 'tingling' has all the logical features of a noun referring to a process, the verb 'to feel' in the same sentence ^{can have} the characteristics of an achievement verb. The resolution of this difficulty that Munsat proposes, is that the sensations, by which, I take it, he means what is referred by portmanteau phrases like 'feel a tingling', fall into a special bastard category of their own, being neither events nor processes, but something in between the two.

I confess that I find this notion of a logical category intermediate between an event and a process, quite unintelligible. If something occurs it must either occur at a specific point in time without being extended in time, in which case it is an event, or it occurs for a period of time, however short, in which case it is a process. There is no room for a third intermediate possibility.

The resolution of this difficulty which I favour rests on the observation that any process, like any state, entails at least two events, its beginning and its end. The event referred to by the achievement verb 'notice' in the sentence 'he noticed a tingling sensation' is the onset of the tingling process. It does not make sense to say 'he noticed the tingling continuously for five minutes'. On the other hand it does make sense to say that the tingling persisted continuously for five minutes after he first noticed it, though not that the tingling had been going on for five minutes before he noticed it.

The reason why it does not make sense to say that the tingling had been going on for five minutes before he noticed it, whereas it does make sense to say that the blood had been circulating for five minutes before he noticed it, is that the achievement referred to by the verb 'to notice' is the attainment of the ability to report the occurrence or presence of what is noticed, and sensations are the sort of thing that can only be said to occur or to have occurred when their owner is in a position to report their occurrence. As things stand now, the only evidence we have or can have for the nature and occurrence of a sensation is the report of the individual in whom it occurs taken in conjunction with whatever circumstantial evidence is available to confirm or disconfirm the hypothesis that he is telling the truth. Consequently the existence of unreported or unreportable sensations is something that cannot in the nature of things be confirmed or denied and is therefore without meaning.

If, however, I am right in thinking that sensations are processes in the brain, and if we know which particular brain processes they are, it might be possible to show that there are processes similar in all respects to those that have been identified as sensations apart from the fact that the individual in question did not and was not in a position to report them. If such were found to be the case, it might then become sensible to talk of unnoticed sensations; but only because and in so far as we would then have evidence of their occurrence which

is independent of the individual's self report.

Since it appears possible to account both for the use of achievement verbs like 'notice' in statements about sensations and for the fact that there cannot be unnoticed or unfelt sensations without in any way compromising the claim that sensations have all the essential characteristics of processes, I conclude that Munsat has failed to show, what he set out to show, namely that sensations are not processes; and if he has failed to show that they are not processes, he has also failed to show that they are not, what I still believe them to be, namely processes in the brain.

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