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WE NEEDED THE ANALYTIC-SYNTHETIC DISTINCTION TO FORMULATE MIND-BRAIN IDENTITY THEN: WE STILL DO

Abstract

Quine's (1951/1980) repudiation of the analytic-synthetic distinction undermines three principles fundamental to the view expounded in 'Is consciousness a brain process?' (Place 1956):

(i)   the idea that problems, such as that of the relation between mind and body, are partly conceptual confusions to be cleared away by philosophical analysis and partly genuine empirical questions to be investigated and answered decisively by the relevant empirical science,

(ii)   the distinction between the meaning of what the individual says when she describes her private experiences and the nature of the actual events she is describing as revealed by science, and

(iii)   the claim that, unless the connection is obscured by the different ways in which the two predicates come to be applied, co-extensive predicates become conceptually (intensionally) connected, and sentences asserting their identity become analytic.

It is argued that, if the object is, as it should be, to assimilate this case to other cases of type-identity in science, rather than perpetuate the problem, these principles are still needed.

1.   Introduction

In 1954, when a series of informal discussions took place at the University of Adelaide between Charlie Martin, Jack Smart and myself which resulted in the publication two years later of my paper 'Is consciousness a brain process?', Quine's (1951/1980) 'Two dogmas of empiricism' had been in the public domain for three years.   But the repudiation of the analytic-synthetic distinction which that paper contains had not yet achieved the status of holy writ it has since acquired.   Had it done so, my paper and Jack's (Smart 1959) follow-up could never have been written.   To show that is not difficult.   Where I anticipate more difficulty is in convincing you that, having used the analytic-synthetic distinction to break the ice, as it were, we still need it in order to defend the position forty years on.

2.   Quine's 'Two dogmas of empiricism'

In order to appreciate what is at issue here, we must recognise that what Quine is repudiating in `Two dogmas' is not just the analytic-synthetic distinction as formulated by Kant in terms of the inclusion of the concept of the predicate of a subject-predicate proposition within the concept of the subject.   It is the very notion that there are sentences that are made true not by the existence of some state of affairs to which the sentence refers, but solely by virtue of the meaning of the words of which it is composed.   For, as he makes clear, Quine is equally concerned to discredit "Hume's distinction between relations of ideas and matters of fact, and ... Leibniz's distinction between truths of reason and truths of fact", and, though he treats it simply as another way of formulating the analytic-synthetic distinction, Leibniz's analysis of the distinction between contingent and necessary truth in terms of what can and cannot be denied without self-contradiction.

Furthermore, although he is careful in his exposition of the analytic-synthetic to draw Frege's distinction between what he (Quine) calls the "meaning" (Frege's '*Sinn'*) of a singular term and a mere name which simply "refers to" (Frege's *bedeutet)* the object in question, and likewise, in the case of a general term, Sir William Hamilton's (1860) distinction between its "intension" and "extension" and Mill's (1843) between its "connotation" and "denotation", the effect of his argument is to undermine these distinctions also.

3.   *Quine's arguments against the analytic-synthetic distinction*

Quine's arguments for rejecting the analytic-synthetic distinction are remarkably unconvincing, which is surprising considering the virtually unquestioned acceptance his view commands. Not only does he begin, as we have seen, by drawing a clear distinction between the meaning or sense, as it is more commonly called, of a singular term and its reference and between the intension of a general term and its extension, he concedes most of what the believer in the analytic-synthetic distinction maintains by acknowledging that there are statements such as the statement

No unmarried man is married

which are analytic in the sense that they are "logically true".   In this example the statement is made true solely by the fact that the two predicates involved, *married* and *unmarried*, are contradictories. No observations comparing persons who are married with those who are unmarried are required in order to check that there are no cases of unmarried people amongst the married and no cases of married people amongst the unmarried.   Instead he focuses on another class of alleged analytic statements of which his example is

No bachelor is married

where the contradiction between the two predicates arises, not just, as in the previous case, from the addition of the negative prefix *un-* to the same predicate, the predicate *married*, but from the accepted 'meaning' of the word *bachelor* when used in contexts such as this where it is taken to be synonymous with the expression

unmarried male of marriageable age.

Quine challenges this interpretation (a) by claiming that the notion of synonymy on which it depends is unclear, (b) by pointing out that our only authority in deciding what expressions are and are not synonymous are the linguistic intuitions of competent speakers of the language (dictionary definitions are parasitical on such intuitions), and (c) by pointing out that there are uses of the word *bachelor* as in the phrases *bachelor of arts* and *bachelor's buttons* which do not conform to the definition and (d) by pointing

out that, since predicate logic is purely extensional, it has no way of marking the distinction between a statement of the form

$$(x) (Fx \supset Gx)$$

where this is due to the fact that being an F is either partly or wholly synonymous with being a G and a case where it just so happens that the two predicates have the same or an overlapping extension.

4.   *A critique of Quine's arguments*

What is perhaps most remarkable about these arguments is that the inability of predicate logic to distinguish between accidental co-extension and co-extension due to synonymy is taken to show not, as one might suppose, the inadequacy of predicate logic, but that a distinction that predicate logic cannot make is unnecessary and should be discarded.   This, despite the fact that universal propositions which are true by virtue of a conceptual connection between two co-extensive predicates justify inferences to possible future cases, in a way that those expressing a purely accidental co-extension cannot do.   With regard to the arguments that focus on the *bachelor* example, it is not clear why Quine should accept that

No unmarried man is married

is a logical truth which can be represented by the formula

$$\sim(\exists x)(\sim Fx \supset Fx),$$

while refusing to accept a similar analysis for

No bachelor is married

on the grounds that in the latter case we are merely relying on the uncertain linguistic intuitions of lexicographers.

But what tells us that *unmarried* is equivalent to *~married* and is, therefore, the contradictory of *married?*   After all, in English the initial syllable *un-* does not always function as a simple negation of a predicate that follows it.   Think of *undulate* or *undermine* where the initial syllable is not the negation prefix *un-*, *unkempt* where the negated predicate *kempt* is no longer part of the language, or *undo*, *untie*, *unscramble* etc. where the sense of the prefix is 'reversal' rather than 'negation'.   The answer has to be that what tells us these things are our linguistic intuitions as competent speakers and interpreters of

English. That competence is acquired by the child and maintained in the adult *not*, except in the case of a few obscure and technical terms, by learning definitions, but by a process of trial and error-correction in which we gradually eliminate both inappropriate uses of words from our own utterances and inappropriate responses to the utterances of others from our own utterances and other behaviour. The end result of that process, moreover, is far more solid and more uniform from speaker to speaker than Quine's doctrine of the "indeterminacy of radical translation" would allow. If it weren't, linguistic communication within the community of speakers of English or any other natural language would be impossible.

5. *The analytic-synthetic at work in 'Is consciousness a brain process?'*

When I was writing 'Is consciousness a brain process?', by far the most formidable objection I needed to overcome was the objection that when an individual describes her private sensations and other experiences, she is not talking about something going on in her brain. She may not even know that she has a brain or, if she does, that there is anything going on inside it. Although there may be no recorded cases where this has occurred, there is nothing *self-contradictory* in supposing that someone who, it turns out, has an empty cranium is, nevertheless, able to describe sensations and private experiences indistinguishable from those described by people with normally functioning brains.

The strategy I adopted to meet this objection appears in the following passage from the paper which I have amended slightly for the benefit of a contemporary audience (changed wording in ***bold italics):***

"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 a process 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, ***on the Ryle-Wittgenstein view, cognitive capacity*** statements are analysable into statements about ***what the individual can say and do***. 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 'lighting is a motion of electric charges' is a reasonable scientific hypothesis, *or rather was, before it became a matter of established scientific fact*." (pp. 44-45)

That this paragraph is invoking the analytic-synthetic distinction needs no argument. But the matter does not end there. For after discussing the nature of the *is* in the statement

<p style="text-align:center;">*Consciousness is a brain process*</p>

I went on to consider why it is that we find the claim that there is nothing self-contradictory in supposing that experiences should occur in the absence of brain activity a convincing argument against the view that, as a matter of fact, experiences *are* a form of brain activity. In this quotation I have found it necessary to make even more corrections which, again, I have indicated by means of *bold italics in what, I regret to say, was in its original form a most obscure piece of prose:*

"There is ... an important difference between the table/packing 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 *it becomes generally accepted that every member of a class of objects or states of affairs which is identified by its possessing one characteristic also possesses another characteristic which is identified in a way that is logically independent from the way the first characteristic is identified, a statement asserting the inherence in an object or state of affairs of the first characteristic will come to entail a statement asserting the inherence in that object or state of affairs of the second characteristic.* If this rule admitted of no exception, it would follow *from the fact that it is not self-contradictory to imagine the existence of an object or state of affairs which possesses the one characteristic without possessing the other that it is empirically possible for the two characteristics to occur independently.* 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." (Place 1956, p. 46)

Put rather more clearly and succinctly, I am claiming in this passage that where it is evident that two predicates have the same extension or where the extension of the one includes that of the other, a conceptual connection develops between the two, such that a statement ascribing both predicates to the same individual or class becomes analytic and necessarily true, where to say that a statement is necessarily true is to say that it cannot be denied without self-contradiction. Having enunciated this principle, I then proceeded in the 1956 paper to explain why, in my view

"[t]he 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".
(Place 1956, p.46)

I tried to do this by comparing it to two examples, the cloud/mass-of-particles-in-suspension case and the lightning/motion-of-electric charges case, which resemble the consciousness/brain-process case both in the fact that no conceptual connection appears to have developed and in the fact that the observations on which the assignment of the two predicates are based cannot be made simultaneously by the same observer.

6. *Analyticity in Smart's 'Sensations and brain processes'*

As might be expected from his subsequent endorsement of the Quinean view of such matters, in Jack Smart's (1959) 'Sensations and brain processes' the reliance on the analytic-synthetic distinction is less conspicuous than it is in my paper. It is there, nevertheless. It appears in what is in effect the first explicit exposition of the doctrine of contingent type identity on pp. 145-7. The exposition proceeds by means of three examples, the example of the general who turns out to be the same person as the boy who stole the apples years before, which is a case of contingent token identity at the level of common sense, Frege's case of the Morning Star and the Evening Star which turn out to be the same heavenly body, the planet Venus, which is a more technical example of contingent token identity, and my example of lightning and electric discharge through the atmosphere which is a case of contingent type identity. Jack does not explain what notion of contingency he is using here; but the fact that Frege introduces the Morning-Star/Evening-Star example in order to illustrate the distinction between sense (Sinn) and reference (Bedeutung) makes it clear that the contrast is between contingent identity statements which are true by virtue of the fact that two logically independent descriptions happen as a matter of fact to have the same referent and necessary identity statements where co-reference comes about by virtue of the fact that the same criteria are used to assign both of the two descriptions to their common referent.

The reliance on the analytic-synthetic distinction is more explicit in the reply that is given to the second of the objections to the identity thesis that Jack considers in the 1959 paper:

"Objection 2. It is only a contingent fact (if it is a fact) that when we have a certain kind of sensation there is a certain kind of process in our brain. Indeed it is possible, though perhaps in the highest degree unlikely, that our present physiological theories will be as out of date as the ancient theory connecting mental processes with goings-on in the heart. It follows that when we report a sensation we are not reporting a brain-process.

"Reply. The objection certainly proves that when we say 'I have an after-image' we cannot mean something of the form 'I have such and such a brain-process.' But this does not show that what we report (having an after-image) is not in fact a brain process. 'I see lightning' does not mean 'I see an electric discharge.' Indeed, it is logically possible (though highly unlikely) that the electrical discharge account of lightning might one day be given up. Again, `I see the Evening Star' does not mean the same as `I see the Morning Star,' and yet `the Evening Star and the Morning Star are one and the same thing' is a contingent proposition. Possibly Objection 2 derives some of its apparent strength from a 'Fido'-Fido theory of meaning. If the meaning of an expression were what the expression named, then of course it would follow from the fact that 'sensation' and 'brain-process' have different meanings that they cannot name one and the same thing." (Smart, 1959, pp. 147-8)

With regard to Jack's last point in this passage, I cannot forbear to remark that, if we follow Quine in repudiating the analytic-synthetic distinction, we are left with no alternative but to endorse "a 'Fido'-Fido theory of meaning." That, of course, is not fatal to the claim that 'sensation' and 'brain-process' refer, at least in certain contexts, to one and the same thing. What it does mean is that we can no longer make sense of the claim that they do so despite having different meanings.

7.   *We still need the analytic-synthetic distinction: The first strategy*

In trying to persuade you that we still need the analytic-synthetic distinction, I shall adopt two strategies. The first strategy is to argue that what I would suggest are the two most significant attempts, in the one case to replace and in the other case to refute, the doctrine of the contingent type-identity of the mental

and the cerebral, Davidson's (1970/1980) "anomalous monism" and the thesis maintained by Kripke (1972/1980) in his 'Naming and necessity', both rely on rejecting the analytic-synthetic distinction. That both men reject the distinction is clear.[1] That both reject significant though different components of the original contingent type-identity thesis is equally apparent. Davidson, though endorsing psycho-physical identity, insists that the identity applies only between a particular instance or token of the type 'mental event' and an instance or token of the type 'physical event'. There are no psycho-physical bridge laws, at least none of the strict variety which he thinks are required in causal relations. Consequently, the possibility of being able to claim, as we were hoping to do, that all tokens of a particular mentally specified type, such as sensations or conscious experiences, are identical with tokens of some, as yet to be determined, neurologically specified type is ruled out a priori. What is also ruled out a priori by the claim that there are no psycho-physical bridge laws is any possibility of adducing evidence of psycho-physical correlation in support of the identity thesis. Without that evidence the only way to support the identity thesis is by a priori argument which is what Davidson aims to provide.

For Kripke the contingent type-identity of mental and physico-physiological events is wrong on two counts. He replaces the Leibnizian notion of necessity and contingency defined in terms of what it is and is not self-contradictory to deny with another definition which also has its roots in Leibniz in terms of what is and is not true in all possible worlds. That view, when combined with the doctrine of rigid designation, entails that identity statements, whether type or token, are necessary rather than contingent. Furthermore, any comparison between the mental-event/brain-event case and other scientifically established type identities such as 'Water is H_2O' or 'The temperature [of a body] is the rate of motion of its constituent molecules' is ruled out, according to Kripke, by his intuitions which, unlike what happens in the two previous cases, fail to tell him that "pain is the firing of C-fibers."

8.   *Davidson's "anomalous monism"*

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[1] In Kripke's case the distinction is rejected only with respect to those expressions, proper names and natural kind terms, which he regards as "rigid designators." But, since he has nothing to say in `Naming and necessity' about those linguistic expressions where he would presumably allow the distinction to apply, this claim may perhaps be allowed to stand. I am indebted to Hanoch Ben-Yami of Tel Aviv University for drawing my attention to this inaccuracy.

In contrast to Kripke where the connection between the repudiation of the analytic-synthetic distinction and both the repudiation of the Leibnizian version of the necessary-contingent distinction and the doctrine of rigid designation are obvious enough, in Davidson the connection between the repudiation of the distinction and his anomalous monism is more obscure. To my knowledge, it is something that Davidson himself never discusses. However, the following considerations do suggest a link between the repudiation of analytic-synthetic and his denial of the possibility of psychological bridge laws from which his rejection of type-identity physicalism is deduced.

For, as we have seen, if you reject the analytic-synthetic distinction, you ipso facto reject the notion of meaning as a matter of the criteria used by speakers and listeners to assign particulars to the extension of a general term or to identify the referent of a singular term. Once that notion is given up, it becomes very difficult to see what sense can be given to the statement that every token of a type characterised in one way (by its mental characteristics) is identical with a token of a type characterised in another way (by its physical characteristics). But why should Davidson think, as he apparently does, that the problem is resolved by insisting that nothing more can be said about such events other than that every token of a mental type is a token of some, but not the same, physical type? Is not the claim that every token of a mental type is a token of some physical type a type-identity statement? If so, how does it help to refuse to countenance the possibility that future empirical research might enable us to specify the terms between which the type-identity holds more precisely? To my my mind only one thing is clear. But for the repudiation of the analytic-synthetic distinction, the problem would never have arisen in the first place.

9.   Kripke's 'Naming and necessity'

As I have already observed, there is an obvious connection between both Kripke's repudiation of the Leibnizian characterisation of the necessary/contingent distinction in terms of what it is and is not self-contradictory to deny and his doctrine of rigid designation and the repudiation of the analytic-synthetic distinction. But in the case of the former there are two other contributory factors. One is Kripke's observation that interesting proofs in modal logic cannot be generated without the axiom

'The proposition "p is necessary" is itself necessary'

or formally

'$\Box p \rightarrow \Box\Box p$'

This axiom is inconsistent with the Leibnizian account of the necessity/contingency distinction, since on that view the proposition `p is necessary' becomes a contingent metalinguistic proposition about the effect of the semantic and syntactic conventions governing sentences that express p. Consequently, in order to obtain the axiom which makes 'p is necessary' itself necessary, Kripke has to give an alternative account of the necessity/contingency distinction which he does in terms of what is and is not true in all possible worlds.

The second factor is that this alternative account of the necessary/contingent distinction enables Kripke to bring the distinction into line with a substantial literature which connects laws of nature to causal laws, causal laws to counterfactuals and interprets counterfactuals in terms of what is true in some possible world, thereby bringing the deduction of counterfactuals from causal laws within the scope of predicate logic which allows the deduction of the particular from the universal only in a case where the particular can be said to exist. But, while these connections undoubtedly add considerable prestige to Kripke's formulation, there is nothing but Quine's arguments which require us to reject the earlier Leibnizian version. It may be true that, using Kripke's formulation of the distinction, type-identities such as 'Water is H_2O' are (and always were) necessary truths. But it is only Quine's arguments that prevent us from saying that, in terms of the earlier Leibnizian way of drawing the distinction, they only become necessary truths when and in so far as the scientifically discovered "real essence" of the natural kind in question is adopted within the relevant verbal community as the overriding criterion for assigning them to the type in question (in the case of 'Water is H_2O' when its chemical composition becomes the overriding criterion for assigning a sample to the category 'water'). Before that happens and in contexts where that is not the relevant criterion, type-identity statements such as 'Water is H_2O' are contingent in the sense that there is nothing self-contradictory in that context or at that stage in the development of scientific understanding of such matters in supposing that this particular sample of water has a chemical composition other than H_2O. In such contexts type-identities of this kind are contingent by the Leibnizian criterion, whatever they may be by the criterion proposed by Kripke.

As to Kripke's claim that his intuitions tell him that pain is not the same thing as "C-fiber firing", even if we grant that his intuitions have some authority in telling us what is and is not true in all possible worlds, all that this intuition tells us is that the "real essence" of pain is not C-fiber firing, not that it hasn't got one.

But in any case, what possible reason can be given for supposing that Kripke's or anyone else's intuitions can be relied on to tell us what is and is not true in all possible worlds? On the view that a statement is necessary if, given the conventions of the language being spoken, it cannot be denied without self-contradiction, it makes perfectly good sense to maintain that, in a case such as 'All bachelors are unmarried', it is only our linguistic intuitions as competent speakers of English that tells us that its negation 'Some bachelors are married' is self-contradictory.   That is an intuition that we inevitably acquire when we learn the criteria for applying the word 'bachelor'.   Now, of course, showing that, given the conventions of the English language, the statement 'All bachelors are married' is by this criterion a necessary truth also shows that, given those conventions, no possible world could contain a married bachelor in this sense.   But that is not because our linguistic intuitions give us a special insight into the contents of possible worlds.   It is simply because such intuitions tell us which English expressions do and do not make sense.

10.   The first strategy: Conclusions

My conclusion is that neither Davidson's nor Kripke's theory contains anything that should entice us to abandon the thesis that mental events are, for the time being at least, contingently (in the deniable without self-contradiction sense) identical with some yet to be empirically identified type of mental event. If these are the positions into which we are driven if we abandon the analytic-synthetic distinction, we had better not do so.

11.   We still need the analytic-synthetic distinction: The second strategy

My second strategy to persuade you that we still need the analytic-synthetic distinction has already been partly revealed in discussing the application of the Leibnizian interpretation of the necessary-contingent

distinction to Kripke's and Putnam's (1975) 'Water is H_2O' example. It consists in a suggestion which I first made in a series of unpublished lectures given in the University of Amsterdam during the academic year 1973-4 that type-identities in science of the 'Water is H_2O' type are contingent hypotheses susceptible to falsification by evidence to the contrary up to the point where scientists begin to rely on them for purposes of classification and measurement. They then become analytic principles true by stipulative definition any exception to which is taken as evidence either that the sample in question has been misclassified or of some defect in the measurement procedure. Consider what happens when it is discovered that something that by other criteria would be classified as water does not have the chemical composition H_2O. When 'Water = H_2O' was still a matter of hypothesis, such a case would have been evidence suggesting that the hypothesis is false; but once the type-identity becomes a matter of established fact, it is treated as evidence that the sample in question is not water, 'Water is H_2O' has become an analytic and necessary truth.

What this analytic-synthetic analysis of the 'Water is H_2O' example shows us, I suggest, is that, in contrast to the views of Davidson who holds that it is an identity of a very different kind and Kripke who sees no identity here at all, the only way in which the mental-event/brain-event case differs significantly from the standard cases of scientific type-identities is that in this case the empirical evidence does not yet allow us to fill in the scientific side of the equation. When it does, and I am becoming increasingly confident that that day is not far off, what is now, or rather will be when it is first specified, a contingent hypothesis subject to verification or falsification by the evidence of psycho-physical correlation will become a necessary truth in the sense that its denial will be self-contradictory. That will have happened when brain-imaging evidence begins to replace the subject's introspective report in determining the occurrence and nature of her conscious experience.

12.   *Conceptual changes on the common sense side of the equation*

The analogy between the consciousness/brain-process case and scientifically established type-identities, such as 'Water = H_2O', 'Heat = molecular motion' or 'Lightning = an electric discharge', has another important lesson to teach us. For it turns out that in all these cases the common sense level concept that

is identified with its scientifically discovered composition is not the common sense level concept which is used in ordinary language. Thus in ordinary language we draw a distinction between water on the one hand, and ice and steam on the other. Yet both ice and steam are H_2O just as much as is the liquid. The water that is H_2O is thus a sense of the term that includes both ice and steam as well as water in the ordinary sense. Similarly in the case of Kripke's other example

'Heat = molecular motion.'

In this case in order to get it right, the common sense level concept 'heat' has to be interpreted to mean 'the temperature of a multi-molecular body'. The same applies in the case of my own 'lightning' example. Here the lightning that is an electric discharge through the atmosphere is lightning in the sense of the event which, in ordinary language, we call 'lightning' only when we see it, and 'thunder' when we hear it.

These examples suggest two conclusions for the putative theoretical identity that concerns us here:

(a)   that we should not expect the consciousness which turns out to be brain process X to correspond precisely to the ordinary meaning either of the noun 'consciousness' or of the predicates 'being conscious of so and so' or 'being conscious that so and so is the case' and

(b)   that what we must expect is that the boundaries of the concept of consciousness which will occupy the left hand side of the equation

'Consciousness = brain process X'

will be determined by the same empirical evidence of psycho-physical correlation as that on the basis of which the filling for the variable X is decided. If that is correct, it would seem that the long reign of the philosopher as the professional in charge of the mind-body problem is finally coming to its end. Just as has happened in the lifetime of most of us in the case of the origins of the universe which used to be a theological problem and is now an astronomical one, so the mind-body problem is about to pass from the grasp of the philosopher into that of the neuropsychologist, just as I envisaged more than forty years ago. All that is needed for that to happen is to discover the kind of "perfect correlation" that Edwin Boring spoke of in his original formulation of the identity theory in 1933, a perfect psycho-physical correlation

in which both variables fluctuate in synchrony and which, unlike those characteristic of causal relations, does not require that all other factors (the much despised ceteris paribus) be held constant for its observation.

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