Truthmaking *vs* Physicalism

1. Two of David Armstrong's best-known theories are the *physicalism* of his book *A Materialist Theory of the Mind* (1968; 1993), and the *truthmaker* theory of, for example, his 2002 paper on 'Truths and Truthmakers' .
2. But last December, while writing my contribution to a volume in Armstrong's memory (Calemi 2015), from which I've extracted this talk, I came to realise that these theories of his are incompatible, as I'll now argue.
3. I'll start by sketching Armstrong's *Materialist Theory* response to Gilbert Ryle's 1949 *The Concept of Mind*. Armstrong agrees with Ryle that beliefs, desires, etc. are *dispositions*, but not with Ryle's inference from this that instances of these dispositions 'are neither… observed or observable states of affairs nor yet … unobserved or unobservable states of affairs' (p. 125). In other words, they're not states of affairs at all, and so can't be *causes of*, as opposed perhaps to *reasons for*, any action we're disposed to do.
4. Armstrong, of course, denies this. He thinks, as I do, that our having such-and-such beliefs and desires are real states of affairs which *do* cause actions we're disposed to do. On his view, as on mine, when I leave my house and go to the Free Press, my favourite local pub, because I desire to have lunch there, and believe it's open, that desire and that belief really do cause me to go, as they certainly seem to.
5. They aren't of course the *only* causes of my going to the Free Press: they won't make me go unless I'm physically able to go, believe the pub will let me in, and so on. In other words, like most deterministic causes of *any* effect, my belief and desire are what John Mackie, in his 1965 paper 'Causes and Conditions', calls 'INUS – **I**nsufficient but **N**ecessary parts of **U**nnecessary but **S**ufficient – conditions' of my action. That is, they are members of a set of simultaneous causes of an effect, each of which is only necessary and sufficient for that effect given all the others.
6. To restate the same point in terms of dispositions, my believing that the Free Press is open disposes me, among other things, to go there if and only if I desire to eat or drink or meet someone there, just as that desire disposes me to go there if and only if I believe it's open – where both of these biconditionals are of course contingent on all the other INUS causes of my going.

7. These and other beliefs and desires, besides disposing me to do, or not to do, various things, also *inter*act, as when my coming to believe that the Free Press is open causes me to *want* to go there. And beliefs, in particular, also have perceptual *causes*, as when seeing the Free Press's door ajar causes me to believe it's open.
8. The view that, between them, these perceptual causes, interactions and behavioural effects of our beliefs and desires suffice to *identify* them is the *functionalism* that, in their 2007 book *Philosophy of Mind and Cognition*, David Braddon-Mitchell and Frank Jackson call 'common sense' or 'analytic'.
9. However, because I doubt if either analysis or common sense entails functionalism so understood, I prefer to call it '*causal*' functionalism, since it's an application to mental states of Sydney Shoemaker's thesis, in his 1980 paper 'Causality and Properties', that 'what makes a property the property it is, what determines its identity, is its potential for contributing to the causal powers of the things that have it' (p. 234).
10. This causal functionalism is also a natural elaboration of Armstrong's claim, in *A Materialist Theory of the Mind*, that 'the concept of a mental state is primarily the concept of *a state of the person apt for bringing about a certain sort of behaviour*', to which he adds that 'some mental states [presumably beliefs] are also *states of the person apt for being brought about by a certain sort of stimulus*' (1993, p.82).
11. But functionalism, so understood, doesn't entail *physicalism*, since it doesn't say what *sort* of properties meet these dispositional specifications. What makes Armstrong a *physicalist* is his further hypothesis that these properties are 'physico-chemical states of the brain' (1993, p. 90). For these, he thinks, include all the states which he takes to be the *non*-dispositional 'categorical' – i.e. real – states that are what *actually* cause the behaviour which he uses to identify our mental dispositions.
12. Armstrong bases this physicalist hypothesis on the assumption that dispositions *need* non-dispositional bases, an assumption I reject for independent reasons. But even *with* this assumption, functionalism still doesn't entail that the bases of our mental dispositions must be *physical*: some of them could be kinds of sensation, or other properties not definable by, or reducible to, physico-chemical ones.
13. This makes Armstrong's physicalism an optional *addition* to his functionalism. But not *vice versa*, since he needs functionalism in order to determine *which* brain state can be identified with any given mental state: namely the one that meets the latter's functional specification.

14. This application of functionalism isn't of course peculiar to theories of the *mind*. Take biology: the functional specification of a *heart*, as what pumps our blood, is what enables us to identify it and, if we need to and can, repair or replace it when our blood stops flowing.
15. The same goes for artefacts, like car engines: their functional specification, as what makes cars go, is what enables us to identify them and, if we can, repair or replace them when necessary to restore a car's automobility when it's also equipped with wheels, fuel, and all the other INUS conditions of a car's ability to move itself.
16. Now in both these cases it's a contingent fact, knowable only *a posteriori*, that *parts* of things are what meet these functional specifications: parts of our bodies in the case of our hearts; parts of cars in the case of their engines.
17. This *needn't* be so: our blood *could* be pumped by vibrations of our whole body, just as engineless cars could be moved by magnetic attraction and can, of course, when they fall off cliffs, be moved by gravity.
18. Similarly with our mental states, which could perfectly well be physical without being states of *parts* of us. So Armstrong's hypothesis that they *are* states of parts of us, namely of our brains, is a substantive addition to his physicalism as well as to his functionalism.
19. There is of course plenty of evidence for this hypothesis. If, for example, I believe it's daylight because I can *see* it is, the light which causes me to believe that can only do so by affecting my eyes, optic nerves, and thence my brain; and similarly, *mutatis mutandis*, whenever our other senses cause us to acquire beliefs or other mental states.
20. And as for the perceptual and other causes of our beliefs and desires, so for their behavioural effects. We know that these effects require bodily intermediaries: *pace* Uri Geller, we can't bend spoons without moving our muscles.
21. And aren't all these familiar facts best explained by identifying our beliefs with the suitably causally related brain states which are (a) caused by our senses and then (b) interact and combine with other brain states – the ones we call desires – to cause our behaviour?
22. I say not; but not because I'm a *dualist*. My reasons for denying Armstrong's identification of our beliefs and desires with states of our brains apply equally to Saul Kripke's 1971 identification of a gas's temperature with the mean kinetic energy of its molecules.
23. I say that's false because it implies, for one thing, that when a single molecule of a gas at room temperature happens to have zero kinetic energy because it's at rest (e.g. while it's bouncing off another molecule), it's at absolute zero, which it isn't; and that speeding it up will automatically heat it up, which it won't.

24. The fact is that temperatures and mean kinetic energies aren't co-extensive properties even in *gases*, let alone in so-called 'black body' radiation, which *has* a temperature even though it needn't contain *any* particles with variable kinetic energies. And properties that aren't even co-extensive certainly can't be *identical*.
25. Kripke's mistake was to misread as an *identity* what is at best an equality of *values*. The kinetic theory never said that temperature *is* mean kinetic energy, any more than the simple gas law – that the pressure times the volume of a gas sample is proportional to its absolute temperature – says that temperature *is* some combination of pressure and volume.
26. All the simple gas law says is that the *value T* of a gas sample's absolute temperature is proportional to a *function* (the product) of *P* and *V*, the *values* of its pressure and volume – and therefore, of course, that *P* and *V* are the corresponding functions of *V* and *T*, and of *P* and *T*, respectively.
27. Similarly, all a deterministic kinetic theory says is that the absolute temperature of a sufficiently large gas sample in thermal equilibrium is proportional to a function – the *mean* – of the kinetic energies of its molecules. That may be false – and in fact it *is* – but not because it identifies two distinct properties that are not even co-extensive: it doesn't.
28. Note too, by the way, that physical equations can fail to assert identities in another way also. $E=MC^2$, for example, doesn't say that anything of mass *M* also has an energy *E* equal to the product of its mass and the square of the speed of light. This equation is an *exchange rate*, like that between pounds and euros. All it says is that so much mass can be exchanged for so much energy, as it is in atom bombs and nuclear power plants.
29. I don't of course deny that physics *sometimes* asserts property identities; it does. It asserts, for example, that all monochromatic light *is* electromagnetic radiation of some specific frequency, and that gravitational mass *is* inertial mass. Those really are statements of identity, whose truth entails, and thereby explains, the co-extensiveness of the corresponding pairs of predicates.
30. But that's no excuse for philosophers, who may only have seen 'equals' used to express identity in first-order logic, ignorantly misreading equations like '$E=MC^2$' or 'temperature is mean kinetic energy' or, come to that 'Water is H_2O' as stating property identities when the corresponding predicates are so obviously not even co-extensive.
31. But what, you may ask, has any of this got to do with physicalism? Well, just as the kinetic theory of gases, rightly read, takes temperatures and kinetic energies to be properties of different things – the former of gases, the latter of their molecules – so physicalism, rightly read, would take our mental states, and the physical states with which Armstrong identifies

them, to be properties of different things: the former of people; the latter of the congeries of brain states on which our constantly varying beliefs and desires depend causally at any one time.

32. So instead of *identifying* a given belief or a desire with a brain state, what Armstrong could – and I think *should* – have said is that our being or not being in that mental state is a two-valued function of properties and relations of our brain cells, just as water's being a liquid or a vapour is a two-valued function of its temperature and pressure.
33. However, the more *usual* physicalist alternative to a mind-brain identity theory is, as you know, *eliminativism*. After all, if mental states are *functions* of brain states, why postulate them at all? Why not credit the brain states themselves with the behavioural effects, perceptual causes and mutual interactions that functionally identify our beliefs and desires?
34. My objection to doing this is that our brain states can't be *truthmakers* for truths about what we believe and desire. And these truths *need* truthmakers, not only on Armstrong's 'maximalist' view, that *all* truths need truthmakers, but also on the non-maximalist view that I share with John Heil (2000), Peter Simons (2005) and others.
35. For even if only *some* propositions, which I call 'primary', need truthmakers to make them true, the others being simply truth functions of primary ones, the former must include contingent truths about what we believe and desire, since none of them *is* a complete truth function of primary propositions.
36. For a start, they certainly aren't complete truth functions of their *contents*. Whether the Free Press is open or shut, for example, it's being so doesn't entail that I believe or desire that it's open, or believe or desire that it's shut. And so in general: for no contingent 'P' or person *x* is '*x* believes that P' or '*x* desires that P' a complete truth function of 'P'.
37. Nor are most contingent truths about our mental states complete truth functions of other such truths – my beliefs about the Free Press neither entail nor are entailed by my beliefs about other pubs, let alone about astronomy, or Outer Mongolia.
38. Nor, and more to the present point, is any contingent truth about what we believe or desire *entailed* by truths about the contemporary brain states of which they happen to be causal functions, not even if all the psychophysical laws that causation depends on are metaphysically necessary, which they aren't.
39. Suppose for example my coming to believe that the Free Press is open makes me *want* to go there, whether or not in the end I actually go. The causal link between that belief and that desire itself depends on *other* beliefs and desires: for example, on my wanting a drink and believing

that the Free Press has the drink I want. My belief that the Free Press is open is only an INUS condition of the desire it causes, just as it is of the *actions* it causes.

40. But then the brain state of which that belief is a function can *also* only be an INUS condition of the brain state of which that *desire* is a function, since the causal link between those two brain states will be contingent on many other such states.
41. And the same goes for all the other causal links between brain states of which our constantly varying beliefs and desires are functions: which of these states *is*, at any one time, the state of which a given belief or desire *is* a function, will itself depend on which other brain states that one is causally linked to at that time.
42. So the propositions that I believe the Free Press is open, and that I want to go there, simply *can't* be made true by my brain states: since those propositions aren't entailed by 'I am in brain state *B*' for any two suitably causally connected values of *B*.
43. And similarly for all other contingent truths about what we believe and desire. Those truths can only be made true by our having those very beliefs and desires. That's what makes Armstrong's physicalism incompatible not only with his but with *any* truthmaker theory.
44. Which of those two theories Armstrong would have given up in the *very* unlikely event of his believing what I've just said I have no idea, since he died before I first thought of saying it. Most physicalists I imagine would keep their physicalism and give up truthmakers – if they ever believed in them in the first place, which I doubt if many did or do.
45. I, on the other hand, can – and will – stick to truthmaking, since I rejected physicalism long ago, for the quite independent reasons given in my and Tim Crane's definitive – and widely ignored – 1990 paper 'There is no question of physicalism'. Which way *you* jump of course, if you need to, is up to you.

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