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RESEARCH ARTICLE

What Is so Bad about Permanent Coincidence without Identity?

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Abstract: 'What is so bad about permanent coincidence without identity?' (Mackie 2008: 163). This is the very question at the heart of the debate between pluralists and monists about constitution (Baker 1997, Fine 2003, Gibbard 1975, Johnston 1992, Lewis 1986, Thomson 1983). My answer to Mackie's question is that it contradicts a supervenience principle we all believe we know to be true. I approach this by considering three possibilities and the supervenience principles with which they conflict. One is somewhat politically controversial; the others are described by Wittgenstein (1967) and Dummett (1979). I focus on the possibility described by Dummett and the supervenience principle with which it conflicts. Our reaction to that possibility shows that we believe that supervenience principle to be true. But I argue that (as is obvious), it is inconsistent with permanent coincidence without identity. That is what is so bad about permanent coincidence without identity.

Keywords: Distinctions; supervenience; macrophysical; microphysical; pluralism.

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'What is so bad about permanent coincidence without identity?' (Mackie 2008, 1963). This is the question at the heart of the debate between pluralists and monists about constitution (Baker 1997, Fine 2003, Gibbard 1975, Johnston 1992, Lewis 1986, Thomson 1983). My answer to Mackie's question is that it contradicts a supervenience principle we all believe we know to be true. I approach this by considering three possibilities and the supervenience principles with which they conflict. One is somewhat politically controversial, the others are described by Wittgenstein (1967) and Dummett (1979). I focus on the possibility described by Dummett and the supervenience principle with which it conflicts. Our reaction to that possibility shows that we believe that supervenience principle to be true. But I argue that (as is obvious) it is inconsistent with permanent coincidence without identity. That is what is so bad about permanent coincidence without identity.

Imagine two small, no longer existent, material objects, one located in America and the other in Australia. They were always the same size, weight and colour. They were always composed of the same type of stuff. Chemists could find no difference at the level of chemical investigation, nor physicists at a more fundamental level. They were always composed of exactly the same type of fundamental particles, arranged in exactly the same way. For short, they were always intrinsically *microphysically indistinguishable* (i.e., indistinguishable with respect to the satisfaction of such predicates as 'contains an atom of carbon' which refer to and quantify over only microphysical entities – molecules, atoms and sub-atomic particles, the properties and relations these possess and the relations among them).

Yet they differed. Although this never happened, if the American one had been put under sufficient pressure it would have been destroyed, but the Australian one would have survived exactly the same pressure.

How can this be? Perhaps it might be that they differed in relational respects even though they were intrinsically microphysically indistinguishable.

Believers in homeopathy believe it is possible for two identical vials of liquid, one prepared in the proper fashion by succussion (shaking and dilution beyond (far beyond) Avogadro's limit) and one just taken from the tap, to differ in their (medical) properties, though no microphysical

examination of their intrinsic properties will reveal any differences.[1] They can differ in properties, their causal powers, just in virtue of their different histories of preparation, which they 'remember'.

Perhaps, then, the American object and the Australian object differed in how they would have responded to the pressure because they were created differently; like the two vials of liquid they had different histories though they were never intrinsically microphysically different.

Wittgenstein in *Zettel* (1967: section 208) describes an imaginary case that fits this model. Suppose seeds from two different types of plant are indistinguishable under the most careful microphysical investigation. Yet the seeds from one type of plant will develop differently from the seeds from the other – each will develop, if allowed to, into a plant of the type it has come from. So, two seeds which are not allowed to develop and so are microphysically indistinguishable throughout their existence, will differ in that one would develop differently from the other if allowed to grow. The explanation of this is that they have different histories.[2] Wittgenstein does not deny that the world could be this way.

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[1] Homeopaths measure dilution on a 'C scale', diluting a substance by a factor of 100 at each stage. So a 6C dilution has the original substance diluted by a factor of $100^{-6}=10^{-12}$. Much higher dilutions are common and more dilute substances are considered by homeopaths to be stronger and deeper-acting. A popular homeopathic treatment for the flu is *Oscillococcinum*, a 200C dilution of Muscovy duck liver. The ingredients of a one-gram tube are: Active ingredient: *Anas Barbariae Hepatis et Cordis Extractum* (extract of Muscovy duck liver and heart) 200C 1×10^{-400} g, (less than the mass of a proton (1.67×10^{-24} g)). Inactive ingredient: 0.85 g sucrose, 0.15 g lactose (100% sugar). When Boiron (the company that makes Oscillococcinum) was asked if it was safe, they replied: 'Of course. There's nothing in it.'

[2] Noonan (2015) notes this case and presents an argument against the pluralist similar to the one developed below. But Noonan (2015) does not emphasise the crucial points highlighted below (see fn. 9 and following). Pluralists are committed to denying the supervenience of the macrophysical on the microphysical even when the microphysical is described using *all* the resources the pluralist allows himself in describing the macrophysical realm, appealing to relational as well as non-relational properties, modal and dispositional as well as categorical properties, sortal and 'sortalish' Bennett (2004, 341) properties as well as non-sortal properties. Secondly, pluralists must explain – whilst retaining the assumption that these predicates do indeed stand *for properties* of things in the world – how such predicates as 'would survive

But let us suppose that the American and Australian objects did not have such a difference in their histories – at least, if their backgrounds are described in the most explicit detail at the microphysical level no such difference appears. At this level of description not only they themselves but their surroundings and the circumstances of their origination were indistinguishable. In short, they were microphysically indistinguishable in all respects, extrinsically as well as intrinsically, and yet if the American one had been put under sufficient pressure it would have been destroyed, but the Australian one would have survived exactly the same pressure. (Of course, this won't be true. One is in America the other in Australia. So the particles composing one are a certain distance from the particles composing the Washington Monument, say, whilst the particles composing the other are not that distance from the Washington Monument or anything similar. But this relational difference is no help in resolving our puzzle so we can imagine it away and suppose that to whatever distance we care to go their environments are microphysically indistinguishable.)

Can we make sense of this? I think we can. Consider the following possibility.[3] There is a substance as sweet as sugar which is found, by giving minute samples to human tasters, to be a mixture of two types of substance, one twice as sweet as sugar, the other tasteless. However, no way can be found to identify the type of one of the minute samples without appeal to human tasters. The failure of intensive investigations to find differences supports the hypothesis that this inability is *absolute* – no way could be found except by the use of human tasters to distinguish the two types; it is not simply that the difference cannot be found by us or will not be found by us – there is no difference. Hence two samples in fact never tasted might be indistinguishable at the microphysical level in all respects, intrinsic and extrinsic, past, present and future, dispositional and modally as well as categoritically, and yet differ in that one *would have* tasted very sweet if tasted,

being crushed' stand for properties which do not supervene on the microphysical although, for example, the predicate 'would taste sweet if tasted' (see Dummett's example following) stands for a property which does.

[3] See Dummett (1979, 14). Dummett's interest is in the primary/secondary quality distinction, the relevance of his example to the topic of this paper has not hitherto been noted as far as I am aware.

the other tasteless. Of course, they won't be extrinsically indistinguishable, because one say might be near the Washington Monument and the other near no such structure, but again this difference is no help in resolving the puzzle, so we can imagine it away.

Of course, we don't believe (now) that this is how the world works, but it is not contradictory to suppose it works this way.[4] So perhaps we can suppose our American and Australian object were so related: if the American one had been put under sufficient pressure it would have been destroyed, but the Australian one would have survived exactly the same pressure. So, of course, one could never deduce from the most detailed microphysical description of them, their surroundings, and their history, which would have been destroyed and which would have survived.

This sounds like magic. In fact, it sounds more like magic than the homeopathic hypothesis which after all, its defenders claim to be science.[5] For since, according to practitioners of homeopathy, what makes the difference in the powers of two microphysically intrinsically indistinguishable vials of liquid is their method of preparation, homeopathy is testable in randomized, placebo-controlled trials. In fact, it has been tested.[6] So we might say, appealing to the criterion of falsifiability as a criterion of the scientific, that the suggestion that the American and Australian objects might have differed at the macrophysical level in the way described (would have responded differently to identical pressures), yet in fact never differed at all ever in any way microphysically, intrinsically or extrinsically, is, unlike the homeopathic hypothesis, not a scientific but a merely magical hypothesis. At any rate, we are sure that the world is not like this.

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[4] And Dummett's speculation is not flat out inconsistent with every formulation of the supervenience of the macrophysical on the microphysical. It is not inconsistent, for example, with weak global supervenience (Sider 1999), which can only be counter-exemplified by a *pair* of worlds.

[5] The British Homeopathic Society, for example. NHS England withdrew funding for homeopathic medication in 2017, the British Homeopathic Society mounted a legal challenge which it lost in 2018. There were similar developments elsewhere. In France, funding was withdrawn in 2021.

[6] That is why governments are withdrawing funding.

I hope I have created some puzzlement by describing the case of the American and Australian objects. How could there have been two such objects so similar in all respects (microphysically) and yet so different (macrophysically)? At least, even if there could have been, it seems this could only have been so because the world could have been radically different from the way we know it actually is.

But, course, pluralists can say, nothing could be further from the truth. The explanation of the macrophysical difference can be quite simple. The American object was a statue of the infant Goliath (call it 'American Goliath'), and the Australian object was a lump of clay (call it 'Australian Lumpl'), at all times coincident with a statue qualitatively indistinguishable from American Goliath.[7] So, of course, they were microphysically indistinguishable in general terms[8] throughout their existence not only intrinsically but also in their surroundings and the circumstances of their origination. And of course, the American object, the statue, would have been destroyed if it had been put under pressure, e.g., rolled into a ball, and the Australian object, the lump of clay, would not. Statues and lumps of clay have different persistence conditions.

This, of course, is what we all *say*. But if we think that the two differed because it is correct to say of the one 'it would have been destroyed if rolled into a ball' and not correct to say this of the other, we must say that spatially separate material objects might be *macrophysically* distinguishable in their general unrealized capacities (e.g., for resisting destruction) though indistinguishable *microphysically* in all general respects at all times intrinsically and extrinsically and, of course, also *microphysically* indistinguishable dispositionally, modally and in all sortal respects, that is, microphysically indistinguishable in all respects pluralists think that macrophysical

[7] See Gibbard (1975) for the original story of (permanently coincident) Goliath and Lumpl. The puzzle is not restricted to artefacts. Kripke gives a well-known unpublished example of a (rootless) flowering plant, which in fact never flowers, and its permanently coincident stem.

[8] Of course, they were composed of *numerically* distinct particles and externally related to numerically distinct particles, so they were distinguishable microphysically in *non*-general terms, unlike American Goliath and American Lumpl.

objects, whether or not coincident, can differ.[9] Pluralists,[10] who think that in the Gibbard case, the all-time-coincident statue Goliath and lump of clay, Lumpl, are numerically distinct material objects differing in, e.g., their general macrophysically specifiable modal properties, are committed to this (and not just in cases involving artefacts, of course; recall Kripke's plant, fn. 7). If coincident material objects differ in general respects in this way macrophysically though indistinguishable microphysically in all general respects, so, of course, do many indistinguishable spatially separate ones. If coincident American Goliath and American Lumpl do in fact so differ then there are in fact microphysically indistinguishable *spatially separate* objects which so differ: the two statues are modally indistinguishable, ditto the two lumps, but American Goliath differs modally at the macroscopic level from American Lumpl according to the pluralist; so then must American Goliath and Australian Lumpl. So the puzzle I began with is resolved by the pluralist.

But, of course, this only highlights the challenge to the pluralist brought out by noting that it is not only a failure of the supervenience of the macrophysical on the microphysical in the special case of *coincident* objects he is committed to. The challenge is to explain how the case of American

[9] I.e., indistinguishable in respect of the satisfaction of all dispositional, modal and sortal predicates which refer to and quantify only over microphysical entities, both those within the macrophysical objects and those outside them, the properties these possess and the relations between them (e.g., 'contains an atom which could combine with two atoms of oxygen to form a molecule of carbon dioxide').

[10] See References. Pluralists are often said to face a 'grounding problem'. What grounds the non-identity of the all-time coincident statue and lump? That is not my question. Nor is my question how they can differ in sortal properties without differing non-sortally, nor how they can differ in modal or dispositional ways without differing non-modally or non-dispositionally. My observation is that if the pluralist appeals to a difference in macrophysical dispositions to explain the differences of the coincident statue and lump he must accept also that there is a vast number of cases of spatially separate (and obviously numerically distinct) objects differing merely in general macrophysical respects, without any basis for the difference in microphysical respects. The distinction I am emphasising is between macrophysical and microphysical properties, whether intrinsic or extrinsic, categorical or dispositional, modal or non-modal, sortal or non-sortal.

Goliath and Australian Lumpl differs from the case of Dummett's two lumps of 'sugar', macrophysically distinguishable, but composed of microphysically indistinguishable samples. Or else, to allow that for all he knows the world does contain cases of this latter type too. I assume the latter is a step too far, even for the pluralist, and I have no idea how the pluralist can explain the difference between the cases. The pluralist must allow that the concepts he applies at the macrophysical level – of sorts, identity conditions, essences etc., are also applicable at the microphysical level. But then if the statue and the piece of clay are in all ways, including these ways, microphysical indistinguishable, as the lumps of 'sugar' are, what can he say to explain his claim that the statue and the clay are macrophysically different whilst denying that the 'sugar' lumps can be? It will not help if the pluralist commits to pluralism all the way down. Even if coincident with any atom there is a plenitude of other particles differing only in sortalish ways, since all of these are contained within the putatively distinct but microphysically indistinguishable statue and piece of clay, it leaves it still a mystery how they can be macrophysically distinguishable if Dummett's two lumps are not. What the pluralist needs to do, to maintain a distinction between the case of the statue and the clay and the case of Dummett's two 'sugars' lumps, is to explain the relevant difference between the predicates 'would have been destroyed if squashed into a ball' and 'would have tasted sweet on the tongue of a normal human being' whilst retaining the pluralist assumption that each predicate denotes a property possessed by macrophysical objects. To put the point another way: the pluralist thinks that there is a property denoted by the predicate 'would have been destroyed if squashed into a ball' and another by the predicate 'would have tasted sweet on the tongue of a normal human being'. He thinks the first can vary between microphysically indiscernible objects but the second cannot. So he needs to explain why these two properties differ in this way.[11] He needs not merely

[11] The monist will explain the intuition that the statue would have ceased to exist if squashed without any appeal to a property the predicate denotes. The statue would cease to exist if squashed he will say because it will not continue to exist with a different shape. It is a statue. No statue undergoes a change of shape. That is a de dicto necessary truth. It is never the case in any possible world that there is a statue which has different shapes at different times. So since the statue is a statue it will

to label the predicates differently using the familiar terminology of the pluralist, e.g., as 'sortalish' versus 'non-sortalish'. He must make clear how this difference explains how the properties he assumes the predicates denote can vary with respect to supervenience on the microphysical. I can see no way the pluralist can do this. That is why pluralism must be rejected. It entails a magical hypothesis inconsistent with how the world works. It entails something we (now) *know* to be false. To put the point another way: you are completely confident you will never encounter cases of Dummett's type. But how can you be if you are a pluralist? For according to you, cases of non-coinciding, microphysically indistinguishable but macrophysically distinguishable objects are everywhere. So this is my answer to Mackie's question: 'What is meant to be so bad about permanent coincidence without identity?' (2008, 163): it entails that the world is full of cases of non-coinciding objects microphysically indistinguishable in all respects but macrophysically distinguishable – which we are certain we know to be false. We are certain that there can be no real differences at the macro level without differences at the micro level.

The rejection of pluralism requires us to acknowledge that when we say of the American object 'it would have been destroyed if rolled into a ball' we cannot be ascribing to it the same property we are denying of the Australian object when we say 'it would not have been destroyed if rolled into a ball' since there is no real difference of properties between them. In line with this Lewis (1986) says that modal predication is inconstant – the reference of a token of a modal predicate depends on the subject term to which it is attached (as the reference 'is so-called because of his size' differs when attached to 'Barbarelli' and 'Giorgione').[12] Hence, though both the American and Australian objects are both statues and lumps of clay, when we say

not continue to exist if squashed. Our intuition here that if we squash the clay the statue will cease to exist is explained by our knowledge of a de dicto necessary truth (see Lewis 1986, 193 on rivers and restaurants).

[12] There are other options consistent with monism. (i) Either the statue or piece of clay, or both, does not exist (Van Inwagen 1995). (ii) One of them, perhaps the statue, is not a material object, but say, a mathematical object, maybe a function from times to pieces of clay, so that they are not microphysically indiscernible. (iii) Though there *are* two coincident material objects in America where American

of the American object, picked out as a statue, 'it would have been destroyed' this is ascribing to it a different property from the one denied of the Australian object when it is said of it, picked out as a lump of clay, 'it would not have been destroyed'. So what we say can be explained without supposing any real difference in properties between them.

The inconstancy of modal predication is a linguistic hypothesis. But given how we are certain that the world is; that is, that spatially separate material things cannot differ in general macrophysical respects without differing in some general way, at some time, intrinsically or extrinsically, dispositionally, modally or sortally, in microphysical respects, a linguistic hypothesis is a necessary one (unless we choose from the options in fn. 12). How this inconstancy is to be explained is another matter. Lewis emphasises that his own (counterpart theoretic) proposal is just one among many. But, however we choose to explain it, pluralism should be rejected since it entails a magical hypothesis inconsistent with how we believe we know the world is.[13]

Goliath is (and in Australia where Australian Lumpl is), they do not differ in their macrophysically specifiable modal properties (maybe because there aren't any (Quine 1976a, Sider 2008)), or are only weakly discriminable, i.e., though there is a formula with two free variables satisfied by the two objects taken in either order, but not by either object taken twice, there is no formula in one free variable satisfied by one and not the other, so they are like Black's two spheres (Quine 1976b). I leave these suggestions aside. They are alternative ways of rejecting pluralism. But what matters is that they are ways of rejecting pluralism.

[13] A final option, not really distinct (i.e., only semantically distinct) from the Lewisean one (see Lewis 1986: sec. 4.3),) is to adopt Lewis' realism about possible worlds and to identify material things including the piece of clay and the statue with transworld individuals unified by counterpart relations – the piece-of-clay counterpart relation for the first and the statue counterpart relation for the second. Then they will be microphysically distinguishable because their microphysical parts will also be transworld individuals, so there will be no counterexample to the supervenience principle. Dummett's two lumps of 'sugar' will also be transworld individuals. But both will consist of world stages unified by the lump-of-'sugar' counterpart relation.

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