Coincidence and Identity

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1. Introduction

This paper is about a puzzle concerning the metaphysics of material objects: a puzzle generated by cases where material objects appear to coincide, sharing all their matter. As is well known, it can be illustrated by the example of a statue. In front of me now, sitting on my desk, is a (small) statue – a statue of a lion. The statue is made of clay. So in front of me now is a piece of clay. But what is the relation between the statue and the piece of clay? Are they identical, or are they distinct?

In this paper, I do the following. First, in §§2 and 3 I set out some cases of coincidence, and some responses to the cases. In the remainder of the paper, I focus on the opposition between two of these responses: the one standardly given by the *endurantist* about persistence, and the one standardly given by the *perdurantist* about persistence. For reasons that will be clear, I call the first response 'pluralism', and the second response 'intermediate monism'. I make no secret of the fact that my sympathies are with the pluralist. In §6 I raise what seems to me to be a serious problem for the intermediate monist's account – i.e., for the account standardly given by the perdurantist. In the final sections of the paper (§§ 7–10) I defend the pluralist view against some objections.

2. Some Coincidence Cases

Case 1: (A case of) 'Different-Origin' Temporary Coincidence

A piece of clay (Piece) comes into existence on Sunday. On Monday the piece of clay is moulded into a statue of a lion (Statue). Thereafter, Piece and Statue coincide for the remainder of their existence. They both go out of existence on Saturday, when the statue is shattered into a thousand fragments. This disperses the clay of which it is composed (and thus simultaneously destroys Statue and Piece).

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Case 2: (A case of) 'Same-Origin' Temporary Coincidence

A piece of clay (Piece) and a statue of a lion (Statue) both come into existence, composed of exactly the same clay, simultaneously on Monday. Here's how: to create the statue, the sculptor takes two distinct pieces of clay, moulds one of these pieces into the shape of a lion's head, moulds the other piece into the shape of the rest of a lion's body, and then joins them together, thereby simultaneously bringing into existence a piece of clay (Piece) that did not exist before and a statue (Statue).[1] Statue and Piece coincide from then on until Friday, when the sculptor remoulds the clay into the shape of an elephant. This radical reshaping destroys Statue, but preserves Piece (since throughout the reshaping the clay is retained in one coherent mass).

Case 3: (A case of) Permanent Coincidence

A piece of clay (Piece) and a statue of a lion (Statue) both come into existence, composed of exactly the same clay, simultaneously on Monday (as in Case 2). However (in contrast to Case 2), Piece and Statue coincide thereafter for the remainder of their existence. They both go out of existence on Saturday, when the statue is shattered into a thousand fragments. This disperses the clay of which it is composed (and thus simultaneously destroys Statue and Piece).

Before I proceed, three clarificatory notes are in order. The first concerns the meaning of the expression 'piece of clay'. My description of the cases assumes that 'piece of clay' means something like 'coherent lump of clay that is distinguished from its surroundings'. In particular, a number of scattered portions of clay do not, while scattered, compose a single piece of clay in the relevant sense, and the proper parts of a piece of clay are not themselves pieces of clay (at the time that they are parts of that piece of clay).

The second is a *caveat* concerning my use of the proper names 'Statue' and 'Piece'. In using these names for the items in these three cases, I am certainly not assuming that the objects named by 'Statue' and 'Piece' in Case 1 are identical with the objects that

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[1]   Case 2 is modelled (no pun intended) on Allan Gibbard's example of the statue Goliath and the lump of clay Lumpl (Gibbard 1975), although Gibbard's example involves permanent coincidence (as in my Case 3) as opposed to temporary coincidence.

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bear these names in Cases 2 and 3. Apart from anything else, that would beg far too many questions. If you prefer, think of the names as subscripted, and call the statue in Case 1 not 'Statue' but 'Statue$_1$', the statue in Case 2 not 'Statue' but 'Statue$_2$', and so on.

Finally, my three cases are not, of course, supposed to represent an exhaustive catalogue of types of coincidence case concerning statues and pieces of clay. In particular, in addition to cases of types 1–3, there are cases of 'different-origin' temporary coincidence where the statue and the piece of clay coincide only for the 'middle' portion of their histories, and cases of temporary coincidence where the statue outlives the piece of clay (e.g., by replacement of parts).[2]

3. Four Responses to the Coincidence Cases

I now set out four responses to the coincidence cases, although only the first two responses will be discussed in detail in this paper.

(I) (Standard) 'Endurance' Theory[3]

Temporary Coincidence is not Identity, and Permanent Coincidence is not Identity. ('Pluralism')

According to what I call 'standard endurance theory', statues and pieces of clay are 'enduring' (three-dimensional) objects, which persist by being wholly present at every time that they exist. It can happen that a statue and a piece of clay completely coincide, sharing all their matter (and all their microphysical parts). In such cases, the statue is not identical with the piece of clay, whether the

[2] I do not assume that a piece of clay can survive no replacement of its parts whatsoever while remaining the same piece of clay. All that I assume is that a statue can survive a more substantial replacement (or at least a more substantial sudden replacement) of its parts than can a piece of clay. I think that this combination of views corresponds to everyday intuitions about the persistence conditions for statues and pieces of clay.

[3] In this paper I ignore 'non-standard' versions of endurance theory that either attempt to avoid temporary or permanent coincidence, or say instead that temporary coincidence is identity, such as Burke's 'dominant sortal' theory, Gallois's 'temporary identity' theory, and 'mereological essentialism'. (For useful discussions of some of these non-standard theories, and references, see Sider 2001, Ch. 5, and Hawley 2001, Ch. 5.)

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coincidence is temporary or permanent. In addition, whether the coincidence is temporary or permanent, the piece of clay and the statue differ in their sortal properties: the piece of clay is not a statue, and the statue is not a piece of clay.[4] (Note that (throughout this paper) I'm taking '*x* is a statue' to entail '*x* is identical with some statue', and '*x* is a piece of clay' to entail '*x* is identical with some piece of clay'.)

Thus, according to what I call 'standard endurance theory', temporary coincidence is not identity, and permanent coincidence is not identity. I'll refer to this combination of views as 'pluralism'.

(II) 'Perdurance' Theory (Four-Dimensional Worms)

Temporary Coincidence is not Identity, but Permanent Coincidence is Identity. ('Intermediate Monism')

The second response is the one typically given by a perdurance theorist about persistence. According to perdurance theory, statues and pieces of clay are four-dimensional space-time worms, which persist by having different temporal parts (or 'stages') at different times, and are never wholly present at any one time during their existence. It can happen (often does happen) that a four-dimensional worm that is a statue (i.e., whose temporal parts are united by the 'statue' unity relation) shares some, but not all, of its temporal parts with a four-dimensional worm that is a piece of clay (i.e., whose temporal parts are united by the 'piece-of-clay' unity relation). In such a case, the 4-D statue-worm and the 4-D piece-of-clay-worm overlap, but are not identical, and we have a case of 'temporary coincidence'. (See Figure 1.) It can also happen that a 4-D worm that is a statue shares all its temporal parts with a 4-D worm that is a piece of clay. In such a case ('permanent coincidence'), the 4-D worm

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[4]   Moreover, for the endurance theorist, the coincidence in Cases 1 and 2, although merely temporary, is, in a sense, *complete* coincidence. At any time that the coincidence obtains, each of the statue and the piece of clay is 'wholly present': they wholly occupy the same place at the time of coincidence, and share all their matter and microphysical parts at the time of coincidence. So, according to what I am calling the 'standard endurance theory', not only can there be items that are completely coincident (in the sense just explained), but numerically distinct, but also such complete coincidence is a feature of both temporary and permanent coincidence cases.
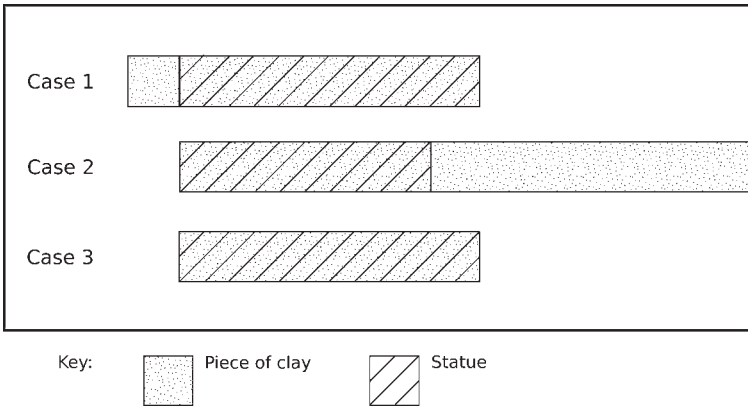
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| Key: | Piece of clay | Statue |

Figure 1.

that is a statue completely coincides with, and is identical with, the 4-D worm that is a piece of clay. (Again, see Figure 1.)[5]

Thus the perdurance theorist holds that temporary coincidence is not identity, although permanent coincidence *is* identity. For what I hope are obvious reasons, I shall refer to this position as 'intermediate monism'.[6]

(III) Stage Theory (e.g., Sider (1996, 2001); Hawley (2001))

Temporary Coincidence is Identity, and Permanent Coincidence is Identity. ('Extreme Monism')

The third response is the one standardly given by a 'stage theorist' about persistence. According to the stage theorist, statues and

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[5] For the perdurance theorist, the 'overlap' in the temporary coincidence cases does not involve *complete* coincidence, if complete coincidence entails the sharing of all parts. For mere overlap of 4-D worms, as in the temporary coincidence cases, does not involve the sharing of all parts, because it does not involve the sharing of all *temporal* parts.

[6] The position that I label 'intermediate monism' has also been referred to as 'moderate monism': see Noonan 2008. However, I prefer the term 'intermediate monism', partly because 'moderate monism' has also been used (by Fine (2003: 198–9)) for a view that encompasses both my 'intermediate monism' and my 'extreme monism'. (Fine himself reserves the term '*strictly* moderate monism' for the view that accepts what he calls moderate monism while rejecting extreme monism.)

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pieces of clay (and other ordinary objects such as cats, trees, tables, and people) are neither four-dimensional space-time worms nor 'enduring' objects. They are instantaneous (momentary) stages. Although the statue in front of me now is an instantaneous stage, it can truly be said to 'persist through time' in virtue of the holding of appropriate temporal relations between that stage and other past and future stages. According to the stage theorist, the statue and the piece of clay are identical both in the permanent coincidence case and in the temporary coincidence cases. At any time at which a statue and a piece of clay 'coincide', there is a single stage present at that time that is both a statue and a piece of clay. It thereby stands in temporal relations of two different types to stages at other times: a 'statue' temporal relation and a 'piece of clay' temporal relation. Where the coincidence is 'merely temporary', the stages to which the stage is connected by the 'statue' temporal relation are not exactly the same as those to which it is connected by the 'piece of clay' temporal relation. Where the coincidence is 'permanent', the stages to which it is connected by the two relations are exactly the same.

I shall refer to the (stage theorist's) view that both temporary coincidence and permanent coincidence are identity as 'extreme monism'.

(IV) Eliminativism (e.g., van Inwagen (1990); Merricks (2001))

Finally, there is the response of the eliminativist. According to the eliminativist, either there are no such things as pieces of clay, or there are no such things as statues, or both. So there are no genuine cases of coincidence, either temporary or permanent, involving the coincidence of statues with pieces of clay.

A few comments on this taxonomy are in order. First, the taxonomy is, obviously, simplified in various ways. In particular (as explained in note 3 above), I am ignoring various non-standard versions of endurance theory that either attempt to avoid permanent or temporary coincidence, or hold that temporary coincidence is identity. In addition, my simplified taxonomy appears to assume that all intermediate monists are four-dimensionalists (and hence that no endurantists are intermediate monists). However, there appears to be no actual incompatibility between endurantism and intermediate monism, although in fact I know of no one who explicitly advocates this combination of views. Finally, my simplified taxonomy does not allow for four-dimensionalists who are pluralists. But it is

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not obvious that there could not be non-standard perdurantists who hold that completely coincident space-time worms need not be identical,[7] or non-standard stage theorists who hold that coincident stages need not be identical (although I know of no actual holders of either of these positions). Both of these would represent four-dimensionalist versions of 'pluralism', since they would hold that neither permanent coincidence nor temporary coincidence need be identity.[8]

4. Permanent Coincidence, Identity, Leibniz's Law, and Modal Predicates

It is a familiar point that, if permanent coincidence is identity, then we must explain, consistently with Leibniz's Law, the fact that the statue and the piece of clay in Case 3 appear to differ in their modal properties: for example, it seems that the piece of clay could have survived radical reshaping, whereas the statue could not have survived radical reshaping. The only obvious way to achieve this is to treat a modal predicate like 'could have survived radical reshaping' as what Harold Noonan has called an 'Abelardian predicate' (Noonan 1991, 1993), which stands for a different property when attached to the expression 'the statue' from the property that it stands for when attached to the expression 'the piece of clay'. Perhaps the best known version of such an account is the 'inconstant' version of

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[7] Either because the completely coincident 4-D worms consist of temporal parts that are coincident but not identical, or because, although the 'worms' have exactly the same temporal parts, the worms are not merely the sums of their temporal parts. I am grateful to Gonzalo Rodriguez-Pereyra for suggesting the second of these possibilities.

[8] In discussions of this paper it has been suggested to me more than once that I have overlooked a plausible response to the coincidence cases, to the effect that *statue* may be regarded as what David Wiggins (1980) has called a 'phased sortal', and hence that *being a statue* may be regarded as merely a phase that some pieces of clay go through. However, I have not overlooked this response. Rather, I reject it as a relevant response on the grounds that just as there appear to be changes that a piece of clay can survive but a statue cannot (such as radical reshaping), so there appear to be changes that a statue can survive but a piece of clay cannot (such as significant sudden replacement of parts). If *being a statue* were simply a phase that some pieces of clay go through (in the way that *being a kitten* is a phase that cats go through or *being a philosopher* is a phase that some human beings go through) there should be no such symmetry.

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counterpart theory advocated by David Lewis in his (1971) and (1986), but there are others (see Noonan 1991, 1993; Gibbard 1975).

This way of dealing with the Leibniz's Law objection has come under attack by Kit Fine (2003). However, in this paper I shall assume, for the sake of argument, that the 'Abelardian' strategy can succeed in disarming the 'Leibniz's Law' objection (to the view that permanent coincidence is identity) that is based on an apparent difference between the *de re* modal properties of the statue and the piece of clay in a permanent coincidence case.

5. Permanent Coincidence, Identity, *de dicto* Persistence Conditions

If permanent coincidence is identity, then, in Case 3, there is a single entity that is both a piece of clay and a statue. It might seem that this provides the defenders of pluralism with a very simple argument against their opponents, as follows:

> The persistence conditions associated with the sortals *statue* and *piece of clay* are different. For example, the persistence conditions associated with being a statue entail that statues go out of existence when the matter of which they are composed is radically reshaped, even if that matter is preserved in one coherent mass. The persistence conditions associated with being a piece of clay entail that pieces of clay *continue* to exist when the matter of which they are composed is radically reshaped, as long as that matter is preserved in one coherent mass. How, then, can a single entity satisfy *both* sets of persistence conditions? But if no single entity can satisfy both sets of persistence conditions, then no single entity can be both a statue and a piece of clay, and the monists' view that there is identity in the permanent coincidence case is refuted.

Unfortunately, however, the view that permanent coincidence is identity is not so easily refuted. Although the persistence conditions associated with being a statue and those associated with being a piece of clay are, indeed, *different*, it is not obvious that they are *incompatible*. Moreover, the defence of the claim that they are compatible does not depend on the adoption of the 'Abelardian' account of *de re* modal predication described in §4.

Consider the following *de dicto* principles, which we might take to express implications of the persistence conditions associated with *being a statue* and *being a piece of clay*.

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(S)   (i)   Necessarily (for all x, if x is a statue, then x does not survive a radical reshaping (even if the reshaping preserves all its matter in one coherent mass)).

      (ii)   Necessarily (for all x, if x is a statue at any time in its existence, then x is a statue at every time in its existence).

(P)   (i)   Necessarily (for all x, if x is a piece of clay, then x does survive a radical reshaping in which all its matter is preserved in one coherent mass).

      (ii)   Necessarily (for all x, if x is a piece of clay at any time in its existence, then x is a piece of clay at every time in its existence).

It does not follow, from (S) and (P) alone, that nothing can be both a statue and a piece of clay – as the piece of clay in Case 3 is alleged, by the proponents of intermediate monism, to be. What does follow, from (S) and (P), is that *if* something is both a piece of clay and a statue, then it *is not* subjected to a radical reshaping in which all its matter is preserved in one coherent mass. But this is consistent with its being the case that although the statue and the piece of clay in cases of temporary coincidence such as Case 2 are distinct, the statue and the piece of clay in a case of permanent coincidence are identical. In other words, the *de dicto* persistence conditions represented by (S) and (P) can be jointly satisfied by a single entity, as long as that entity is not subjected to a radical transformation of its shape in which all its matter is retained in one coherent mass.[9]

To sum up, then, the intermediate monist can consistently accept that the sortals *statue* and *piece of clay* are associated with distinct *de dicto* persistence conditions such as (S) and (P).[10] Indeed, the intermediate monist may even appeal to these very persistence conditions in order to argue that in a *temporary* coincidence case such as Case 2, the statue and the piece of clay are distinct entities. In addition, since (S) and (P) are *de dicto* principles, the intermediate monist who accepts them is not in danger of thereby being committed to any difference in the *de re* modal properties of a statue and a piece of clay. For (S) and (P) are completely silent on the question whether

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[9]   For further discussion, see my (2007).

[10]   It does seem, however, that (in contrast to the intermediate monist) the stage theorist ('extreme monist') must deny (S)(i) and (P)(i). I shall not discuss this here.

an entity that satisfies the persistence conditions for being a statue, or for being a piece of clay, in one possible world also satisfies those conditions in other possible worlds.[11]

6. Temporary Coincidence and Permanent Coincidence

I shall assume, then, at least for the sake of argument, that the perdurance theorist's intermediate monism is not refuted either by an appeal to Leibniz's Law applied to modal properties (§4), or by a simple appeal to the potentially conflicting persistence conditions associated with the concepts of *being a statue* and *being a piece of clay* (§5).

It seems to me, though, that, even when these concessions are granted, intermediate monism is *deeply* counterintuitive. For it is, I think, deeply counterintuitive to claim that there is distinctness in a same-origin temporary coincidence case (such as Case 2) and yet that there is identity in a permanent coincidence case (such as Case 3). In this section, I shall try to explain and justify this claim.

Here is a simple-minded argument against intermediate monism:[12]

(1)   If same-origin temporary coincidence is not identity, then permanent coincidence is not identity.

(2)   Same-origin temporary coincidence is not identity.

Therefore:

(3)   Permanent coincidence is not identity.

Since the intermediate monist *accepts* Premise (2) of this (obviously valid) simple-minded argument, but rejects its conclusion, the intermediate monist must reject Premise (1). But Premise (1) of the simple-minded argument is, it seems to me, extremely plausible.

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[11]   My concern here is simply to point out that the acceptance of a difference in (*de dicto*) persistence conditions does not carry with it an acceptance of a difference in (*de re*) modal properties. It remains the case that the intermediate monist may have to appeal to the 'Abelardian' interpretation of modal predicates in order to explain away the *apparent* difference in modal properties, as explained in §4.

[12]   The 'simple-minded' argument is, obviously, also an argument against extreme monism, since the extreme monist (e.g., the typical stage theorist) rejects the conclusion of the argument, by rejecting Premise (2). But it is the implications of the argument for intermediate monism that I shall discuss here.

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Intuitive Support for Premise (1)

The basic idea behind Premise (1) is the following: how can whether a piece of clay is a statue depend on what happens in the future? Suppose that I know that the piece of clay in front of me now, and the statue in front of me now, have always coincided throughout their existence, up to now. Then I know that what I am confronted with is *either* a case of permanent coincidence *or* a case of same-origin temporary coincidence. But (since my knowledge of the future is limited) I may not know which. Suppose, then, that I *do not* know which. It seems that I can argue as follows:

(IOF) *The irrelevance of the future*: If this piece of clay is a statue at time t, its being a statue at t is independent of events that occur later than t.

(i)   If permanent coincidence is identity, then, if this case is a case of permanent coincidence, this piece of clay is now a statue.

(ii)   If this piece of clay is now a statue, it is now a statue regardless of whether this case is a case of permanent coincidence or a case of same-origin temporary coincidence. *(from (IOF))*

Therefore *(from (i) and (ii))*:

(iii)   If permanent coincidence is identity, then, even if this case is a case of same-origin temporary coincidence, this piece of clay is now a statue.

(iv)   If permanent coincidence is identity, then same-origin temporary coincidence is identity. *(generalization of (iii))*

Therefore (by contraposition):

(1) If same-origin temporary coincidence is not identity, then permanent coincidence is not identity.

Do Premise (1) and (IOF) Simply Reflect Endurantist Prejudices?

It might be suggested that Premise (1) of the 'simple-minded' argument, and the 'irrelevance of the future' assumption (IOF) that helps to generate it, simply reflect endurantist prejudices. If this were so, then it would obviously be detrimental to my position: my

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simple-minded argument would be question-begging, and powerless against a *perdurantist* intermediate monist. Since the endurantist thinks that the *whole* of this piece of clay is present at every time in its existence, and hence that the piece of clay is wholly present now, perhaps it should come as no surprise that the endurantist thinks that what is relevant to whether this piece of clay is now a statue must depend on properties that it has now, and not on what happens at future times. By contrast, the perdurantist thinks that the piece of clay is *not* wholly present at any time in its existence, and, in particular, that the piece of clay in front of me now has some parts – namely, temporal parts – that lie in the future. But if some of the temporal parts of this piece of clay lie in the future, then, it may seem, it is only to be expected that the characteristics of those future temporal parts may be relevant to the truth value of some of the things that we might now say about this piece of clay – including, for example, the claims that it is, or that it is not, a statue.

However, it does not look as if this can be a correct diagnosis of the intuition behind Premise (1) and the 'irrelevance of the future' principle (IOF). If the intuition were simply that it is because the piece of clay is wholly present at every time in its existence that its being or not being a statue now cannot depend on future events, then we would expect Premise (1) to be no more plausible than

(1*) If *different-origin* temporary coincidence is not identity, then permanent coincidence is not identity.

And one would expect (IOF) (the 'irrelevance of the future' principle) to be no more plausible than

(IOP) *The irrelevance of the past*: If a piece of clay is a statue at *t*, its being a statue at *t* is independent of events that occur earlier than *t*.

Yet not only are (1*) and (IOP) significantly less compelling than (1) and (IOF), but also (IOP) – the 'irrelevance of the past' principle – is not intuitively compelling at all. For it is very plausible to say that whether something is a statue depends, in part, on the kind of origin that it has – that nothing is a statue unless it is the product of artifice or design, or something like that. But if this is true of statues in general, it will be true of pieces of clay that are statues (assuming, that is, that there are any pieces of clay that are statues).

It may be that, in spite of this, it is possible to formulate, with sufficient care, some appropriately modified 'irrelevance of the past' principle that is parallel to a plausible version of an 'irrelevance of the future' principle for being a statue and which is not subject to

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this objection to (IOP). I shall not pursue this issue here. For present purposes, I simply point out that if it *is* the endurantist's 'wholly present at every time in its existence' principle that lies behind the plausibility of Premise (1), this is not at all obvious. On the contrary, Premise (1) seems to owe its plausibility to considerations that are specifically about the future that do not extend to the past. And these considerations cannot depend simply on the temporally symmetric claim that pieces of clay are wholly present at every time that they exist.

I should make clear that, in defending (IOF), I am not suggesting that to deny (IOF) is to hold that the future course of events can bring it about that this piece of clay is now a statue as a result of backwards causation. That would, indeed, be an extremely mysterious and objectionable theory. But the perdurantist or other intermediate monist who denies (IOF) is not committed to such backwards causation. Rather, I take it that the theorist who denies the principle (IOF) is committed to the idea that the property of being a statue is like the property of being a future prime minister: a property whose current possession depends (in part) upon, but is not caused by, the future course of events – that is, what has been called a 'future-reflecting property'.

7. What's Supposed to be so Bad about Permanent Coincidence Without Identity (PCWI)?

I have tried to establish that Premise (1) of my 'simple-minded' argument against the perdurance theorist's intermediate monism is very plausible, and that its plausibility does not rest simply on assumptions that are straightforwardly question-begging against a perdurantist.

However, the endurantist pluralist view obviously faces a challenge of its own. For several writers have suggested that there is something deeply repugnant about the idea of permanent coincidence without identity, and regard it as a conclusion that it is worth some considerable trouble to avoid. In particular, it remains to be seen whether the perdurantist's intermediate monism (with the counterintuitive consequences I have claimed, in §6, that it has) is, on balance, in conflict with intuition to a greater extent than is the endurantist pluralist view.

But what exactly is supposed to be so bad about permanent coincidence without identity (PCWI)? One argument against PCWI is that it is inconsistent with (or at least does not sit comfortably with) a four-dimensionalist metaphysics. But this argument, by itself, is obviously forceful only in combination with other arguments

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for four-dimensionalism.[13] I shall not attempt to discuss these arguments here.[14] Instead, in the sections that follow, I shall consider three further arguments against PCWI. I shall conclude that these arguments are uncompelling – or, at least, that they are uncompelling when employed in an attempt to defend the position of intermediate monism.

8. Common-sense Intuitions About Temporary Coincidence

Many writers have suggested that there is something at least *prima facie* counterintuitive, and repugnant to common sense, about the idea that the statue and the piece of clay are two even in a *temporary* coincidence case. Now, of course, anyone who believes, as the standard perdurance theorist does, that temporary coincidence is *not* identity must deny that the facts of the matter in temporary coincidence cases are consistent with these alleged common-sense intuitions. However, it has been suggested that although perdurance theorists (with their intermediate monism) cannot accept that these 'monistic' common-sense intuitions speak the truth about temporary coincidence cases, the perdurance theorist can nevertheless do a better job of accommodating these monistic intuitions than the (pluralist) endurance theorist can.

Here are some examples of alleged common-sense intuitions that (allegedly) support the thesis that even temporarily coincident objects are identical.

Miscellaneous Considerations

There are various considerations which, if we were 18th century philosophers, we might describe as 'the vulgar arguments'. For

[13]   Of course, if, as I tentatively suggested at the end of §3 above, a (non-standard) four-dimensionalist could consistently be a pluralist, then it is false that PCWI is *inconsistent* with a four-dimensionalist metaphysics. The most that could be maintained is that a four-dimensionalist metaphysics is *unfriendly* to PCWI, or that PCWI is inconsistent with the combination of four-dimensionalism and some other assumptions that four-dimensionalists typically make.

[14]   It is worth noting that two recent writers (Sider (2001) and Hawley (2001)) put considerable weight on considerations concerning coincidence in arguing for four-dimensionalism, although admittedly they do not rest their case entirely on these 'coincidence' considerations.

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example: If the statue and the piece of clay are two, and the statue weighs 1lb, and the piece of clay weighs 1lb, why don't the two together weigh 2lb? If I bought two objects (a statue and a piece of clay) when I bought the statue, why does my receipt list only one object? If the statue and the piece of clay are two, why don't I list them as two in the inventory of my possessions that I submit to the removal firm, insurance company, etc.?

The Sweater and the Thread

Suppose that I knit a sweater from a single thread, and hang the sweater on a hook on my office door. Then there is a common-sense intuition that there is just one sweater-shaped object hanging behind the door, not two such objects, a sweater and the thread from which it is knitted. (Cf. Hawley 2001: 143–5.)

Competition for Space

We think of physical objects as things that have to compete for space. So it is, at least *prima facie*, odd to say that they can coincide. (Cf. Sider 2001: 154ff.)

It is sometimes suggested that the perdurantist's model helps to accommodate these monistic common-sense intuitions because it makes temporarily coincident objects 'no more mysterious than (spatially) overlapping roads' (e.g., Sider 2001: 152[15]). And it is also sometimes suggested that the perdurantist's 'overlapping roads' model mitigates the (alleged) counterintuitiveness of the claim that temporarily coincident objects are not identical because of the following fact: although, according to the perdurantist, the temporarily coincident objects are distinct four-dimensional worms, the perdurantist can provide a *single* object – namely, the shared temporal segment – that both wholly occupies and is wholly confined to the region of overlap in any case of temporary coincidence (e.g., Sider 2001: 156).

I am unconvinced by these claims. I reject the claim that the perdurantist's overlapping worms are no more mysterious than spatially overlapping roads because of the problem concerning the future discussed in §6 above (to which nothing in the spatial

[15] Note, though, that Sider himself regards perdurance theory as inferior to stage theory in its account of coincidence cases.

analogy corresponds). In addition, I am sceptical about the relevance of the fact that the perdurantist can supply a single object that is wholly contained within the region of overlap in a temporary coincidence case. For example, in any temporary coincidence case concerning a statue and a piece of clay that overlap only for the *middle* portion of their histories (as illustrated by Figure 2), this 'single object' will have to be a four-dimensional worm that is neither a statue nor a piece of clay, and has 'persistence conditions' that do not match those of any of the persisting things that common sense recognizes. In the case of a statue and a piece of clay that overlap only for the middle portion of their histories, the 'single object' that is the shared temporal segment must 'come into existence' at the start of the time of the coincidence and 'go out of existence' at the end of the time of the coincidence. But common sense recognizes no persisting objects that come into existence and go out of existence in this fashion. How, then, can an appeal to such an object legitimately be invoked to accommodate an alleged *common-sense* intuition that there is just one object present in a case of temporary coincidence?[16]

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[16] It might be objected that my argument, if successful, would prove too much, and hence that there must be something wrong with it. In the case of spatially overlapping roads, there is, I admit, a common-sense intuition that in the region of overlap there is 'just one' road (even though this intuition may be countered or overturned by information that suggests that the case is one in which there are two roads that overlap). However, in the spatial case, how is the 'just one road' intuition to be accommodated by the theory that says that the case involves two (overlapping) roads that merely share a segment? It is plausible to suggest that it can be accommodated by appealing to the fact that even though there are two *roads* in the case, there is just one *road-segment* that wholly occupies the region of overlap. But if road-segments are not roads, it looks as if this attempt to accommodate the 'just one' intuition in the spatial overlap case should be subject to the objection that I have made in the text to the perdurantist's attempt to accommodate the 'just one' intuition in a temporal overlap case by appeal to temporal segments that are neither statues nor pieces of clay. Although I cannot fully discuss this issue here, my inclination is to say that even if mere road-segments are not, strictly speaking, roads, they are not foreign to the common-sense conception of a spatially extended physical object in the way that a temporal segment that is shared by a statue and a piece of clay and is itself neither a statue nor a piece of clay is foreign to the common-sense conception of a persisting physical object.
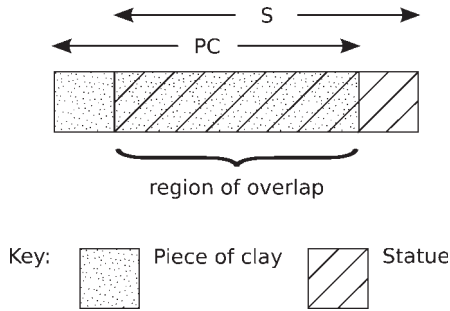
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Figure 2.

9. Sortal Properties, Modal Properties, and Intrinsic Similarity Principles

It is at least questionable (I have just claimed) whether perdurance theorists, with their intermediate monism, can successfully exploit the alleged common-sense intuitions that (even temporary) coincidence is identity in order to get the upper hand over the endurantist pluralist. But there are further arguments which seem to be arguments directly against the pluralist's view that permanent coincidence is not identity.

The pluralist holds that the statue and the piece of clay are distinct entities, even in a permanent coincidence case such as Case 3. Clearly, this invites the question: what is it, in Case 3, that *makes* them two, given that they come into existence simultaneously, share all their matter throughout their existence, and go out of existence simultaneously?

One response that the pluralist might give is that what makes the piece of clay and the statue distinct in the permanent coincidence case (Case 3) is that they have different *modal* properties. For example, the piece of clay could have survived radical reshaping, although the statue could not have survived radical reshaping. However, to appeal to such a modal difference as what grounds the difference between the entities clearly flies in the face of the following principle, which Harold Noonan (1993: 133) has labelled '(CII)' (an acronym for 'Constitution is Identity'):

> (CII) Purely material entities of identical constitution at all times cannot be distinct merely in virtue of differences in modal, dispositional or counterfactual properties.

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Now, the pluralist could, of course, take issue with principle (CII), and simply reject it.[17] But, as far as I can see, the pluralist need not do so. For instead of claiming that what makes the piece of clay and the statue two in a permanent coincidence case (such as my Case 3) is fundamentally a modal difference between them, why can't the pluralist say that what makes them two is, rather, a fundamental *sortal* difference between them: the statue is a statue, and not a piece of clay, and the piece of clay is a piece of clay, and not a statue?

But if the distinctness is, fundamentally, a distinctness that holds in virtue of a difference in sortal properties, then this way of distinguishing between the statue and the piece of clay is *not* in conflict with Noonan's principle (CII) – unless, of course, sortal properties are themselves 'modal, dispositional or counterfactual properties'. But why should we suppose that they are? No doubt, the sortal properties have modal, dispositional, or counterfactual *implications*. But obviously it cannot be maintained that every property that has such implications is itself a modal, dispositional, or counterfactual property.

So far, then, I have suggested that, despite what appears to be sometimes assumed,[18] the principle (CII) can be accepted by the defender of the (pluralist) view that permanent coincidence is not identity. If so, then the principle does not capture what is at issue in the debate between pluralists and their opponents (and the label 'Constitution is Identity' for the principle must be a misnomer).[19]

[17]   Lynne Rudder Baker (2000: 171), for example, holds that the statue and the piece of clay in a permanent coincidence case are distinct in virtue of a difference in their essential properties, and thus would reject (CII).

[18]   The assumption appears to be made not only by Noonan (1993) but also by Johnston (1992: 97), although they are on opposite sides of the monism−pluralism debate.

[19]   Perhaps the principle (CII) has mistakenly become the focus of debate for the following reason. In attacking the view that permanent coincidence is identity, a natural strategy for the pluralist is to appeal to the fact that the statue and the piece of clay apparently have different modal properties (i.e., to appeal to the 'Leibniz's Law' argument discussed in §4 above), thus providing an argument for pluralism that does not beg the question by invoking a sortal difference between the statue and the piece of clay. But, of course, even if the pluralist does appeal to this argument, that does not show that the pluralist thinks that the alleged modal difference is the *ground* of the distinctness between the statue and the piece of clay, as opposed to a consequence of (and evidence for) that distinctness.

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Let us try a different tack. In his (1992), Mark Johnston admits that the following principle is plausible (at least if we ignore the fact that being a statue may require having the right kind of origin):[20]

(8) If y is a paradigm statue, and x is intrinsically exactly like y, then x is a statue.[21]

Johnston argues, in effect, that if (8) is accepted, it provides a *reductio ad absurdum* of the claim that Statue and Piece are not identical in a permanent coincidence case such as my Case 3. For, he suggests, in Case 3 Piece is intrinsically exactly like Statue, and Statue is a paradigm statue; so, according to (8), Piece is also a statue. But if Piece is a statue in Case 3, this has intolerable consequences for the view that Piece and Statue are numerically distinct. For if Piece is a statue, and Statue is a statue, and Piece and Statue are two, then the case involves two *statues*, which is emphatically not the verdict that the pluralist wanted.[22]

Johnston argues, however, that reflections concerning Peter Unger's 'Problem of the Many' show that (8), in spite of its initial plausibility, is false. He claims that it should be replaced by a revised principle $((8')$[23]$)$ that does not imply that if Piece is intrinsically exactly like Statue, then Piece is a statue. Harold Noonan (1993), in his response to Johnston, argues that Johnston's revision of (8) is unnecessary, and that the Problem of the Many can be accommodated by a different revision to (8) (namely, $(8*)$), one that (in contrast to Johnston's $(8')$) is like the original principle (8) in providing a

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[20]   Johnston points out that if we are to judge (8) to be even *prima facie* plausible we may also have to ignore the fact that the concept of a statue appears to be subject to a 'maximality' constraint: no proper part of a statue (even if otherwise intrinsically like a statue) is a statue (1992: 98, note 9). Like the fact that (8) may require qualification to deal with the objection that to be a statue requires having a certain kind of origin (in addition to having certain intrinsic properties), the fact that (8) may need to be qualified by a maximality constraint is irrelevant to the implications of (8) for the case of the permanently coincident statue and piece of clay (cf. Johnston 1992: 98, note 9; Noonan 1993: 136).

[21]   In fact, this is a specific version of the more general principle that Johnston labels '(8)', viz., 'If y is a paradigm F and x is intrinsically exactly like y then x is an F' (1992: 98). For simplicity, I conduct my discussion in terms of the specific version of the principle.

[22]   As before, I am assuming that 'x is a statue' entails 'x is identical with some statue'. See §3 above.

[23]   See the following note.

reductio ad absurdum of the (pluralist's) 'non-identity' claim about the permanent coincidence case.[24] And if Noonan is right about this, we could, it seems, safely conduct our discussion in terms of Johnston's original principle (8) after all, bearing in mind that we may, if we like, take it to be implicitly qualified as Noonan suggests (and hence read as (8*)).[25]

I do not want to try to adjudicate this debate between Noonan and Johnston over the implications of the Problem of the Many for intrinsic similarity principles such as (8). Instead, I want to make the following point. I do not see why the defender of the non-identity verdict on the permanent coincidence case (that is, the pluralist) should accept that the 'intrinsic similarity' principle (8) *does* imply that the statue and the piece of clay in the permanent coincidence case are identical. Surely one should accept this only if one accepts that a sortal property such as *being a statue* or *being a piece of clay* is not an intrinsic property? But why should the pluralist concede that this is so?

Now, I admit that I don't have an account of what it is for a property to be intrinsic that would show that sortal properties, as conceived of by the pluralist, are intrinsic properties. However, I don't see that the onus is on me to provide such an account. Surely, if monists appeal to intrinsic similarity principles such as (8) in order to argue that sortal properties must be grounded in other properties (in a way that rules out a 'bare difference' in sortal properties), then the onus is upon them to explain why a sortal difference does not, in and of itself, count as an intrinsic difference.[26]

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[24] The relevant principles are:

> (8$'$) If y is a paradigm statue and x is intrinsically exactly like y and x is of the right category, i.e. x is not a mere quantity or piece of matter, then x is a statue. (Cf. Johnston 1992: 101.)

> (8*) If y is a paradigm statue and x is intrinsically exactly like y and x does not partly *overlap any statue* then x is a statue. (Cf. Noonan 1993: 136.)

(Again, for simplicity I have replaced the generic principles that Johnston and Noonan themselves label '(8$'$)' and '(8*)' with specific versions of those principles, applied to statues.)

[25] In fact, Noonan argues that Johnston's own revision of (8) is not only unnecessary, but also inadequate to deal with the Problem of the Many, unless conjoined with a controversial theory of vagueness (1993: 137–8).

[26] Although I haven't tried to establish that sortal properties are intrinsic properties, it is worth noting that sortal properties, as conceived of by the pluralist, do not appear to be either relational properties or modal properties.

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At the end of the day, then, the crucial issue seems to be, not whether there can be no sortal difference without an intrinsic difference (a principle that can be accepted as trivially true by the pluralist if sortal properties are themselves intrinsic properties), but, rather, whether there can be no sortal difference without some *other* intrinsic difference. In other words, the crucial issue seems to be, not whether (8) is acceptable, but whether some principle along the lines of (8A) is correct:

(8A) If y is a paradigm statue, and x is exactly like y in its *non-sortal* intrinsic properties, then x is a statue.

For it seems that, even if my complaint about the assumption embodied in the use of (8) (and Noonan's (8*)) against the pluralist – the assumption that sortal properties are not intrinsic properties – is a justified complaint, (8A) would avoid that objection, but would still yield the verdict, unacceptable to the pluralist, that the piece of clay in Case 3 (permanent coincidence) is a statue. The pluralist must, it seems, admit that, in Case 3, Statue is a paradigm statue, and, also that, *setting aside* the sortal difference between them, Piece and Statue in Case 3 are intrinsically exactly alike. Thus, it follows, if (8A) is accepted, that in Case 3 Piece is a statue, and hence (unless the case involves two *statues*) identical with Statue, contrary to what the pluralist maintains.

However, unlike (8) (and (8*)), (8A) seems to me to have an air of the ad hoc and question-begging in the context of the debate between the pluralist and the monist. But there is a further consideration. Consider yet another 'intrinsic similarity principle', (8B):

(8B) If y is a paradigm statue, and y begins to exist at t_0, and x begins to exist at t_0, and x is exactly like y in its non-sortal intrinsic properties from t_0 up to some later time t, then x is a statue.

Just as (8A) reflects the idea that there is no sortal difference without a non-sortal intrinsic difference (and hence that permanently coincident objects must belong to exactly the same sortal kinds), so (8B) encapsulates the idea that there is no sortal difference between entities that are alike in their intrinsic non-sortal properties at the *beginning* of their existence (and hence that same-origin coincident objects must belong to exactly the same sortal kinds).

If so, then they do not fall into either of the two main categories of property that are most commonly regarded as non-intrinsic.

The pluralist must, of course, reject (8B), as well as rejecting (8A), for the pluralist holds that neither permanent coincidence nor temporary coincidence is identity. But what about the intermediate monist? Intermediate monists, although they may (and almost certainly will) accept (8A), must, of course, reject (8B), on pain of taking on board the unwanted conclusion that Statue and Piece are identical in a same-origin temporary coincidence case.

But now I ask: is (8B) really any less plausible than (8A)? It seems to me that it is not. But if (8B) is at least as plausible as (8A), this makes precarious the intermediate monist's appeal to intrinsic similarity principles such as (8A) in support of the view that permanent coincidence is identity.

10. Pluralism and Ontological Profligacy

The final objection to the pluralist view that I shall consider also comes from Harold Noonan. Noonan (1993, §4) argues that the pluralist who defends the view that there is permanent coincidence without identity in cases such as the statue and the piece of clay, on the grounds that the statue and the piece of clay differ in their modal properties, will find it hard to resist a commitment to an indefinite number of cases of 'permanent coincidence without identity' where the allegedly coincident but distinct entities do not (unlike the statue and the piece of clay) belong to distinct ontological categories. For example, what about the case of the permanently coincident snowball and snowdiscball, where the concept of a snowdiscball is like that of a snowball, except that the persistence conditions for snowdiscballs differ from those of snowballs in that they allow (indeed, require) a snowdiscball to persist when the snow of which it is composed is flattened into a disc shape (1993: 145)? [27] Evidently, if this example is accepted, it provides a model for the generation of a myriad of examples of permanently coincident physical objects which a pluralist who takes a difference in modal properties to be sufficient for numerical distinctness must regard as distinct. But a commitment to this multiplicity of permanently coincident but distinct physical objects represents, according to Noonan, an unacceptable 'degree of ontological inflation' (1993: 145).[28]

[27] Noonan acknowledges Sosa 1987 as the source of such examples.
[28] As Noonan indicates (1993: 145), the problem is not simply that in some cases where we might have thought that there was just one physical object (e.g., a snowball) there will, according to the pluralist, be two (a

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In the previous section, I have argued that the pluralist need not appeal to a distinction in modal properties as the fundamental ground for a numerical distinction between the statue and the piece of clay in a permanent coincidence case, but may instead appeal to a fundamental sortal difference between them. However, Noonan's argument concerning ontological profligacy remains pertinent. For if the pluralist appeals to a sortal difference between a piece of clay and a statue as that which underlies the apparent difference between their modal properties, should the pluralist not also appeal to a sortal difference between a snowball and a snowdiscball as what underlies the apparent difference between *their* modal properties? And does this not lead, as Noonan suggests, to an unacceptable degree of ontological inflation?

One reaction to such examples, on behalf of the pluralist, would be to claim that a concept such as that of a snowdiscball is illegitimate. If it is, then clearly it can generate no genuine additional entities via cases of coincidence, and hence no ontological inflation.

However, I shall not attempt to defend this 'ontologically illiberal' pluralist response to Noonan.[29] Rather, I shall argue that even if the relevant entities (snowdiscballs and the like) *are* accepted as legitimate, Noonan's charge of ontological inflation has little, if any, force. Or, at least, it lacks force if it is intended, as Noonan appears to intend it, as an argument in favour of intermediate monism rather than pluralism.

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permanently coinciding snowball and snowdiscball). It will also be the case that in some cases where we might have thought that there was just one physical object (e.g., a snowball) there will, according to the pluralist, be *many*. For, if the concept of a snowdiscball is a legitimate physical object concept, one can obviously think up a variant of the concept of a snowdiscball such that three physical objects: a snowball, a snowdiscball, and a physical object belonging to this third kind, might coincide throughout their existence. And so on indefinitely. Moreover, as long as concepts such as that of a snowdiscball can be generated *ad lib.*, then it seems that *whenever* there is one physical object, there will always be many physical objects with which it permanently coincides (cf. Noonan 1993: 145, final paragraph).

[29]   Given that the concept of a snowball is an artefact concept rather than a natural kind concept, it is hard to see what resources the pluralist could appeal to in order to insist that although the world contains snowballs it contains no snowdiscballs. In addition, this response, on its own, would be insufficient to deal with a further argument of Noonan's (not discussed here) in which he claims that considerations of vagueness threaten the pluralist with ontological inflation (1993: 143–5).

This is perhaps most easily seen if we assume that our ('ontologically liberal') pluralist is (as pluralists typically are) an endurance theorist, and that our intermediate monist is (as intermediate monists typically are) a perdurance theorist.[30] If the pluralist accepts the multiplicity of coincident entities envisaged in Noonan's objection, this may seem to be ontologically profligate. But if it is, I think that the intermediate monist perdurantist is in no position to criticize the endurantist on these grounds. For the perdurantist who admits the legitimacy of concepts such as that of a snowdiscball must recognize a multiplicity of *four-dimensional worms* corresponding to these concepts. Hence, when we compare the ontological commitments of the 'ontologically liberal' endurantist pluralist and those of the perdurantist intermediate monist with respect to such entities, the only respect in which the perdurantist can claim to be ontologically more parsimonious seems to be that the perdurantist refuses to acknowledge, in addition to a multiplicity of entities that are *temporarily* coincident but not identical, a set of further entities that are *permanently* coincident but not identical. And I do not see that this represents a significant gain in ontological economy, if indeed it is a genuine gain at all.[31] Hence, I submit, it represents a very weak ground for preferring the perdurance theory, with its intermediate monism, to the pluralist endurance theory that holds that there can be permanent coincidence without identity.

To put the point another way, if there is ontological profligacy or inflation here, it consists chiefly in admitting, into one's ontology, entities such as snowdiscballs *in addition* to snowballs. The perdurantist intermediate monist who admits the legitimacy of the concept of a snowdiscball (as most perdurantist do), and admits that it picks out genuine entities, must also admit that *sometimes* these entities are entities additional to snowballs, for in some cases these entities will coincide only temporarily with snowballs, in which case (according to intermediate monism) they must be distinct from them. But once this is conceded, why is it supposed to represent a significant gain in ontological economy to say that, in the cases where the coincidence is permanent, we can identify these entities with the corresponding entities of more familiar kinds (such as snowballs)? I submit that any sacrifice of ontological economy here that is required by the pluralist view is, *pace* Noonan (1993: 145), a trivial price to pay

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[30] I don't think that my argument depends on this assumption, though.
[31] Cf. Lewis 1973: 87 on the distinction between qualitative and quantitative parsimony.

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for any advantages that the pluralist view may have over that of the intermediate monist.

The most that Noonan's 'ontological inflation' objection can show, I think, is this. If the pluralist who distinguishes the statue and the piece of clay in a permanent coincidence case relies, in making that distinction, on the claim that the statue and the piece of clay belong to significantly different ontological categories (such as those of *physical object* and *piece of matter*), then that pluralist cannot consistently *also* rely on the claim that a difference in modal properties or sortal properties is sufficient for a difference in identity. For if Noonan's examples are successful, they show that the pluralist must recognize cases of the permanent coincidence of entities that differ in their sortal properties and modal properties *even though those entities belong to the same ontological category*.[32] However, although this may be an important point, and although it may constitute a valid *ad hominem* objection to Johnston and some other pluralists, I do not see that it tends to undermine the case for preferring pluralism to intermediate monism.[33]

[32] I suppose that a pluralist might try to claim that although there are snowdiscballs (etc.) as well as snowballs, the snowdiscballs (etc.) are not physical objects, and hence belong to a distinct ontological category from snowballs after all. If this were so, then the relevant coincidence cases (e.g., that of a snowball with a snowdiscball) could be claimed to be like the case of the statue and the piece of clay in involving the coincidence of entities that belong to different ontological categories. But this looks to me like a desperate manoeuvre, and I shall not discuss it further.

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