Promiscuous Endurantism and Diachronic Vagueness

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1. According to a popular line of reasoning, vagueness creates a problem for the endurantist conception of persistence.[1] Assuming that ordinary material objects can undergo some mereological change without thereby ceasing to exist, just how much change they can tolerate appears to be a vague matter. Surely a cat—Tibbles—can lose *a few* body cells, but surely it cannot lose *too many* of them, so it seems that we are bound to be faced with "borderline cases" in which we are unsure what to say. For a perdurantist, such considerations pose no serious threat. If ordinary objects are things that persist through time by having a different temporal part at each moment at which they exist, just as they extend over space by having a different spatial part at each place at which they are found, then the borderline cases can be explained in familiar semantic terms: our linguistic practices are not precise enough to determine the exact temporal extent of the referent of such expressions as 'Tibbles' or 'that cat', just as they are not precise enough to determine the exact spatial extent of the referent of expressions such as 'Everest' or 'that mountain'. By contrast, the endurantist would seem to be committed to a different account. If ordinary objects are things that persist through time by being wholly present at each moment at which they exist, and if it is indeterminate whether a certain number of body cells suffices to constitute a whole cat, then the borderline cases correspond to times at which it is indeterminate whether a cat exists at all. To the extent that our expressions for existence are not capable of harboring semantic vagueness (e.g., because they belong to our logical vocabulary), this means that the endurantist can only regard the borderline cases as a sign of epistemic or ontic vagueness—a problem.

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1. See e.g. Heller (1990: 49ff), Le Poidevin (2000), and especially Sider (2001, §4.9).

In some recent articles, Kathrin Koslicki (2003: 121f), Jonathan Lowe (2005), and Kristie Miller (2005a, 2006) object that this popular line of reasoning is inconclusive. The perdurantist's account of the vagueness in question—they argue—does not come for free: it depends on the assumption that there are enough objects to serve as "good candidates" for being the referent of a vague term. In particular, the perdurantist's account is typically formulated on the assumption that composition is fully unrestricted across time—an assumption that can be put thus (following Sider 2001: 133):

> *Unrestricted Diachronic Composition (UDC):* For any class of time instants, I, and any function f assigning a non-empty class of objects, $f(t)$, to each t in I, there is something, x, that exists exactly at the times in I and that at each such time t is composed exactly of the objects in $f(t)$.

For a perdurantist, the object x whose existence is guaranteed by UDC is a (temporally extended) mereological fusion whose t-parts, at every given time t, are composed of the t-parts of the objects in $f(t)$. And when the perdurantist says that a name such as 'Tibbles' is semantically vague, she means to say that our linguistic practices do not select a unique such fusion as the referent of that name: there are many fusions that fit the bill, many largely (temporally) overlapping objects differing from one another only in a few temporal parts at either "end".[2] Very well, says the objection. Suppose we find this account plausible. Why should it be a prerogative of the perdurantist? What prevents the endurantist from endorsing UDC and providing a perfectly parallel account of the vagueness of 'Tibbles'?

Indeed, nothing prevents the endurantist from making this move. As Koslicki, Miller, and Lowe correctly point out, a mereologically promiscuous endurantist is free to accept UDC *holus bolus* while at the same time rejecting, for each choice of f, the identification of the relevant x with a temporally extended mereological fusion. The endurantist can construe x as an entity which, for each time t in the domain of f, is wholly present at t and is entirely composed of (though distinct from) the objects in $f(t)$. And she can do so for any f whatsoever. In short: A mereologically promiscuous endurantist is free to say that for any sequence of times and classes of body

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2. In saying this, the perdurantist is also assuming that the referent of 'Tibbles'—a cat— is nothing over and above a (temporally extended) aggregate of body cells. We'll come back to this in Section 2.

cells existing at those times, there is an enduring object that exists at just those times and is constituted at those times by those body cells.[3] Accordingly, the endurantist could then provide an account of the vagueness of a name such as 'Tibbles' that is perfectly analogous to the perdurantist's account. There are lots of good candidates for being the referent of that name —the endurantist can say—lots of continuants that currently consist of the same body cells but that differ slightly in their persistence conditions, and our linguistic practices are not precise enough to select a unique such candidate over the others.

Very well, then. There are no obvious reasons why the endurantist should reject UDC, so no obvious reasons to conclude that vagueness creates a special problem for the endurantist conception of persistence. Are there, however, any *good* reasons to draw this conclusion?

2. It wouldn't be a good reason to do so just because UDC would force the endurantist to inflate her ontology way beyond what common sense would acknowledge. As Lowe (2005: 110) puts it,

> it may indeed be that endurantism has common sense on its side in its rejection of talk of temporal parts, but that doesn't mean that endurantism must be entirely bound by all the constraints of common sense—as though perdurantism represented exciting "revisionary" metaphysics while endurantism is for stick-in-the-mud common-sense realists.

Nor would it be a good reason to complain that UDC would entail a commitment to instantaneous objects (among other things). In his reply to Koslicki, Ted Sider (2003: 136) says that such a commitment would put the endurantist in an embarrassing situation:

> I suspect that most [endurantists] would react thus: 'If I needed to accept *that* (ubiquitous instantaneous objects), I might as well concede any remaining differences and accept [perdurantism]'.

On the face of it, however, some endurantists may *not* concede the remaining differences: as Miller (2005a: 319f) argues, one could still deny that

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3. This is the natural way to cash out UDC in endurantist terms. Miller (2006) distinguishes two further variants, corresponding to different ways of construing $f(t)$. What follows is not significantly affected by such refinements.

persisting objects are mereological *fusions* of instantaneous things.[4] Alternatively, the endurantist may happily concede all the differences and yet deny the embarrassment: as Lowe (2005: 109f) argues, one might insist that the disagreement is purely verbal, perdurantism and endurantism being translatable into each other without remainder.[5] Either way, the endurantist would be free to endorse UDC and resist the objection from vagueness on such grounds.

But now consider the following. According to Lowe (2005: 110),

> it won't do for the perdurantist to object that the endurantist is committed to a plethora of spatially coinciding 3D objects, for this only corresponds exactly to the perdurantist's own plethora of temporally overlapping 4D objects.

Here one may disagree. There certainly is a perfect correspondence between the two plethoras. But one thing is spatial coincidence, another temporal overlap (i.e., sharing of temporal parts), and this is not a distinction without a difference when it comes to exploiting such plethoras for the purpose of explaining vagueness in semantic terms. On the contrary, the distinction makes all the difference.

For consider what happens with the vagueness of 'Tibbles'. Pick a time t_0 and suppose we agree that Tibbles exists at t_0. Indeed, suppose t_0 is the time at which we decide to baptize a cat with the name 'Tibbles'. This means that all the admissible candidates for the referent of that name—and there may be a plethora of them—must exist at t_0. Moreover, assuming for simplicity that our baptismal act does not suffer from spatial vagueness, all such candidates must be things that are composed, at t_0, of the same class of body cells, C_0, i.e., objects whose assignment functions f agree on the value $f(t_0) = C_0$. Now:

(A) For the perdurantist, this simply amounts to saying that all such candidates must have a t_0-part. Indeed, they must have *the same* t_0-part, Tibbles-at-t_0, which is something composed, at t_0, of the body cells in C_0. To say that Tibbles-at-t_0 is composed, at t_0, of the body cells in C_0 is to say that

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4. Actually, Correia (2005b) argues that a commitment to instantaneous objects implies a commitment to instantaneous *temporal parts*, which is at odds with the endurantist conception under discussion. We'll come back to this in Section 4.
5. See also Miller (2005b). The inter-translatability between perdurantism and endurantism is further defended in McCall and Lowe (2003, 2006) and Hirsch (2005).

that Tibbles-at-t_0 is composed (simpliciter) of the t_0-parts of the body cells in C_0. And since a perdurantist is likely to construe composition extensionally, this boils down to saying that all the admissible candidates for the referent of 'Tibbles' have, as their t_0-part, the mereological fusion of the t_0-parts of the body cells in C_0. Thus, for the perdurantist there are lots of things existing at t_0 (in the relevant region of space) but just one thing that is *entirely* present at t_0 (in that region of space): their common t_0-part. There is nothing special about this, just as there is nothing special about the fact that many different things may share a common spatial part: every admissible referent of 'Everest' must include the peak of the mountain, at location s_0, but there is just one thing located entirely at s_0: their common s_0-part. It is precisely this analogy between temporal existence and spatial location that allows the perdurantist to put forward a uniform semantic account of the temporal vagueness of 'Tibbles' and the spatial vagueness of 'Everest': it's hard to pick out a temporally extended cat from a single stage, just as it is hard to pick out a spatially extended mountain from the peak.

(B) For the endurantist, the picture is altogether different. Endurantism rejects temporal parts and, with them, the analogy between space and time that makes the perdurantist's account so straightforward. Thus, for the endurantist the many admissible candidates for the referent of 'Tibbles' would have to be *entirely* present at t_0: they would not temporally overlap; they would spatially coincide. They would all be composed of the same class of body cells, C_0, yet they would all be distinct.[6] And they would be distinct precisely in virtue of their having distinct persistence conditions. Now, spatial coincidence is no big deal for some endurantists: following Wiggins (1968), some take it to be a genuine possibility—in fact, a necessity— precisely as a result of the many puzzles of material constitution and diachronic change.[7] But here the deal is big indeed. For insofar as the number of borderline cases for 'Tibbles' may be very large, the endurantist would be forced to countenance a correspondingly large number of fully coincident objects—coincident objects *of the same kind*. And she would be forced to say that the vagueness of 'Tibbles' is due to the fact that our linguistic

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6. And they would all be distinct from the fusion of the body cells in C_0. To be sure, the endurantist could maintain that all such things are identical at t_0, though different at other times. Again, we'll come back to this option in Section 4.
7. Lowe (1983) follows Wiggins on this score. Compare also Koslicki (2004).

practices are not precise enough to select one such object over the others as the official referent of that name. This would certainly be isomorphic to the account offered by the perdurantist. But as an explanation of the limits of our linguistic practices, this would be utterly incredible. It wouldn't just be that we fail to pick out a unique cat among the many cat candidates that ensue from the amount of feline tissue that is in front of us at t_0. Our practices would be imprecise because we fail to pick out a unique entity among the many indiscernible cat candidates that are, fully and distinctly, in front of us at t_0. This is not a semantic account of the vagueness of 'Tibbles'; it is an acute version of the problem of the many.

Indeed, the picture is much worse than that. For UDC puts no restriction whatsoever on the number of assignments f such that $f(t_0) = C_0$. Thus, not only would the endurantist be forced to countenance one fully coincident object for each possible referent of 'Tibbles'. By accepting UDC, she would be forced to countenance one fully coincident object for each such assignment. And on any reasonable count, there are uncountably many assignments that fit the bill—uncountably many objects that right now would consist of the very same body cells but that would differ from one another by virtue of differences that would manifest themselves in the future, or that manifested themselves in the past. For the record, these would include objects that suddenly came into existence, such as those whose assignment function is not defined for $t < t_0$, as well as objects that will suddenly pop out of existence, such as those whose assignment function is not defined for $t > t_0$; they would also include objects that are exactly alike and coincide throughout their lives except for some negligible $t \neq t_0$, as well as objects that are completely different and spatially apart throughout their lives except for $t = t_0$; and so on. This plethora of entities would be in one-to-one correspondence with the entities accepted by a perdurantist committed to UDC, so the endurantist is right in rejecting up front any crude objection from ontological parsimony. But the claim that all such entities are entirely present at t_0, rather than merely overlapping at t_0, would deprive the correspondence of any straightforward appeal, and the objection would most definitely strike back.

3. Of course, one could reply that a mereologically promiscuous endurantist is *not* committed to the massive spatial coincidence that we have just described. There are two obvious ways of doing this, at least in principle.

On the one hand, the endurantist could simply accept the plethora of objects that come with UDC while insisting that only one thing exists at t_0, treating composition as identity and identity itself as an "occasional" relation *à la* Gallois (1998), i.e., as a relation that may obtain at some times but not at others. On this view, the vagueness of 'Tibbles' could still be explained in semantic terms: although there is only one cat present at t_0, when the name is introduced, there are numerous descendants that could legitimately qualify as the enduring bearers of that name—numerous cat-like entities sharing the same origin and differing slightly in their persistence conditions. To many philosophers, however, occasional identity is just as unintelligible as ontic vagueness, or wholesale epistemic vagueness, so one can hardly hope to block the argument from vagueness on such grounds.[8]

On the other hand, the endurantist could insist that the plethora of objects that come with UDC are not genuine entities but *entia successiva à la* Chisholm (1976): really, there is just one class of body cells in the location in question at t_0, hence only one cat constituted by those body cells, hence only one candidate for the name 'Tibbles'. What is indeterminate, on this view, is not which of many different enduring *objects* is the referent of 'Tibbles', but only which of many different selection functions f picks out the sequence of those classes of body cells whose members successively *constitute* the one cat that is present at t_0—a temporal variant of a familiar solution to the spatial problem of the many.[9] However, this would hardly qualify as a semantic explanation of the vagueness in question. Constitution is an ontological relation. Thus, if it is indeterminate which sequence is the one whose members successively constitute the single enduring candidate for the name 'Tibbles', then it is indeterminate how things are. Indeed, since a cat can only exist at those times at which something constitutes it, it follows that there are times at which it is indeterminate whether or not the single enduring candidate for the name 'Tibbles' exists. Hence, there are times when the number of objects in existence (including not just body cells and sums thereof, but objects such as cats) is not determinate. If cats were nothing over and above the sums of body cells that successively constitute

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8. Lowe does not consider this possibility, nor does Koslicki. But see Miller (2006: §4).
9. See Lowe (1995). In correspondence, Lowe has clarified that this is indeed how he sees things, his defense of the profligate version of endurantism being meant as a mere formal reply to the argument from vagueness.

them—if they were themselves the *entia successiva* of those sums of cells—then we could still see this as a product of semantic indecision. But to make that assumption is to accept mereological essentialism, and we already know that mereological essentialism provides a (radical) way out of the argument from vagueness (see Sider 2001: 180ff). The argument is meant to apply to those versions of endurantism that accept the initial assumption to the effect that a cat is a genuine denizen of reality that *can* change its mereological composition, so this option is not on the table. The indeterminacy is truly ontological.

4. To be sure, there is a third way a promiscuous endurantist could avoid the objection from massive coincidence. So far we have been following Koslicki, Miller, and Lowe in assuming that endurantism finds the idea of temporal parts a repugnant one: to say that every object is "wholly present" at each moment at which it exists is tantamount to saying that no object can be partially present at any time, hence that no object can have proper temporal parts. Yet this popular line of thinking is by no means obvious. For one thing, the notion of something being *wholly present* at a time (hence the notion of something being partially present) is notoriously a slippery one. There are two *prima facie* plausible ways of understanding this notion:

(a) x is wholly present at t iff everything that is part of x at t exists at t.
(b) x is wholly present at t iff anything that is ever part of x exists at t.

As Sider (2001: 63ff) pointed out, however, neither formulation does the job properly. The first is too weak, since every perdurantist will agree with the right-hand side of (a); the latter is too strong, since only a mereological essentialist would accept the right-hand side of (b).[10] Secondly, and more importantly, the notion *of temporal part* is itself somewhat slippery in this context. Sider's by now classical definition is as follows (p. 59):

(c) x is a temporal part of y at t iff (i) x exists only at t, (ii) x is part of y at t, and (iii) x overlaps at t everything that is part of y at t.

On this basis, perdurantism is then identified with the thesis that, necessarily, every object has a temporal part at each moment at which it exists. As

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10. For some recent attempts to define 'x wholly present at t', see Hughes (2005) and Crisp and Smith (2005).

Fabrice Correia (2005b: 500) pointed out, however, in the present context this definition is far from innocent, since it makes UDC incompatible with endurantism: *every* object turns out to have a Siderian temporal part at each moment it exists, namely, that instantaneous part whose existence is guaranteed by the smallest function f that assigns to the moment in question the singleton of the object itself.[11] Thus, one way or the other, the idea that endurantists are not entitled to temporal parts is not as obvious as one might have thought. Endurantism—one could argue—denies that persisting objects have a temporal dimension, in the sense of being "spread out" in time, but that doesn't automatically preclude them from countenancing proper temporal parts.

To illustrate this last thought, consider a butterfly and the caterpillar it came from: isn't this a case where an endurantist might be willing to say that we have two distinct things, one existing after the other, that make up a single organism? As Correia puts it (p. 501):

> on the ordinary view, both the caterpillar and the butterfly have a life strictly shorter than the life of the organism, and at each time at which any one of them exists, it coincides [mereologically] with the organism. So … both the caterpillar and the butterfly are proper temporal parts of the organism.

In a similar spirit, Christopher Hughes (2005: 473f) suggests that an enduring statue made from some enduring clay may be regarded as a proper temporal part of that portion of clay (assuming the clay outlasts the statue). And one could apply the same suggestion to describe objects such as Sydney Shoemaker's (1988) klables as enduring entities whose morning parts are located in the kitchen while their afternoon parts are located in the living room. By analogy, then, one could describe the Tibbles scenario as one in which the plethora of cat candidates (and more) that come with UDC

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11. More precisely: let y be any object, t any instant at which y exists, $I = \{t\}$, and f the function on I defined by $f(t) = \{y\}$. Then UDC implies that there is some (instantaneous) object x that exists just at t and that at t is composed exactly of y. If 'x is composed of y at t' means (plausibly) that x overlaps at t everything that overlaps y at t, and vice versa, then it follows that x is a temporal part of y at t. Since y and t were arbitrarily chosen, this means that UDC implies that every (persisting) object has a (proper) temporal part at each moment at which it exists—perdurantism. Perhaps this is why Sider thinks that a commitment to instantaneous objects would put the endurantist in an embarrassing situation, as seen in the quotation in Section 2.

are not mereologically disjoint enduring objects massively colocated at t_0 but, rather, enduring objects that literally coincide (mereologically) at t_0. In other words, one could describe the Tibbles scenario as one in which the "longer" cat candidates—those that last longer—include the "shorter" ones as proper temporal parts *even though* each such thing is strictly speaking three-dimensional. And if this description is accepted, then the one-one correspondence between the endurantist's plethora of objects and the perdurantist's plethora would indeed be on equal footing, both ontologically and with regard to their role in the semantic account of the vagueness of 'Tibbles'.[12]

Is the description acceptable? Doubtfully. One problem is that the appeal to temporal parts does not by itself secure ontological parsimony. Take this caterpillar in front of you, which is located at region α, and consider the following questions:

(1) How many caterpillars are there in front of you (at α)?
(2) How many butterflies are there in front of you (at α)?
(3) How many enduring organisms are there in front of you (at α)?

On the view under examination, we are supposed to answer 'One' to (1) and 'Zero' to (2), since the butterfly comes into existence as the caterpillar goes out. What about (3)? If the answer were 'One' (on account of the fact that right now the living organism is a caterpillar), then we would be back to occasional identity: the one organism that is now identical to a caterpillar would, by the same pattern, be identical to a butterfly at a later time, and the caterpillar is not the butterfly. So the answer must be: 'Two' (or more), viz. a shorter-lasting caterpillar, x, and a longer-lasting organism, y. Construing one enduring organism as a mereologically coincident temporal part of the other may help explain a number of things. It may even render the duplication tolerable. But a duplication it is.[13]

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12. Correia (2005b) makes this suggestion in his reply to Varzi (2005), where the objection from massive coincidence articulated in this paper is first outlined. For a more general account, see Correia (2005a).
13. Compare: a philosopher such as Thomson (1998) would not hesitate to acknowledge that a statue is a spatial part of the lump of clay that constitutes it, and vice versa, holding that this would explain why the statue and the clay share all sorts of properties such as shape, weight, etc.; but that doesn't take away the fact that her constitutional ontology makes room for *two* objects in the same place at the same time.

Moreover, and quite independently, the analogy between the caterpillar/butterfly case and the Tibbles case is moot. Pre-analytical intuitions about the former seem to depend significantly on the fact that 'caterpillar' and 'butterfly' are good candidates for what Wiggins (1980) called "substance sortals", and a friend of sortalist metaphysics might therefore be inclined to think that they come with different identity criteria: no caterpillar is a butterfly, though a caterpillar and a butterfly may be construed as making up a single living organism. By contrast, the putative temporal parts of the "longer" cat candidates that are present at t_0, when the name 'Tibbles' is introduced, are sortally similar. It is precisely because they are sortally similar that the endurantist's willingness to acknowledge cases of colocation of sortally different objects (such as a statue and the clay it comes from) is not sufficient to make sense of the plethora of colocated objects that come with UDC. Thus, if x_1 is the enduring cat candidate that lasts until time t_1 and x_2 the enduring cat candidate that lasts until a later time t_2, the thought that x_1 is a temporal part of x_2 cries for a justification that the caterpillar/organism example can hardly deliver.

So perhaps endurantism is indeed compatible with temporal parts; but insofar as such parts do not belong to temporally extended wholes, their acknowledgment falls short of dispensing of the problem. Endurantism is stuck with a choice between massive coincidence and occasional identity—if not with an ontological account of the vagueness of persistence.

5. We conclude that the endurantist's *ego quoque* fails. Yes, there is no obvious reason why the endurantist should reject UDC, hence no obvious reason to conclude that vagueness creates a problem for her conception of persistence. There are, however, perfectly good reasons why the endurantist should better avoid UDC. And there are good reasons to suppose that even UDC, if accepted, would fail to provide the endurantist with the necessary resources for explaining vagueness—diachronic vagueness—in familiar semantic terms.

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