

Substrata and Properties: From Bare Particulars to Supersubstantialism?

Matteo Morganti

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Abstract The theory of the ontological constitution of material objects based on bare particulars has recently experienced a revival, especially thanks to the work of J.P. Moreland. Moreland and other authors belonging to this ‘new wave’, however, have focused primarily on the issue whether or not the notion of a ‘bare’ particular is internally consistent. Not much has been said, instead, about the relation holding between bare particulars and the properties they are supposed to unify into concrete particulars. This paper aims to fill this gap and, making reference primarily to Moreland’s version of the theory, highlight some aspects and consequences of it that have not received due attention so far. It is argued that, given a number of seemingly plausible metaphysical assumptions, supporters of bare particulars are led to either endorse supersubstantialism—the view that material objects are identical with regions of space–time—or abandon their theory altogether. Whatever one makes of the proposed conclusion, a dialectical structure emerges that puts precise constraints on bare particular ontologies and, therefore, will have to be taken into account in future discussion of these and related topics.

Keywords Bare particular · Substratum · Property · Identity · Supersubstantialism

1 Introduction: The Return of Bare Particulars

A long-established ontological view holds that concrete particulars, i.e. material objects, are constituted of properties plus *bare particulars* (henceforth, BPs): property-less, non-repeatable entities that play the role of bearers of properties¹ and/or individuators of objects. This view is supported by the intuition, already expressed among others by Aristotle and Locke, that every thing must (partly) consist of something over and above the properties that *it* exemplifies. And the idea

¹Normally intended as universals, though they need not be.

M. Morganti (✉)

Department of Philosophy, University of Rome ‘RomaTRE’, Via Ostiense 234, 00144 Rome, Italy

e-mail: mmorganti@uniroma3.it

URL: <http://host.uniroma3.it/docenti/mmorganti/index.htm>

of a fundamental “substratum” also fits naturally the subject–predicate structure of our language. In view of this, many regard the BP theory as the default position with respect to the issue of the ontological constitution of material objects.

On the other hand, intuitive as it may be, the BP theory has received a lot of criticism in the last hundred years or so. A traditional line of scepticism comes from empiricist circles. If direct experience (the Russellian ‘acquaintance’) is essential for knowledge and all we truly know of things are their qualities, empiricists argue, how can we get to know BPs? If, as a matter of principle, we cannot, on what basis do BP theorists feel allowed, or even compelled, to introduce such entities in their ontology? Whether or not this criticism is actually cogent (Allaire (1963), for example, claims that BPs are in fact also known by acquaintance, as the source of the numerical distinctness of things—a somehow controversial claim), it has by now lost much of its force. Indeed, that metaphysics should conform to a strict empiricist methodology is explicitly denied by most contemporary metaphysicians (see, e.g. J.P. Moreland (1998; 254)). But consider now the following objection, formulated in more or less these terms by Sellars (1952; 184): “Properties are exemplified by BPs” means, in effect, that “If a property is exemplified by something, then that something is such that it exemplifies no properties” (or, slightly differently, “Anything that exemplifies a universal is such that it doesn’t exemplify any universals”), which is self-contradictory. To use Armstrong’s terminology (2000; 78–79), the BP theorist is caught in an ‘antinomy of bare particulars’: BPs are necessary constituents of objects because they act as property-bearers; however, since they are bare, BPs do not exemplify properties, while objects exemplify properties; hence, objects cannot be essentially constituted by BPs as property-bearers. The usual answer to this objection is that a BP is only bare if it is considered ‘in abstraction’ from the fact that it actually instantiates properties. This is directly connected with the distinction between ‘thick’ and ‘thin’ particulars: the former being the sort of things possessing properties that we experience on a daily basis; the latter to be understood instead as whatever is left when we ‘subtract’ all properties from ordinary objects. The question, of course, is whether the distinctions and qualifications just introduced—based on rather vague notions of abstraction and subtraction—really constitute sufficient ground for responding to detractors of the BP theory.

Important work in this sense has been done by Moreland in the last 10–15 years, and the theory has certainly achieved a better status since. However, the debate about the internal consistency of BP ontologies still continues and, at present, the latter are far from being the most popular viewpoint on the nature of concrete particulars.

The present paper takes on the task of contributing to this debate, but with a fundamental new twist: that of pointing out and discussing entirely different problems from those considered so far in (most of) the literature, and suggesting that it is these problems that should really be regarded as central.

The structure of the essay is as follows. In a brief stage-setting section (Section 2), Moreland’s theory is looked at more closely and it is argued that the criticisms that have been levelled against it are ineffective. In the following section (Section 3), potential new problems for BP ontologies, having to do with the somewhat unexplored relationship between BPs and *empirical* (i.e.—very roughly—physical, causally efficacious) properties, are pointed out. It is argued that—at least against the background of certain seemingly plausible metaphysical assumptions—the analysis of such relationship may be taken to provide reasons for abandoning the theory

altogether. This, unless one adopts a rather unorthodox version of the BP ontology, based on some form of substantivalism about space (and, perhaps, time). This variant of the BP theory is sketched and commented on in the subsequent section (Section 4), where the overall dialectic is also summarised.

The structure and conclusion of the argument might be equally taken to support the BP theory and to count against it—the paper is not intended to offer a final pronouncement in this sense. The take-home message is, instead, that, whatever one's preferences, an important dialectical structure emerges that should be taken into account in all future discussions of these and related topics in metaphysics.

2 More on Moreland

In order to dispose of the objection that BP ontologies are inevitably inconsistent, Moreland introduced a distinction between what he calls the *tied to* and the *rooted in* relation, presenting the former as an external relation holding between BPs (i.e. thin particulars) and properties, and the latter as a relation connecting properties and concrete (thick) particulars in a part-to-whole link (essentially, the converse of the exemplification relation). According to Moreland (see, for instance, 1998; 257–258), this suffices for conclusively dispelling doubts of the sort voiced by Sellars and substantiated in the antinomy of bare particulars. For, the distinction just introduced allows one to say without contradiction that BPs are both essentially bare and the basis for the possession of properties by material objects. The idea is simply that a BP *a* can become tied to, say, properties P, Q and R, but always remains bare in itself, because ontologically distinct from P, Q and R; while the rooted in relation connects instead each one of P, Q and R with the (*a*, P, Q, R) complex, so admitting (in fact, requiring) properties on both of its sides, and consequently allowing one to conceive of essentially non-bare (concrete) particulars (partly) constituted by essentially bare particulars.

Objections, not surprisingly, have been formulated to this renewed version of the theory too. Mertz (2001; 50–51), for instance, argues that on Moreland's view, since every BP can become tied to any property and every property can become tied to any BP, there is no reason why the same BP should not become tied to contradictory properties², which is obviously unacceptable. This criticism, though, is not particularly worrying: for, the constraints that apply to the process (of exemplification, but also of bundling—property-only ontologies, it seems, stand or fall together with the BP theory in this respect) can lie entirely in the relation, and need not be sought exclusively in the relata. Another alleged difficulty is illustrated by Preston (2005): according to him, BPs are connected to both properties (as universals)—so giving rise to specific property-instances—and property-instances—so giving rise to ordinary concrete particulars; but this is unacceptable because it entails that BPs are somehow mysteriously 'duplicated', and present in something that is externally related to themselves. This is incorrect, though: in Moreland's view, BPs are *only* connected to (in particular, tied to) properties, and property-instances (i.e. BP-plus-property complexes) are only related to (in particular, rooted in) *concrete* particulars. No contradiction or ambiguous duplication of roles arises here.

² Mertz uses an analogy with the fact that both Square and Circle are contrary to Triangle, so that two incompatible entities are both related, via the same relation, to a third one.

Doubts about the bareness of BPs are not easily defused, however. In fact, *prima facie* it looks as though some properties can, and in fact should, be attributed to BPs in order to be able to conceptualise them and talk about them meaningfully, but no satisfactory account of them can possibly be given. Think, for example, of sentences like ‘BPs are simple’, ‘BPs are particulars’ or ‘BPs are capable of giving rise to concrete particulars’: do these not refer to actual properties—in fact, the distinctive, fundamental metaphysical features of all BPs? The issue appears especially relevant in the context of Moreland’s version of the theory, given that he contends that existence is the having of a property (or the being had by a property) (1998; 261), so *requiring* that (actual) BPs possess properties. Now, suppose one agrees with this, and assumes that BPs possess essential characteristics. How exactly are the latter to be conceived of.

The tied to relation cannot be invoked because the properties in question (simplicity, particularity, ability to constitute concrete particulars etc.) are essential to BPs: indeed, if these properties were distinct entities externally tied to BPs, the question concerning the basic metaphysical nature of the latter would remain unanswered. At the same time, the basic metaphysical features of BPs cannot be rooted in BPs: otherwise, given the basic tenets of the theory, an analysis in terms of part and whole should be possible which, by assumption, is not (if BPs had properties rooted in them, one would have to postulate more basic BPs tied to those properties, so starting a vicious regress). How can the BP theorist, and Moreland in particular, reply to all this?

In a co-authored paper, Moreland suggests a way out of this conundrum. It consists of the idea that the metaphysical properties

“said to be necessary for bare particulars are not genuine properties; these include simplicity, particularity, unrepeatability and those of the three categories of transcendental, disjunctive and negative properties” (Moreland and Pickavance 2003; 10).

What this means is that there are things that can meaningfully be said of BPs but have no direct ontological counterpart. For instance, what Moreland and Pickavance call ‘transcendental’ predicates—such as, say, ‘is coloured if green’—and disjunctive predicates—e.g. ‘is either coloured or not coloured’—only express logical facts about property-instantiation in general; they do not denote actual, full-blown properties of the things they are predicated of. Similarly, negative properties such as, for instance, not being black are not genuine properties, but rather by-products of a *lack* of certain qualities (in the present example, blackness). The basic metaphysical properties of BPs, Moreland and Pickavance contend, are analogous to negative properties: the ground for the truth of, say, ‘BP *a* is simple’ is simply the fact that *a* does not have complexity; as for particularity/unrepeatability³, it similarly reduces to lack of repeatability, i.e. inability to exist at many place simultaneously.⁴

³ Moreland and Pickavance suggest a distinction between these two features that seems ungrounded. Here, particularity and unrepeatability will be regarded as one and the same thing.

⁴ As argued by Pickavance (2009), that denoted by the predicate ‘is constituent-dependent on...’ is also to be considered as a relation that is not metaphysically genuine. (Pickavance points this out explicitly with the aim of answering an objection formulated by Davis (Davis (2003; 541–547)).

One may object that facts of simplicity and particularity are more fundamental than facts of complexity and repeatability, and so the former should not (and cannot) be analysed in terms of the latter, but rather the converse. If one finds this compelling (as I, for one, do) and yet wants to stick to the BP theory, s/he has to give up the analogy between metaphysical and negative properties proposed by Moreland and Pickavance. The only alternative remaining is, at that point, to insist that particularity and simplicity are fundamental and genuine aspects (to use a somewhat old-fashioned but still effective expression, ‘ways of being’) of BPs but do not correspond to specific entities endowed with autonomous existence. This form of (perhaps circumscribed) property nominalism safeguards the claim that the mere existence of a BP *a* is the truth-maker for statements such as “*a* is simple” etc. without *ipso facto* accepting the merely ‘negative’ characterisation of the metaphysical properties of BPs offered by Moreland and Pickavance.

The question arises, of course, whether talk of ‘aspects’, ‘ways of being’ and the likes is not just a way of giving the problem a name without solving it. Without entering into a detailed discussion, suffice it to say here that, although this does not seem to be the case at the level of ontological constitution, the need for something basic and primitive at the level of metaphysical explanation is undeniable. And this seems to support a generally deflationary attitude that, in the present case, gets translated into the thought that it is better to simply stop worrying about the internal (in)consistency of the notion of a BP, and accept the idea that the bareness of BPs is compatible with their possessing ‘minimal clothes’—that is, a number of characteristics that entail no ontological proliferation and no contradiction with the proposed theory. In what follows, it will be assumed that this is indeed the case.

3 BPs and Empirical Properties: Do Substrata Need More Than Minimal Clothes?

In a rather neglected passage, Campbell argues that:

“All causal action is exerted by way of the properties of things and all effects are effects on the properties of things. The substratum, precisely because it is without properties, including passive powers, ought to be totally immune to all causal activity. A fortiori, it ought to be unscathed by every destructive process. Yet if we introduce metaphysically indestructible substrata, we are undertaking a priori natural philosophy of a most discreditable kind. What items can you produce or postulate, belonging to the natural order, that are necessarily immune from destructive alteration?” (1990; 9).

What Campbell seems to have in mind here is that a (the?) problem with BPs is that by positing them one postulates entities that remain forever outside the natural order of things, essentially based on the possibility of change, interaction and, most importantly, creation and destruction. In particular, change always involves qualities and, consequently, BPs are in principle unable to change in any way. Of course, BP theorists can simply *assume* that BPs are not involved in causal processes, so that whenever a concrete particular ceases to exist

what used to be its bare ‘core’ continues to be an actual entity. Still, it is undeniable that BPs so understood are endowed with a peculiar feature the avoidance of which in one’s ontology would be welcome. After all, that even the most radical annihilation of a material object necessarily falls short of destroying it entirely—in particular, that it fails to affect the very entity that is regarded as constituting the *material* substratum of that object—appears quite odd. Moreover, and perhaps more importantly, in such a framework a problem also arises concerning the nature of identity. Chisholm (1967) complained that if there are ‘bare identities’—that is, if the identity of objects is independent of their qualitative aspects—then there must be a possible world that is a duplicate of the actual world except for the fact that in this world, say, you play the role that I play in the actual world and vice versa, which is quite hard to accept. But if BPs survive every causal process involving the corresponding concrete particular, and assuming *that the identities of things are entirely determined by their BPs*, then objects possess bare identities, and Chisholm’s worry immediately becomes pressing. In particular, the threat envisaged by Chisholm can be seen to arise in diachronic, rather than trans-world, fashion: every BP that individuates a concrete particular renders the latter indestructible and able to survive even the loss of all its properties (including essential ones) and, possibly, the acquisition of other ones (or exemplification of the same ones at a different time, discernibility is not an issue here). With this, Campbell’s objection immediately extends to concrete, rather than only bare, particulars, obviously becoming much worse.

Notice that the problem here is not just that the BP theory entails haecceitism, but that it entails *extreme* haecceitism. The difference is important. As a general doctrine, haecceitism says, roughly, that it is possible for distinct possible worlds to differ with respect to what is true *de re* of the things inhabiting them without differing qualitatively. In a *moderate* form, however, haecceitism also includes the thesis that the objects’ identities are *logically connected* to their qualities. This view can certainly be—and has in fact been—defended as plausible (see, for instance, Adams (1979)). In its extreme version, however, haecceitism also entails—as we have just seen—that the identity of objects is entirely independent of those objects’ qualities. And this view is, not surprisingly, far less widespread.⁵

Indeed, supporters of BPs openly claim that their theory does not entail belief in bare identities and extreme haecceitism; and, to do so, they give up the abovementioned assumption about bare particulars as the sole source of identity of concrete particulars. Pickavance (2009), for instance, argues that, although all concrete particulars are *individuated* by their BPs, their *identity* is only determined by the whole constituted by those BPs together with at least some properties, tied to those specific BPs during a specific interval of time, and essential for the corresponding concrete particular.

This, however, is insufficient as it stands to solve the problem pointed out a moment ago. For, even if one claims that the identity of objects is determined by BPs and properties together, if BPs are indestructible it is still the case that the same BP, by becoming tied to new (essential) properties after ceasing to be tied to the last

⁵ This does not mean that there is a general consensus against extreme haecceitism. Salmon (1996) goes so far as to present a putative proof of extreme haecceitism (for a response, see Catterson (2008)).

(essential) one of a previous set of properties, can individuate any number n of concrete particulars at n different times (better, periods of time). But, again, could it be the case, say, that I have among my ontological constituents the very same BP that constituted Julius Caesar? It looks as though one is only dealing with a form of ‘pseudo-moderate’ haecceitism here that is basically as hard to accept as the form of haecceitism Chisholm complained about.

A first pair of assumptions that it appears sensible to make⁶ is, then, that:

- (A1) No metaphysical posit supposed to account for the fundamental structure of the material world should be made a priori immune to natural processes;
- (A2) An ontological account of concrete particulars shouldn’t entail extreme or pseudo-moderate haecceitism.

Now, drawing on a passing remark by LaBossiere (1994; 370), one may suggest that Campbell’s challenge can be met by claiming that, necessarily, each BP is tied to at least one property throughout its entire existence. That is to say that BPs always exist ‘dressed’ with more than the ‘minimal clothes’ constituted by their fundamental metaphysical properties considered above, since they are always tied to at least one empirical property. Indeed, on this construal, it becomes possible to contend that BPs are always fully immersed, as it were, in the causal structure of the world because they always participate in at least one tied to relation, so partaking in causal interaction via the property or properties they are attached to, *and ceasing to exist when they are not tied to any property any longer*.

However, while this satisfies (A1), it is not obvious that it satisfies (A2). For, the proposal may be understood in two rather different ways, entailing rather different consequences with respect to the problem at hand. One possible interpretation is that, *at each time* a given BP exists, there is *at least one* property that BP is tied to. In a formal rendering (B stands for the property of being a bare particular, P for that of being a genuine empirical property, E for the relation of existing at a time, T for the relation of being tied to, and $\forall t$ represents quantification over time instants):

$$(a) \quad \Box \forall x(Bx \rightarrow \forall t(xEt \rightarrow \exists y(Py \wedge yTx))).$$

On this construal, however, the proposal does not prevent entirely different sets of properties from being tied to the same BP at different times; consequently, it fails to represent a solution to the problem with haecceitism, so failing to satisfy (A2).

A better, alternative interpretation is that, necessarily, each BP is tied to at least one *and the same* property throughout its entire existence. Formally:

$$(b) \quad \Box \forall x(Bx \rightarrow \exists y(Py \wedge \forall t(xEt \rightarrow yTx))).$$

In this case, both requirements (A1) and (A2) are met. This is not surprising: what (b) expresses is, in effect, a modification of Pickavance’s view, to the effect that not only is the identity of each concrete particular determined by a specific BP together with some specific properties, but it is also the case that each BP is *necessarily* tied

⁶ Notice that here, as in what follows, the assumptions are by no means presented as obviously compelling or inevitable. The relevant claims have to be understood as conditional claims. In this case, the idea is, for instance, that *if* one thinks that non-moderate haecceitism is implausible, *then* one will have to take Campbell’s objection seriously and formulate the BP theory accordingly.

to *those* properties. This is, clearly, a way of establishing the logical connection between non-qualitatively grounded identities and qualities distinctive of moderate haecceitism.

But even this proposal is not entirely exempt from difficulties. A first problem is that it makes every BP *existentially dependent* on one or more specific properties. And since—according to BP ontologies—it is also the case that properties are existentially dependent on the specific BPs that constitute the concrete particulars those properties belong to, mutual ontic dependence arises. Supporters of the view that ontic dependence *must* be well-founded, i.e. non-circular, would suggest that this suffices for rejecting the theory. Lowe, for instance, argues that, since ontic dependence is ultimately rooted in identity-dependence⁷, this functional relationship cannot be circular (in Lowe’s terminology, symmetrical) because:

“individuation, in the metaphysical sense, is a determination relation: an individual object’s individuator is the entity, or set of entities, which determines—makes it the case—that the individual object is the very object that it is. As such, individuation is an explanatory relation: an individual object’s individuator explains why that individual object is the very object that it is. But it would seem that explanatory relations, quite generally, cannot be symmetrical in character” (Lowe 2003; 92–93).⁸

Something similar is maintained by Fine (1994). Hence, if one accepts the assumption that:

(A3) Ontic dependence must be well-founded,

the BP theory again appears in trouble. Of course, (A3) need not be regarded as compelling. The burden of proof, however, seems to be on supporters of BPs, especially if one brings considerations of metaphysical economy and simplicity into play: Why should one postulate two distinct ontological categories in the first place, if it follows a priori from his or her theory (once refined so as to meet Campbell’s challenge) that tokens of each category never exist separated from tokens of the other category (and in fact existentially depend on the latter)? Is not the violation of (A3) sufficient for putting into doubt the conviction that alternative ontological views that do away with the two-category framework altogether cannot perform the same explanatory work as the BP theory?⁹ Of course, these are not intended to be conclusive arguments. They should, nevertheless, give some pause for thought to the BP ontologist.

A possible reaction to this is to say that, strictly speaking, BPs are existentially dependent on properties but not property-instances, while property-instances but not

⁷ Detailed arguments in support of this claim are given in Lowe (2005).

⁸ Lowe makes it clear that ‘explanation’ does not have here an epistemic connotation but a metaphysical one. For the necessity of asymmetry for explanation relations, he refers to Ruben (1990; Ch. 7).

⁹ For instance, resemblance nominalism (see, e.g. Rodriguez-Pereyra (2002)), while preserving the idea that concrete particulars are not reducible to their qualitative aspects and are, instead, ontologically prior to them, does not assume that the fundamental ‘material nuclei’ of objects constitute an autonomous ontological category. In relation to this, it is worth mentioning that, in a recent discussion of BPs, Davis and Brown (2008) have proposed an ontology of ‘simple aspected particulars’ connected to their properties essentially and individuated by haecceities.

properties are existentially dependent on BPs. That is, that BPs only exist tied to certain universals—so giving rise to specific instances thereof—but the latter exist independently of whether or not any BP instantiates them.¹⁰ If this is correct, then it is true that no circularity of ontic dependence arises. And this option appears especially natural in the context of Moreland’s version of the BP theory, where the distinction between properties and property-instances is drawn quite sharply and it is explicitly contended that BPs are tied to the former, not the latter. However, whether or not one is convinced by this counterargument, the problem still persists. For, think now of BPs and properties as universals. For the BP ontology to truly solve the difficulty with haecceitism, we have seen, it must be the case that each BP that individuates a concrete particular is necessarily tied to that concrete particular’s (essential) empirical properties throughout that BP’s existence. But this means that, in spite of the fact that, *ex hypothesi*, both universals and bare particulars obey no constraint whatsoever as to which bare particulars and which universals, respectively, they can become tied to¹¹, the following must be the case: *every specific* BP must be *necessarily* tied to *one specific* property (if not more) throughout its entire existence; consequently, certain universals (regardless of how many other instances they have and how many other BPs they become tied to) *have to* be tied to certain specific BPs (i.e. exemplified by some specific concrete particulars) as long as the latter exist. But how is this fundamental metaphysical fact of necessary connection (albeit not of circular dependence) to be explained? What is it, exactly, that some properties are essential to objects? As a matter of fact, it looks as though, if entities belonging to an ontological category can become connected to entities belonging to another category and no constraints exist on this process, the highest level of free (re)combination should be allowed. This will appear maximally plausible to those who embrace (modern-day variations of) Hume’s Dictum that ‘there are no metaphysically necessary connections between distinct, intrinsically typed, entities’.¹² But this maxim does not hold in the scenario under scrutiny.

Importantly, in the present context the endorsement of Hume’s Dictum (let us refer to it as assumption (A3’)) leads to exactly the same results as the acceptance of (A3): i.e., that option (b) above is, after all, not a compelling answer to Campbell’s objection to BPs. As a consequence, again one may conclude that there is sufficient reason for putting into doubt the existence of BPs as items belonging to a well-defined autonomous category, and opting instead for more economical one-category ontologies.

¹⁰ Another way for the BP theorist to obtain the same result is to claim that property-instances are numerically unique and primitively individuated *tropes* that, as such, can exist independently of BPs. However, the large majority of supporters of BPs, including Moreland, identify the fundamental (if not unique, as in Moreland’s case) role of BPs with that of individuators of concrete particulars and their properties. Clearly, introducing tropes makes this function unnecessary, so directly leading one to question the BP theory itself. More generally, it looks as though the introduction of BPs in one’s ontology should not dictate how one should conceive of properties.

¹¹ Of course, other than the constraints preventing contradictory properties from being exemplified by concrete particulars (see above). Pointing at these constraints does not help the BP theorist here.

¹² Notice that this does not conflict with the existence of constraints on *how* exactly entities of one category get connected to entities of the other. For detailed discussion of Hume’s Dictum, see Wilson (2010).

4 (Super)substantivalism as a Last Resort

Before continuing, let us take stock. So far, it has been argued that, assuming that:

- (A1) No metaphysical posit supposed to account for the fundamental structure of the material world should be made a priori immune to natural processes,
- (A2) An ontological account of concrete particulars should not entail radical or pseudo-moderate haecceitism,
- (A3)–(A3') Ontic dependence must be well-founded, and there cannot be metaphysically necessary connections between distinct, intrinsically typed, entities,

it follows that BP ontologies—while probably unscathed by other criticisms—have problems when it comes to accounting for the relationship between BPs and genuine empirical properties. In particular, as we have seen, Campbell points out that BP ontologies may violate (A1), and this may in turn entail an implausible form of haecceitism, hence a violation of (A2). This leads BP theorists to establish a tight connection between BPs and empirical properties. But this can only be done in such a way that either Campbell's objection is neutralised but the problem with haecceitism is not; or both difficulties are solved but one establishes a necessary connection between distinct existences that either is circular (so violating A3) or falls foul of Hume's Dictum (contra (A3')). Is there anything else the BP theorist can say at this point?

The only option remaining is the most radical one: to simply refrain from 'dressing up' BPs with genuine, empirical properties and allow instead for the possibility of 'truly bare' BPs (TBPs), that is, BPs only endowed with the minimal clothes represented by their fundamental metaphysical properties. Of course, this means to accept that BPs are actually immune from change and destruction, so opening the way to Campbell's objection. The latter, however, would lose force if one could identify BPs with something that indeed appears *sui generis* with respect to the natural order of things.

But there is a natural candidate for playing this role! If *TBPs are identified with points of space*,¹³ indeed Campbell's objection appears not to be fatal: for, it is far from absurd to think that points of space may exist 'on their own' and fail to get involved in causal interaction, and yet be perfectly respectable inhabitants of the physical world. Sider (2006), for one, does contend that points of space can and should be understood as TBPs. Clearly, those BP ontologists who endorse this view had better claim that the *only* existing BPs are points of space, otherwise - besides having to draw a principled distinction between different types of BPs - they would only obtain a partial solution to the problem at hand.

Obviously enough, this proposal requires substantivalism about space, for BPs (i.e. points of space) are necessary for objects to be constituted and, as a consequence, space cannot be reduced to a network of relations among objects. But there is more. Since BPs are the material substratum of objects, the theory being considered in fact amounts to giving up the *dualist* assumption that there are two sorts of substances, space and matter. That is, not only does it lead to

¹³ Or at any rate, minimal regions of space, conceived in harmony with physics (see Braddon-Mitchell and Miller (2006)). We will talk of points and regions more or less interchangeably in what follows, as nothing in the arguments being presented hinges on this.

substantivalism: it entails the endorsement of so-called *supersubstantivalism*, the view that material objects are *identical with* spatial regions (tied to properties). Moreover, since, following the Einsteinian revolution, there is a more or less universal consensus in contemporary physics that space and time should be regarded as a unitary four-dimensional whole, one is more or less directly led to four-dimensionalism—the view that material objects are extended in time as well as in space, and are, therefore, to be identified with ‘worms’ of sorts inhabiting a block universe (or, alternatively, with continuous ensembles of instantaneous ‘stages’).¹⁴ One thus obtains, as a synthesis, four-dimensionalist supersubstantivalism, namely (as the readers will be able to guess) the view that material objects are identical with space-time regions tied to properties.¹⁵

What is the BP ontologist to make of all this? Is the landfall in the four-dimensionalist supersubstantivalist harbour a good thing for his/her theory? Here, there is only space for a brief general review of arguments for and against, but this will be already sufficient for present purposes.

On the positive side, supersubstantivalism has become increasingly popular in recent years—it has been defended, for instance, by Sider (2001); Skow (2005) and Schaffer (2009)—and not without reason. Among other things, it has been presented as more parsimonious than dualism; as able to naturally explain the fact that material objects have geometrical and mereological properties that mirror those of space-time regions and the fact that material objects cannot exist without occupying space-time regions; as being in harmony with General Relativity, where the distribution of matter is given by the stress-energy tensor, which defines a field and is, consequently, naturally interpreted as a property of space-time¹⁶; and as also finding support, for similar reasons, in quantum field theory. As for the four-dimensionalist component, it also appears to bring advantages with itself: for instance, how is one to explain the motion of material objects, given that parts of space do not move around? In a supersubstantivalist setting, this would be a problem, but a four-dimensionalist supersubstantivalist can argue that motions can (and should) simply be reconstructed in terms of continuous space-time trajectories.

Getting back to our main discussion, most importantly, it is a fact that the problems discussed earlier in this paper appear solved with the endorsement of four-dimensionalist supersubstantivalism. If BPs are space-time points (or regions) they can be conceived of as TBPs without for that reason giving rise to the worries fuelling Campbell’s objection (A1). At the same time, the identity of objects is only determined by their corresponding space-time points (or regions) being tied to certain properties (A2), and yet those points or regions are existentially independent of those properties (A3-A3’).

On the negative side, supersubstantivalism certainly is a radical metaphysical view, and one with a number of open issues. To mention one that has been discussed in the literature, the supersubstantivalist has to make sense of modal differences that

¹⁴ I say ‘more or less’ in the main text because, in spite of the obvious significance of Relativity Theory, the debate between three-dimensionalism (i.e. presentism) and four-dimensionalism is still open, and in fact appears to be such that it cannot be settled on the basis of current physics alone.

¹⁵ In this context, the BP theorist will conceive of BPs either as extended four-dimensional simples, or as point-like constituents of instantaneous object-stages, connected to other stages via relations to be further specified. We do not need to pick one particular option here.

¹⁶ The well-known hole argument (see Norton (2008)) is also taken by some to show that General Relativity lends support to (super)substantivalism.

seem to be lost if one endorses it. For example, it could be argued that I could have been to the left of where I actually am, but the space–time region that I currently occupy is essentially where (i.e. the one) it is, hence I cannot be a space–time region.¹⁷ And another potential problem (which, unlike the previous one, has gone unnoticed so far) also exists, having to do with co-located numerically distinct objects: standard quantum mechanics explicitly allows for the possibility of distinct physical systems having the same location—more specifically, the same probability for distinct physical entities to be found in a specific location, where probability assignments, however, have *objective* and not epistemic significance. It thus looks as though supersubstantialists who take quantum theory seriously (or at least understand standardly interpreted quantum mechanics as describing a possible world that they have to account for) will have to say something more about what properties can become tied to space–time regions, and how.¹⁸

One last thing to take into account, which is neither clearly positive nor obviously negative from the perspective of the BP ontologist, is the following. If BPs are points of space, the distance between BP ontologies and property-based ontologies (the bundle view and the theory of tropes) is considerably reduced: *both* alternatives now claim that material objects are constituted by sets of compresent property-instances! (The difference remains, of course, that the former but not the latter is incompatible with relationalism about space, and that in the former but not in the latter BPs are ontological constituent of material objects).

Whether or not the foregoing lends support to the BP theory, as mentioned repeatedly in the course of the paper, here we were primarily interested in illustrating the relevant dialectic and what supporters of BPs have to say to make their theory as plausible and immune from potential problems as possible. And in this sense, given our discussion so far, the endorsement of super substantialism might be regarded as a good move for the supporter of BPs. Of course, though, one may equally well regard supersubstantialism as unappealing. One could, that is, introduce one further assumption, to the effect that:

(A4) (Four-dimensional) supersubstantialism is not a workable account of the nature of material objects.

In view of this, and in conclusion, the argument in the paper can now be summarised as follows. *If* one is persuaded by our earlier analysis and agrees with (A4), one is led to abandon the BP ontology. *If* one is persuaded by our earlier analysis but does not agree with (A4), it is an option for him/her to defend the BP theory in the form of supersubstantialism. *If*, finally, one wishes to defend BPs

¹⁷ Ways out of this have been identified: supersubstantialists can either explain away the relevant differences as appearances; or give up geometrical essentialism—the doctrine that points of space–time have their properties essentially; or abandon compositional essentialism for space–time regions—the view that the latter cannot contain different points in different possible worlds. There seems to be no obvious way to proceed here, but see Skow (2005; paragraphs 3.7–3.8) for the suggestion that giving up geometrical essentialism might be considered the best option because on the basis of General Relativity.

¹⁸ Perhaps, they will have to allow for single BPs—or parts of them, in case they are conceived of as four-dimensional simples—to determine the identity of more than one concrete particular or object-stage; or, maybe, explain away the relevant possibility (in the quantum case, for instance, by shifting to talk about modes of single field-points rather than particles).

but dislikes supersubstantivalism, one has to attack, by providing explicit arguments, (A3) and/or (A3') and/or (A2) and/or (A1).¹⁹ Whatever one's subjective preferences may happen to be, the stage for (more interesting?) future discussion of BP ontologies appears set.

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¹⁹ Notice, in this connection, that Moreland would in fact agree with (A4), as he seems unsympathetic to four-dimensionalism—see his (2003a) and (2003b).