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Are the Realist Bundle Theorists Committed to the Principle of Constituent Identity?

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Abstract: One of the key questions in the contemporary analytic ontology concerns the relation between the Principle of Identity of Indiscernibles (PII) and the Bundle Theory (BT). The majority of authors believe that BT implies PII. Therefore, it is widely believed that the world violating PII presented by Max Black (1952. "The Identity of Indiscernibles." *Mind* 61 (242): 153–64) is also devastating for BT. However, this has been questioned by Rodriguez-Pereyra (2004. "The Bundle Theory is Compatible with Distinct but Indiscernible Particulars." *Analysis* 64 (1): 72–81), who formulated an interpretation of BT with *instances*. Recently Robert (2019. "Can the Realist Bundle Theory Account for the Numerical Difference between Qualitavely Non-discernible Concrete Particulars?" Theorema 38 (1): 25–39) argued that this version of BT is not a constituent ontology and, therefore, Rodriguez-Pereyra's solution comes at a price of excluding bundle theory from the domain of constituent ontologies, and, in this sense, it fails. I question Robert's point by claiming that his account of constituent ontologies is too demanding. In particular, I show that the instance version of BT is compatible with the constrains defining constituent ontologies in general, and therefore Rodriguez-Pereyra's argument is correct.

Keywords: bundle theories, constituent ontology, the principle of identity of indiscernibles, the principle of constituent identity

1 Introduction

One of the most vivid contemporary ontological debates concerns the relation between the Principle of Identity of Indiscernibles and the Bundle Theory. Since many believed that the latter entails the former, the famous example of the universe which violates the Principle of Identity of Indiscernibles presented in the paper of Black (1952) was devastating to the supporters of the Bundle Theory. To the rescue came the article of Rodriguez-Pereyra (2004), where he argued that there is no implication between them. In this argument, he suggested an interpretation of the

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existence of bundles of universals in the world as their instances. One bundle can correspond to several instances. In this way, Rodriguez-Pereyra showed the possibility of the existence of Black's world and proved that the failure of the Principle of Identity of Indiscernibles is compatible with the Bundle Theory.

However, this solution has recently been challenged by Robert (2019). Due to him, the Bundle Theory is an example of constituent ontology, according to which concrete particulars have their own non-mereological structure. However, as Robert demonstrates, the instance view of Rodriguez-Pereyra does violate this definition and as such it is not a version of the Bundle Theory taken as an example of constituent ontology. Therefore the argument with instances should be rejected. In this paper, I will argue that Robert's version of the constituent ontologies is too demanding and, on this basis, undermine his claim that the instance view is incompatible with the assumptions made with constituent ontologies, and therefore, Rodriguez-Pereyra's argument is correct.

2 The Bundle Theory and the Principle of Identity of Indiscernibles

It seems that the discussion about the relation between the Principle of Identity of Indiscernibles and the Bundle Theory is stimulated by pointing out some subtle differences between various formulations of the latter. Therefore, in this Section I will provide rigorous definitions of these views, along with the Principle of Constituent Identity. In order to make my arguments clear, I will formalise these claims in first-order logic. The notation is the following: "$x(y)$" stands for "x is instantiated by y", where x is any universal and y is any particular; by "$x \in y$" I will denote the relation between a given particular y and some universal x that means "x is a constituent of y"; finally, by "$x = y$" I understand the numerical identity of two particulars: x and y. To avoid the objection that my arguments reply only to mock problems generated by the formalisation rather than real claims that someone held, I will present my reasoning also in the natural language.

The key idea of the discussion evoked in this paper is the Principle of Identity of Indiscernibles (PII). There are various versions of PII, depending on the domain of the entities in question. Since here it will be discussed in the context of the Bundle Theory, we will focus on the formulation for universals, which states that:[1]

1 Definitions of PII, BT and PCI are based on the ones from Rodriguez-Pereyra (2004) and Robert (2019), who quote them after Loux (1998), van Cleve (1985), and Armstrong (1978); note that PCI is a PCI* from Rodriguez-Pereyra (2004).

PII For all particulars x and y and every universal z, if z is instantiated by x if and only if z is instantiated by y, then x is numerically identical with y.
Let U be the set of universals and P be the set of particulars. Then:

$$\forall_{x,y \in P} \forall_{z \in U} [(z(x) \leftrightarrow z(y)) \rightarrow x = y]$$

Prima facie, two particulars, indiscernible in terms of universals instantiated by them, are numerically identical. A principle that might look very similar to PII is the Principle of Constituent Identity (PCI), which says that:

PCI For all particulars x and y and every universal z, if z is a constituent of x if and only if z is a constituent of y, then x is numerically identical with y.

$$\forall_{x,y \in P} \forall_{z \in U} [(z \in x \leftrightarrow z \in y) \rightarrow x = y]$$

Both PII and PCI aim to give sufficient conditions to describe a situation in which two universals are numerically identical. However, in the case of PII it is about particulars *instantiated* by some universals, while PCI describes particulars that are *constituted* by them.

The last, and probably the most questionable, definition in this article is that of the Bundle Theory (BT) of particulars. Roughly speaking, according to it, particulars are constituted by some entities which they instantiate, i.e. particulars are *bundles* of these entities. In this article we restrict our attention to a *realist* version of BT, which says that particulars are bundles of *universals*.[2] In order to understand this view, it might be helpful to compare it to the rival conception: the theory of *substratum*. This postulates the existence of irreducible bearers of universals called *substrata* that are allegedly essential constituents of all particulars existing in the world. In the Bundle Theory there is no room for such beings. It can be summarised in the following way:

BT For every particular x and every universal y, y constitutes x if and only if x instantiates y.

$$\forall_{x \in P} \forall_{y \in U} [y \in x \leftrightarrow y(x)]$$

Confusion is twofold about BT, as vividly discussed in the philosophical literature of last decades. Firstly, its formulation is controversial; supporters of many similar but different views want to identify themselves as proponents of the Bundle Theory (see e.g. van Cleve (1985) and Casullo (1988)). What is more, the multitude of these formulations is a reaction to many objections to the basic version of the Bundle Theory (see e.g. van Cleve (1985)). However, there are still philosophers who support

2 The reason for this choice is that the realist version of the Bundle Theory is the one discussed in papers which are the subject of this article, e.g. by Rodriguez-Pereyra (2004) and Robert (2019). However, this is not the only possible variant of BT. For example, those with nominalist inclination can claim that particulars are entirely constituted by *tropes*, see e.g. Stout (1952), Campbell (1990), and Williams (1953).

this view. This paper should be particularly appealing to them, since one of its conclusion is that BT cannot be undermined as easily as it seemed for a while.

Now, having stated all the necessary definitions, we can move to discussing the link between them. It seems that after the publication of Black's paper in 1952, there was a common belief among philosophers that the Bundle Theory and the Principle of Identity of Indiscernibles are closely related. In particular, they believed that BT implies PII:

Theorem: BT → PII

Attempting to write down the proof of this theorem in a formal way should reveal that one needs to assume PCI.[3] One example of such a proof may go as follows:

Proof: Let x, y be any particulars and z be any universal. Then:

1. For every universal z, z is instantiated by x iff z is instantiated by y. (conditional proof assumption, the antecedent of PII)
$$\forall_{z \in U}\left[z(x) \leftrightarrow z(y)\right]$$
2. For every universal z, z constitutes x iff z constitutes y. (1,BT)
$$\forall_{z \in U}\left[z \in x \leftrightarrow z \in y\right]$$
3. x is numerically identical with y. (2,PCI)
$$x = y$$
4. For every universal z, if z is instantiated by x iff z is instantiated by y, then x is numerically identical with y. (1,3)
$$\forall_{z \in U}\left[z(x) \leftrightarrow z(y)\right] \rightarrow x = y$$

Since x, y were any particulars, therefore PII.

$$\forall_{x, y \in P}\left[\forall_{z \in U}\left(z(x) \leftrightarrow z(y)\right) \rightarrow x = y\right]$$

Quod erat demonstrandum

The need to use PCI in the proof seems to be inevitable; when comparing the definitions of PII and BT, one can see that an additional premise combining being a constituent of something and the identity of particulars is needed for any proof of the relation between them. For many philosophers, such as Loux (1998, 99), PCI is not controversial at all. They give two main reasons for that. First, it is the metaphysical

3 The need to assume PCI in order to prove the Theorem has been noted already by Loux (1998, 107), Hochberg (1969, 156), and recently by Rodriguez-Pereyra (2004, 76). However, I will be the first who show it explicitly by proving the Theorem.

counterpart of the axiom of extensionality in Zermelo-Fraenkel set theory. Therefore, one may believe that PCI is a metaphysical axiom as well, and therefore, its correctness cannot be questioned. Moreover, some believe that PCI simply describes a relation between a 'whole' and its 'constituents' and it just reflects the belief that objects with a complex structure are nothing more than the universals that constitute them (see: Loux 1998, 107). For now, let us assume that those arguments are compelling and treat PCI as uncontroversial – and therefore also accept the Theorem. As we shall see in a while, this move entails some substantial difficulties for the supporters of BT.

3 Black's Argument

Although in past decades there have been made some attempts in the literature to undermine the Principle of Identity of Indiscernibles, such as Kant's (see: Rodriguez-Pereyra 2018), it was a contemporary article by Black (1952) that questioned it successfully and obliged contemporary philosophers either to find a compelling response to it or to reject PII. In his paper, shaped as a dialogue between two thinkers, *a* and *b*, one of them asks the other to imagine a world that contains nothing but two exactly similar spheres. They are in perfect agreement with respect to all their features: each of them is made of chemically pure iron, they have a diameter of one mile, they are two miles apart, have the same colour, temperature, etc. (see: Black 1952, 156); in other words, they are indiscernible. Thus, from PII it follows that they are also identical, so there is only one object in the world. However, *b* insists that in his universe there are *two* objects: namely, two spheres. Therefore, he concludes, given that Black's universe is a counterexample to PII, one should reject Black's universe. Let us call the universe in question 'Black's world' and the reasoning 'Black's argument'.[4]

It turns out that this argument is devastating not only for PII, but also for BT. By applying *modus tollens* to the Theorem and accepting the failure of PII from the reasoning above, it follows that BT is incorrect as well. Therefore in order to save the Bundle Theory one has to either reject the Theorem (e.g. by questioning PCI) or Black's argument. Since the Theorem has been already proven in this paper, I will begin with discussing the latter possibility. In the literature there are a number of attempts to undermine this argument. Let us examine some of them.

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4 Black's paper ends with no clear conclusion about who won the discussion, although the most compelling arguments were presented by *b*. For this reason, and because "*b*" corresponds to the first letter of Black's surname, his views are often attributed to this person. However, Black never declared his views explicitly.

The most straightforward reply to Black's reasoning is to include in the domain of quantification properties that depend on the identity of *relatum*, such as "being identical with itself" or "being two miles apart from the other sphere". This attempt to undermine Black's argument has already been taken by his fictional opponent *a* and briefly criticised by *b*. However, it was Rodriguez-Pereyra who made this argument explicit. In order to achieve it, he divided all properties into two classes: *pure* and *impure*. Examples given above fall into the second class by their definition, since they depend on the identity of *relatum*. Using universals that correspond to impure properties in PII leads to its trivialisation; therefore, they should not be evoked in responses to Black's argument (see: Rodriguez-Pereyra 1999, 2006). Only pure properties – those which do not refer to any particular beings, such as "being made of iron" – can be used for this purpose. Therefore, another approach to undermining this reasoning is required.

An ingeniously simple strategy questioning Black's argument that became widely known comes from O'Leary-Hawthorne (1995). It is based on the assumption that since according to the Bundle Theory concrete particulars are constituted by universals and because universals can be *multi*located, particulars themselves can also be multilocated. Therefore, Hawthorne argues that in the world described by *b*, in fact there only exists *one* particular – the sphere – that is *bi*located. It is compatible with PII, since there are not two indiscernible objects in the world but only one. In this way, Black's argument is blocked. However, this solution has been criticised by Rodriguez-Pereyra (2004). According to him, the world described by Hawthorne is not Black's universe. This is because in the original Black's argument there are *two* indiscernible particulars: *two* spheres. Meanwhile, if one accepts the possibility of multilocation of particulars, the picture is different; in Hawthorne's world, although *two* indiscernible bundles of universals exist, they correspond to only *one* particular. This means that there is only one sphere in this universe. Therefore, it is a completely different world than the original one and Hawthorne's defence is just irrelevant.

The failure of Hawthorne's argument should be upsetting for the supporters of the Bundle Theory. In order to save their ontological beliefs, they can either look for another strategy to reject Black's argument (check e.g. Hawley 2009; Rocca 2005) or choose another possibility – rejecting the Theorem. Although its proof has been presented above, it was only under the assumption that PCI is an unquestionable metaphysical truth. However, it turns out that it has some serious weaknesses. Once it is abandoned, it is possible to offer an interpretation of Black's universe in which, although PII fails, BT is saved. One such view will be presented in the next section.

4 The Bundle Theory with *Instances*

One of the strategies that allows one to save the Bundle Theory by rejecting its relation with PII was invented by Rodriguez-Pereyra (2004). His ultimate goal was to show that BT does not imply PII: therefore, the Theorem is incorrect. In order to reach this conclusion, he rejected PCI and came up with a version of the Bundle Theory in which particulars exist in the physical reality by their *instances*.

According to Rodriguez-Pereyra, particulars are not just bundles of universals, but they are *instances* of these bundles of universals. Instances are universals that appear whenever a bundle of universals occupies some place in the physical world (in other words, it *subsists*). They are exhaustively *constituted by* the universals of the bundle, but they *are not numerically identical* with the bundle. All instances of one bundle of universals are different since they occupy different places. Therefore, the situation described in Black's universe may be summarised as follows: there exists one bundle of universals (sphere-ness, iron-ness, etc.), which is wholly located in two different places. The difference between this approach and the one described by Hawthorne is that for Rodriguez-Pereyra these bundles located in the physical world as their instances are not *identical* with the one bundle of universals. Instead, they exist as numerically different instances. Therefore, while in Hawthorne's universe there exists only *one* sphere (identical to the bundle of universals), in the world of Rodriguez-Pereyra there are *two* spheres – two instances of the bundle (see: Rodriguez-Pereyra 2004, 78). Once we accept the existence of instances, we are done with Black's argument. In the universe described within the framework suggested by Rodriguez-Pereyra, there is only one bundle of universals, which has two instances, however. Although Black's universe does violate PII, it is perfectly compatible with the Bundle Theory. Let us call his interpretation of the Bundle Theory an "instance view". It can be summarised as a modified version of BT, according to which particulars are instances of bundles of universals and particulars are entirely constituted by universals but they are not identical to bundles of universals. Call it BTI:

> **BTI** For every particular x and every universal y_i, y_i constitutes x if and only if and x instantiates y_i, but x is not identical with the bundle of universals $\{y_i\}$:
>
> $$\forall_{x \in P} \forall_{y_i \in U} [(y_i \in x \leftrightarrow y_i(x)) \hat{x} \neq \{y_i\}_{i \in 0,1,2,\ldots}]$$

Note that Black's world interpreted in terms of the instance view does violate PCI. This is because in this case there are two particulars – the spheres – which share all constituents, such as being made of iron, having a diameter of one mile, etc., but still they are not numerically identical. In fact, this world is a perfect counterexample to

PCI. However, it does not need to be something negative. As I have argued before, some philosophers take PCI for granted as an unquestionable metaphysical truth. As a motivation for accepting it, I evoked its similarity with the axiom of extensionality from ZFC and the relation between the 'whole' and its 'constituents'. However, there are many reasons to reject PCI that I will now discuss. It turns out that PCI is appealing only to those who *identify* particulars with *sets* or *mereological sums of universals*. They read the relation 'being a constituent of' as membership. This captures one of the motivations for accepting PCI, which was its analogy to one of the axioms of set theory. However, as Rodriguez-Pereyra (2004, 77) points out, particulars are neither sets nor mereological sums of universals. First, being such, they would lack causal powers, whereas particulars have them. Moreover, particulars can cease to exist, even if universals that they instantiate do not. Therefore, the conclusion is that PCI should be rejected, even by supporters of the Bundle Theory.

Is BTI compatible with BT? Yes, because according to the former, particulars are constituted by universals. The only difference between these two views is that BTI adds the description of the existence of particulars in the world – while BT did not make any claim about it at all. In fact, using formalisations of these two claims, one can easily prove that BTI → BT, so BTI may be treated as one of the interpretations of BT. Since BTI allows for the existence of worlds that are counterexamples to PCI, BT is independent of the latter. Therefore, it seems that the Bundle Theory is saved by the instance view – even if PII indeed fails, as it has been argued by Black. However, this reasoning has been recently questioned by Robert (2019). His argument will be discussed in the next section.

5 Robert's Reply

As we have seen, in Rodriguez-Pereyra's argument, he undermines the Theorem by rejecting one of the premises necessary for its proof: namely, the PCI. However, this answer did not satisfy Robert. He believes that BT is an example of constituent ontologies, and, as such, entails PCI, so the proof of the Theorem is fully correct. Since the instance view is just another variation of BT, it should lead to PCI as well. In this Section 1 will argue that although both BT and BTI are good examples of constituent ontologies, the understanding of the latter ones endorsed by Robert is too narrow.

Robert ascribes the use of the term *constituent ontology* for the first time to Wolterstorff (1970). In the contemporary philosophical literature, there are many variations of this view. Even within Robert's paper, he loosely provides various statements that he ascribes to the supporters of constituent ontologies. Some of them are stronger, and some are weaker. In order to have the best insight into whether his belief that the instance view is incompatible with constituent ontologies in general, I will begin with referring to the most general descriptions of this concept.

In order to understand constituent ontologies, it is worth comparing them with the rival view: *relational ontologies*.[5] According to this view, concrete particulars (or: objects, individuals etc.) do not have ontological structure. Following Armstrong's (1989) terminology, they are blobs. The only structure that they have is the mereological one. Therefore, according to the supporter of relational ontology, although spheres in Black's universe are made out of iron, have a given temperature, etc., they are not constituted by these properties. The only parts that they have are those mereological ones: e.g. the part of one sphere is its semi-sphere.

On the contrary, according to the supporters of constituent ontologies, concrete particulars have their own non-mereological structure. Their constituents may be, for example, universals. Clearly, this view is very broad and splits into a variety of standpoints. Depending on whether someone believes that objects consist exclusively of properties or also of some other things, they may be, for instance, a supporter of either the Bundle Theory or the *substratum* approach. Consider the example of a sphere from Black's universe. For the bundle theorists, it is exclusively constituted of properties of being made out of steel, having a given temperature etc. Meanwhile for the supporters of the *substratum* approach, the spheres in question are constituted not only by universals enumerated in the previous sentence, but also each of them has its own unique *substratum* that constitutes them. Both views belong to the domain of constituent ontologies, as they are based on the belief that there are some entities that constitute spheres: such as universals alone, or along with substrata.

As I have mentioned before, although Robert claims that the *instance* view is incompatible with the premises of constituent ontologies – and therefore it also violates the Bundle Theory – he never specified what exactly should be understood by the term 'constituent ontologies.' In particular, he mentioned a few brief descriptions that differ in strength. For example, he begins with ascribing to the supporters of constituent ontologies the following belief: "ordinary concrete objects are not irreducibly fundamental beings, but derivative constructions arising from more basic constituents." (Robert 2019, 31). From the context of his paper, we know that "ordinary concrete objects" are just particulars. In order to make arguments in this paper consistent, let us slightly reformulate this quote without the loss of its meaning and call it CWC for "constitute-whole claim":

5 For more detailed descriptions of both views, see e.g. Rettler and Bailey (2017), van Inwagen (2011), Wolterstorff (1970), and Armstrong (1989).

CWC For any particular *x*, there exists (at least one) universal *y* such as *y* is a constituent of *x*.[6]

$$\forall_{x \in P} \exists_{y \in U} (y \in x)$$

As we shall see in a while, this view is not controversial for the supporters of the Bundle Theory and moreover is perfectly compatible with the instance view. However, a few paragraphs later he introduces the following *interpretation* of the constituent ontologies – which, as he himself notes – is only one of many possible ones. Let's call it CWC* (Robert 2019, 32):

CWC* For any particular *x*, there exists some collection of universals $\{y_i\}$ such that *x* is *identical* with $\{y_i\}$.

$$\forall_{x \in P} \exists_{\{y_i\} U} (x = \{y_i\})$$

According to Robert, the instance view violates CWC*. Although it is true, I will argue that this does not mean that BTI is incompatible with constituent ontologies in general, i.e. defined by CWC. This is contrary to Robert's intention; although he gives a plenty of interpretations of the constituent-whole claim, he believes that one should embrace strong versions as CWC* (2019, Section 4), which I comment on in the final section.

6 Response to Robert

In this Section 1 will argue that CWC does not entail CWC*. In particular, CWC* is only a very strong interpretation of constituent ontologies. Therefore, although the instance view is incompatible with CWC*, it is in perfect agreement with CWC – and moreover is a viable version of the Bundle Theory.

First of all, one should note that CWC* puts a sign of equality between being an object and being the set of universals. This is a very strong claim and it is not required by the version of the Bundle Theory described in this paper. What is crucial to note is that this view is incorrect because of the same reasons that led to the rejection of PCI a few paragraphs earlier: i.e. the lack of causal powers of sets and the possibility of objects ceasing to exist even if universals that it instantiates do not.

Having these concerns with CWC* in mind, let us make explicit what exactly Robert tries to prove. As we have already noted, his ultimate goal is to prove that the instance view is incompatible with constituent ontologies, and therefore it cannot be used in the response to the worry with Black's argument. In order to achieve this

6 Note that – as in the case of all other claims in the paper, i.e. BT or PCI – I adopted CWC to the reality of this discussion about universals. In its more general version "universals" may be just replaced by "entities".

goal, he claims that BTI entails PCI and therefore, the response of Rodriguez-Pereyra fails.

Lemma: BT → PCI

6.1 Sketch of the Proof

It seems that the intuition for which Lemma stands – according to the intention of Robert – is the following:

1. BT → CWC
2. CWC → CWC*
3. CWC* → PCI

Therefore, from the transitivity of implication and from 1, 2, 3 we get that: BT → PCI.

Quod erat demonstrandum

The structure of the argument is correct. Therefore, I will focus on checking the correctness of its particular steps. Let us begin with the first one.

6.2 Proof of Step 1

The implication BT → CWC seems to be rather uncontroversial. Since BT states that particulars are constituted of universals that instantiate them, it is clear that they are not irreducibly fundamental beings, but derivative constructions arising from more basic constituents. Therefore CWC. The rigorous proof that takes advantage of formalizations of BT and CWC requires an additional assumption: that for every particular there exists at least one universal that is instantiated by this particular. It is motivated by the common sense and the belief that all particulars have at least one property. It will be the first step of the proof:

1. For any particular x there exists an universal y that is instantiated by x.

$$\forall_{x\in P}\exists_{y\in U}\left[y(x)\right]$$

2. For every particular x and every universal y, if x instantiates y then y constitutes x. (BT)

$$\forall_{x\in P}\forall_{y\in U}\left[y(x)\rightarrow y\in x\right]$$

3. For every particular x there exists an universal y that constitutes it. (1,2)
4. $\forall_{x\in P}\exists_{y\in U}\left[y\in x\right]$

Therefore CWC.

Quod erat demonstrandum

6.3 Proof of Step 3

To begin, note that CWC* states that particulars are just sets (or collections) of universals. Therefore, one can apply axioms of Zermelo-Fraenkel set theory (ZF or ZFC) to them, such as the axiom of extensionality:

AE For all sets x, y if z is a member of x iff z is a member of y, then x is identical to y.[7]

$$\forall_{x,y}\left[\forall_z\left(z \in x \leftrightarrow z \in y\right) \rightarrow x = y\right]$$

Now the proof is straightforward:

1. For any particular x there exists a set of universals $\{z_i\}$ such that x is identical with $\{z_i\}$. (CWC*)

$$\forall_{x \in P} \exists_{\{z_i\} U}\left(x = \{z_i\}\right)$$

2. Universals are members of particulars (sets). (1)

$$\forall_{x \in P} \exists_{z_i \in U}\left(z_i \in x\right)$$

3. For all particulars x and y and every universal z, if z is a constituent of x if and only if z is a constituent of y, then x is numerically identical with y. (2,AE)

$$\forall_{x,y \in P}\left[\forall_{z \in U}\left(z \in x \leftrightarrow z \in y\right) \rightarrow x = y\right]$$

Therefore PCI.

Quod erat demonstrandum

6.4 The Counterexample to the Step 2

We are left with the last element of the Lemma: step 2. According to it, CWC entails CWC*. I will argue that it is not correct. The argument will be quite simple. Let us revisit the Black's world in the instance view. I will show that although it violates CWC*, CWC is perfectly compatible with it. The latter states that for every particular, there exists at least one universal that is a constituent of this particular. Indeed: according to BTI, in the world in question there exist two particulars (two spheres) that are entirely constituted by universals (sphere-ness, iron-ness, etc.). Therefore it is compatible with CWC. On the other hand, in this world particulars (spheres) are

7 Note that in the example of AE, symbols are used in their regular reading; namely, "=" stands for the equality of two universals and "∈" denotes a member belonging to a set.

not identical to bundles of universals that constitute them. This is inconsistent with CWC*. Finally, Black's world in the instance view is a counterexample of the step 2 of the Lemma.

The final conclusion of these considerations should be that Robert's argument against the paper of Rodriguez-Pereyra is incorrect. This is because – as we have shown above – not every version of BT entails PCI. In fact, the only formulations of BT that would work for his argument are those compatible with CWC*; there are only a few of them, since this view is a very strong interpretation of constituent ontologies, that would be appealing only for those, for whom particulars are *identical* with the bundles of universals that constitute them.[8] Thus, PCI can be viably rejected, along with the Theorem. The supporters of the Bundle Theory can sleep soundly, even with Black's argument on the table.

7 The Price to Pay

Robert argues that BTI is not a viable example of a constituent ontology, as it is inconsistent with CWC*. However, under the more general formulation of the constituent-whole claim, namely CWC, BTI can be regarded as an example of a constituent ontology. I have explicitly demonstrated that CWC does not entail CWC*, and concluded that not all supporters of the former are inclined to endorse the latter, which, in fact, will be attractive only to the very narrow group of bundle theorists: those *identifying* the bundles universals with particulars.

However, Robert believes that there are independent reasons to endorse such a strong reading of a constitute-whole claim as CWC* (2019, 34–35), for example those presented by Wolterstorff (1970, 111) or Loux (1998, 112). If he is correct, then accepting BTI comes at a cost which I discuss below. However, I argue that his reasons to prefer CWC* do not prejudge the fallacy of CWC, but are rather the matter of ontological preference, and that the price for giving up CWC* is worth paying.

Robert summarises the standpoint of Wolterstorff in the following way: 'concrete things are 'identical with' complexes of more primitive entities that do not pertain to the category of concrete particulars' (2019, 35), and notes that a similar view is held by Loux. Indeed, CWC* is one of the variations of such a claim, in which

8 Note that if CWC was about the relation of membership rather than being a constituent of, CWC* would indeed follow from it. This confirms the intuition that the whole mistake of Robert was to force the supporters of BT to believe that particulars are *identical* to sets (or bundles or collections) of universals and the latter are just members of the former.

the 'primitive entities' are taken to be universals. The advantage of this view seems to be that it allows to make a *methodological* move: namely, to translate an ontological question 'what are ordinary concrete things?' into 'what are the constituents of ordinary concrete things?' However, similar translation can be performed also on the grounds of CWC; for example, from the initial ontological question one can obtain straightforwardly: 'what constituents do ordinary things *include*?' Obviously, the cost of this move is that theory with CWC but not CWC* would be unable to provide a complete recipe of concrete particulars in terms of their constituents. For example, while on the grounds of BT, which is compatible both with CWC and CWC*, particulars are *identified* with universals, the supporters of BTI should renounce the possibility of giving a complete analysis of particulars in terms of universals only. If one agrees to pay this price, then they agree that BTI is a legitimate version of a constituent ontology.

Hence, it seems that the most attractive feature of such strong versions of constituent-whole claim is some sort of Occam's razor; since CWC* gives an exhaustive list of constituents of particular and CWC fails to do so, it is in the advantage of the former. However, this argument is not convincing to all supporters of constituent ontologies. In particular, the debate above demonstrated that such authors and Rodriguez-Pereyra would sacrifice this exhaustiveness of CWC* for the price of defending their version of the bundle theory, which is the only one that can survive Black's argument. Denying their right to put their view among constituent ontologies seems to be largely unjustified, and, hence, should be rejected.

8 Summary

In this paper I presented several stages of the debate on the Principle of Identity of Indiscernibles and its relation to the Bundle Theory. I supported Rodriguez-Pereyera's solution and defended it from the objection of Robert. The latter argued that the instance view (BTI) is incompatible with constituent ontologies, since the latter implies the Principle of Constituent Identity, which BTI falsifies. In order to make my point more viable, I wrote this reasoning explicitly and discussed all of its steps: BTI $\rightarrow$ BT $\rightarrow$ CWC $\rightarrow$ CWC* $\rightarrow$ PCI. I proved them all except of the implication of CWC* from CWC, for which the Black's universe under the interpretation with instances is a counterexample. This lead to the conclusion that the interpretation of constituent ontologies denoted as CWC* is too demanding and may be appealing only for those, who *identify* particulars with sets or sums. Therefore BTI is a viable version of BT and it does not imply PII.

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