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LEIBNIZ'S ARGUMENT FOR THE IDENTITY OF INDISCERNIBLES IN HIS CORRESPONDENCE WITH CLARKE[1]

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The Principle of Identity of Indiscernibles, which says that there are no two particulars having in common all their properties, occupies an important part in Leibniz's metaphysics. This principle, however, is normally held not to be necessarily true; indeed Max Black's [2, p. 83] possibility of a world consisting of two exactly similar spheres consists of a refutation of the necessity of the Identity of Indiscernibles. And some results in quantum physics imply that the principle is false even in the actual world (French [6], French and Redhead [7]).

Leibniz believed in the Identity of Indiscernibles because he thought it followed from other principles of his metaphysics. In particular, in a letter to Clarke Leibniz infers the Identity of Indiscernibles from the Principle of Sufficient Reason (L V, 21).[2] Specifically Leibniz there attempts to derive the Identity of Indiscernibles from an application of the Principle of Sufficient Reason to God's act of creation, namely that God has a reason to create the world he creates. Since the Leibnizian God governs his act of creation by the Principle of the Best, according to which God wills only what is best, the reason he creates the world he creates is that it is the *best* possible world. Thus, although Leibniz does not say so explicitly, the Principle of the Best plays a part in his derivation of the Identity of Indiscernibles from the Principle of Sufficient Reason in his letters to Clarke.[3]

In this paper I shall argue that this argument fails, not just because the Identity of Indiscernibles is false, but because there is a counterexample to one of the premises that Leibniz cannot satisfactorily rule out. That is, Leibniz's argument, even if valid, is unsound. The significance of this is, I take it, that not even granting Leibniz certain highly questionable metaphysico-theological assumptions, like the principles of the Best and of Sufficient Reason, can he make a good case for the Identity of Indiscernibles.

In §1 I shall reconstruct Leibniz's argument for the Identity of Indiscernibles from the Principle of Sufficient Reason as it appears in the correspondence between Leibniz and Clarke. The reconstructed argument accounts only for some of the assertions Leibniz makes about the Identity of

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[1] This paper is dedicated to the memory of Ezequiel de Olaso.
[2] I refer to passages in the *Leibniz-Clarke Correspondence* by initial, letter number and section number: 'L V, 21' refers to section 21 of Leibniz's fifth letter. Quotations are from Clarke's own translation as edited in Alexander [1] and I have checked them with Leibniz's original letters in French as found in Gerhardt [8, vol. VII, pp. 347-440]. I have occasionally corrected Clarke's translation on the basis of the original French (see footnote 7 below).
[3] Stephen Grover [9] has forcefully argued that the Principle of the Best plays an essential rôle in the correspondence with Clarke.

Indiscernibles in the *Correspondence*, but this is not surprising, since there he makes incompatible assertions about the Identity of Indiscernibles. He asserts, for example, that it is contingently true (L V, 25-6), yet he also seems to assert that it is necessarily true (L IV, 6).[4] His argument for the Identity of Indiscernibles from the Principle of Sufficient Reason applied to God's will accounts only for its contingent truth: and even then, I shall argue, the argument fails.

A crucial premise of Leibniz's argument is that indiscernibles would force God to choose among equally good alternatives. In my reconstruction this premise appears as the claim that to every world containing numerically different but indiscernible particulars (i-particulars) there corresponds some numerically different but indiscernible possible world (i-world). In §2 I shall present a counterexample to this premise and in §3 I shall show that the way to rule out the counterexample makes the argument collapse. Thus I conclude that Leibniz's attempt to derive the Identity of Indiscernibles from the Principle of Sufficient Reason in the correspondence with Clarke fails.[5,6]

I. Leibniz's Argument

In the *Correspondence* Leibniz says he derives the Identity of Indiscernibles from the Principle of Sufficient Reason:

> I infer from [the Principle of Sufficient Reason]...that there are not in nature two real, absolute beings, indiscernible from each other; because if there were, God and nature would act without reason, in treating the one otherwise than the other; and that therefore God does not produce two pieces of matter perfectly equal and alike (L V, 21).[7]

Clearly God can have no sufficient reason, in Leibniz's sense, to treat i-particulars differently. But this passage does not tell us why Leibniz thinks God's creating i-particulars amounts to treating them differently. To find out let us look at the passage from Clarke to which the above is a reply:

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[4] For an attempt to explain this apparent inconsistency see Broad [3, p. 163]. Parkinson [13, p.: 133] endorses Broad's explanation.

[5] Leibniz also attempted to derive the Identity of Indiscernibles from the Principle of Sufficient Reason in *Primae Veritates*; see Couturat [5, pp. 518-523]. But this derivation differs from the one in the correspondence with Clarke: it lacks any theological component and depends on the principle that in every true affirmative proposition the concept of the predicate inheres (*inest*) in the concept of the subject.

[6] As Broad [3, p. 171] and Khamara [11, p. 141] have pointed out, in his letters to Clarke Leibniz granted, for the sake of argument, certain non-Leibnizian assumptions, mainly the irreducible reality of bodies and of relational properties. Thus the fact that my objections to Leibniz also make those assumptions does not make them faulty, since Leibniz thought that, even granting them, he could give a cogent argument for the Identity of Indiscernibles. (Other authors, e.g. Ishiguro [10, p. 93], reject that Leibniz thought relational properties reducible to non-relational ones).

[7] I have slightly modified Clarke's translation: where my translation has *treating* his has *ordering*. The French reads *traitant*, see Gerhardt [8, vol. VII, p. 393].

> This argument, if it was true, would prove that God neither has created, nor can possibly create any matter at all. For the perfectly solid parts of all matter, if you take them of equal figure and dimension...are exactly alike; and therefore it would be perfectly indifferent if they were transposed in place; and consequently it was impossible (according to this learned author's argument) for God to place them in those places wherein he did actually place them at the creation, because he might as easily have transposed their situation. (C IV, 3-4.)

Leibniz's argument seems to be that if there were i-particulars, they could have been interchanged, and there would have been no reason for placing them one way rather than the other. Therefore, since God observes the Principle of Sufficient Reason, he does not create i-particulars. We find Leibniz making a point like this in the following passage:

> ...if space was an absolute being, [something would] happen for which it would be impossible there should be a sufficient reason....Space is something absolutely uniform; and, without the things placed in it, one point of space does not absolutely differ in any respect whatsoever from another point of space. Now *from hence* it follows...that 'tis impossible there should be a reason, why God, preserving the same situations of bodies among themselves, should have placed them in space after one certain particular manner, and not otherwise; why everything was not placed the quite contrary way, for instance, by changing East into West (L III, 5. Italics are mine.)

Leibniz is here arguing against the absolute theory of space (and later he suggests a similar argument against absolute time). He says that absolute space would violate the Principle of Sufficient Reason by containing indiscernible points ('without the things placed in it, one point of space does not absolutely differ in any respect whatsoever from another point of space'), since that enables things to be placed in different but equally good ways (i.e., by changing East into West). Leibniz's argument against absolute space thus contains two steps: absolute space denies the Identity of Indiscernibles, which requires the denial of the Principle of Sufficient Reason. But the latter is true; therefore space is not absolute (similarly for Leibniz's argument against absolute time).[8]

Leibniz thinks then that if there were indiscernibles God would have violated the Principle of Sufficient Reason, by choosing without reason between equally good alternatives. Since God's objects

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[8] However some interpreters, notably Benson Mates [12, p. 233], disagree with this reading of the passage I have quoted. Instead of seeing it as a two-step argument, he sees it as having *two* independent but interwoven arguments: one showing that absolute space violates the Identity of Indiscernibles; the other showing that it violates the Principle of Sufficient Reason. While Mates admits that Leibniz thought the Identity of Indiscernibles followed from Sufficient Reason, his reading separates Leibniz's Identity of Indiscernibles and Sufficient Reason arguments against the absolute theory of space and time. By so doing he fails to make complete sense of the *Correspondence*, where Leibniz explicitly claimed to have derived the Identity of Indiscernibles from the Principle of Sufficient Reason. Hence my preference for reading the passage as a single argument against absolute space, as violating the Sufficient Reason by its violating the Identity of Indiscernibles.

of choice, when creating, are possible worlds,[9] I shall restate Leibniz's point by saying that absolute space entails the existence of different worlds between which God could have no reason to choose – as he did when he made one of them actual. Thus Leibniz's inference to the Identity of Indiscernibles from Sufficient Reason seems to run along the following lines: i-particulars in a world **W** entail a different world **W*** such that God would have had no reason to choose, as he did when he chose the actual world, between **W** and **W***. But God observes the Principle of Sufficient Reason. Therefore, there are no i-particulars.

Now, why would God lack a reason to prefer a world **W**, where body *a* occupies point *x* and body *b* occupies point *y*, to a world **W*** which differs *only* in that *a* occupies *y* and *b* occupies *x*? Or, if space is relative and it is *a* and *b* that are indiscernible, why would God lack a reason to prefer a world **W** where *a* is in place *w* – defined in terms of spatial relations between bodies – and *b* is in place *z* (ditto) to a world **W*** which differs *only* in that *a* is in *z* and *b* is in *w*?

To answer this question, let us restate the situation as follows. Although numerically different, in neither case do **W** and **W*** differ in qualitative content: any correct and purely qualitative description of **W** correctly describes **W*** and vice versa. In other words, **W** and **W*** share all their purely qualitative descriptions, i.e., descriptions which say *that* certain properties and relations are instantiated without saying *which* particulars instantiate them. Since sharing all their purely qualitative descriptions makes **W** and **W*** qualitatively indiscernible worlds (i-worlds), we can argue that God cannot rationally choose between them; for no world can be better than another if the same properties and relations are satisfied in both. For Leibniz's criterion of goodness or perfection for possible worlds is simplicity in hypothesis and richness in phenomena and, surely, no world can be simpler in hypothesis and richer in phenomena than another if the same properties and relations are satisfied in both. This suggests the following reconstruction of Leibniz's argument:

(**1**) There is a reason why God creates the world he creates and not any other, namely that it is the best possible world.

(**2**) If **W** and **W*** are i-worlds, neither is better than the other.

(**3**) There is no world **W*** such that it and the actual world are i-worlds [it follows from (**1**) and (**2**)].

(**4**) For every world **W**, if **W** contains i-particulars, there is a world **W*** such that **W** and **W*** are i-worlds.

(**5**) The actual world contains no i-particulars, i.e. the Identity of Indiscernibles is true [it follows from (**3**) and (**4**)].

Premise (1) corresponds to a conjunction of the Principles of Sufficient Reason and of the Best, two important principles of Leibniz's metaphysics that I shall not question. I shall also grant premise (2),

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[9] See Gerhardt [8, vol. II, p. 48; vol. IV, p. 431; vol. VI, p. 240]. See also Clatterbaugh [4, p. 251] and Rescher [14, p. 17].

the Leibnizian rationale for which, in terms of the criterion of perfection for possible worlds, has already been suggested. The premise I shall concentrate on is (4). But first, to make this reconstruction intelligible, I must give a clear account of a) i-particulars, and b) i-worlds.

a) Particulars are indiscernible if and only if they do not differ in their *intrinsic* properties, namely those properties whose possession does not depend on bearing any relation to any particular. *a* and *b* are *i-particulars* if and only if they are numerically different ($a \neq b$) and indiscernible. Thus, according to Leibniz, points are i-particulars: 'without the things placed in it, one point of space does not absolutely differ in any respect whatsoever from another point' (L III, 5). This definition of course allows i-particulars to share their *relational* – i.e. non-intrinsic – properties.

b) I said that numerically different worlds that share all their purely qualitative descriptions are i-worlds. By a pure qualitative description of a world I mean one that mentions only the *pure* properties that are satisfied in that world. By *pure* properties I mean those properties which are either intrinsic or which, if relational, do not depend on the identity of the *relata* but only on their properties: *being red*; *being close to a red particular*; *being close to a green particular that is bigger than the closest particular to it*. *Impure* properties, on the contrary, are relational properties to which the identity of at least one of the *relata* is essential: *being identical to a*; *being identical to a and close to b*; *being close to b and to a green and square particular*.

Worlds **W** and **W*** are indiscernible, then, if and only if every particular in either corresponds to a particular in the other with all the same *pure* properties. And **W** = **W*** if and only if every particular in either corresponds to a particular in the other with all the same pure *and impure* properties. In other words, there cannot be *two* worlds with all the same particulars satisfying all the same properties and relations in both worlds. **W** and **W*** are *i-worlds* if and only if they are numerically different and indiscernible, if and only if *every* particular in either corresponds to a particular in the other with all the same *pure* properties and *not* every particular in either corresponds to a particular in the other with all the same *impure* properties.[10]

II. Spatially Permuted Worlds

Let us now consider Leibniz's premise (4). Leibniz did not try to prove premise (4), but he did provide intuitive support for it. His example of changing East into West uses a thought experiment to show that

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[10] All this seems to rely on a Lewisian, rather than Leibnizian, notion of possible worlds, since it takes worlds as composed of concrete particulars. For Leibniz possible worlds exist in the mind of God and so are composed of concepts rather than concrete particulars or things. Indeed it is in this way that Mates urges to consider Leibnizian possible worlds [12, pp. 73-74]. However, as Mates notes, that talk of possible objects permeates Leibniz's writings is not a problem since Leibniz's references to possible objects can be rephrased in terms of individual concepts. In the same way my talk about possible objects or particulars can be rephrased in terms of Leibnizian individual concepts. Thus, to give an example inspired in one of Mates' [10, p. 73], to say that a possible world **W** contains a green unicorn is rephrased into saying that there is a (complete) individual concept that contains the attribute of *being green* and *being an unicorn*. I am indebted to an anonymous referee for having urged me to address this issue.

to a certain world with i-particulars there corresponds an i-world. For Leibniz to support premise (4), however, he needs more than a single case of a world containing i-particulars having an i-world. But Leibniz's East/West example is clearly intended to exemplify a general case, which gives us the rationale for premise (4).

What, then, is the general case? Leibniz's example generates an i-world for a given world containing i-particulars by interchanging the spatial positions of particulars, leaving their other spatial relations unchanged. Thus, since for Leibniz spatial points are i-particulars, to a world **W** containing only particulars *a* and *b* occupying points *x* and *y* respectively, there corresponds a world **W*** where *a* occupies *y* and *b* occupies *x*. **W** and **W*** are i-worlds: they are numerically distinct, since some impure properties satisfied in **W** are not satisfied in **W***, e.g. *being identical to a and occupying x*, but they are indiscernible, since every pure property satisfied in either of them is satisfied in both.

Similarly for worlds in which space is relative but contain some i-particulars. Imagine, for example, a world **W** in which there are four particulars, *a*, *b*, *c* and *d*, lying in a straight line and each of them being one mile apart from the previous one. Imagine, furthermore, that *b* and *c* are i-particulars. Then there is a world **W*** in which *b* occupies *c*'s position and vice versa.[11] **W** and **W*** are i-worlds. For they are indiscernible, since every pure property that is satisfied in one of them is satisfied in both. And they are numerically distinct, since some impure properties are satisfied in only one of them, e.g. the property of *being identical to b and between a and c* is satisfied only in **W**. I shall call any two i-worlds that have exactly the same particulars and differ only as to their spatial positions *spatially permuted worlds*. Thus, Leibniz's East/West thought experiment suggests that he thought that for every world containing i-particulars there corresponds some spatially permuted i-world.

But this is not true, for even if containing i-particulars is a *necessary* condition for a world's having a spatially permuted i-world, it is not a *sufficient* one since there are possible worlds containing i-particulars that lack spatially permuted i-worlds. Consider the world which I call **BW**, in which space is relative – as Leibniz held – and which, like the world imagined by Max Black [2, p. 83] contains nothing but two i-particulars. The difference between **BW** and Black's world is that the particulars of **BW** are atomic, i.e., have no parts. As I shall show, to **BW** there correspond no i-worlds.

Let *a* and *b* be the two atoms of **BW**. Since in **BW** space is relative, spatial position is determined by spatial relations and therefore spatial position cannot be altered without altering spatial relations. But, of course, the spatial relations of *a* and *b* cannot be altered without altering their distance and this cannot be done without altering some spatial *pure* relational property. Suppose that in **BW** the atoms are one mile apart and they both have temperature *t*. In a world **W** in which they are closer (half a mile, say) they have the pure property of *being half a mile apart from an atom having temperature t*, a property which they lack in **BW**. But then **W** and **BW** are not i-worlds, since no particular in **BW** corresponds to a particular in **W** having all its same pure properties. This holds, obviously, for any

[11] Notice that, since in the world **W** now under consideration space is relative, merely interchanging the positions of *a* and *d* would generate the same world **W*** generated by interchanging the spatial positions of *b* and *c*, and interchanging the positions of *a* and *d and* of *b* and *c* would generate no new world.

other spatial alteration made to **BW**. Thus, although **BW** contains i-particulars, no spatially permuted i-world corresponds to it.

Is **BW** a counterexample to premise (4)? To show this we need to show that *no* i-world corresponds to **BW**, and we have only established the weaker claim that no *spatially permuted* i-world corresponds to **BW**. Thus although what Leibniz says in support of premise (4) is not enough for establishing it, it might still be the case that to **BW** corresponds some i-world, in which case God could not have created **BW** without violating the Principle of Sufficient Reason. But what would such an i-world look like? I shall answer this question in the next section.

III. Alien-duplicated Worlds

What could an i-world for **BW** look like? In the previous section we saw that any other world containing only the two atoms of **BW** is not indiscernible from **BW** and so any i-world for **BW** must contain at least one particular different from the atoms *a* and *b*. Indeed, it is easy to conceive of an i-world for **BW**; for imagine that *a* and *b* are not the only possible particulars belonging to worlds like **BW**, then there is another possible world containing only *c* and *d* (numerically different from *a* and *b*) which have the same pure properties *a* and *b* have in **BW**. Let us call this world **BW***. **BW** and **BW*** are i-worlds: for both *a* and *b* there are particulars in **BW*** having all the pure properties they have in **BW**, and for both *c* and *d* there are particulars in **BW** having all the pure properties they have in **BW***, and no particular, either in **BW** or in **BW***, corresponds to a particular in the other with the same *impure* properties. Similarly, a world containing only *a* and *c* (or *a* and *d*, or *b* and *c*, or *b* and *d*) in which *a* and *c* (or *a* and *d*, or *b* and *c*, or *b* and *d*) have the same pure properties *a* and *b* have in **BW** is an i-world for **BW**.

What makes any two worlds indiscernible is, of course, that to each particular in either of them there corresponds a particular with all the same pure properties in the other. This entails, in general, that if worlds **W** and **W*** are indiscernible then to each particular in either of them there corresponds an indiscernible particular in the other. I shall call the relation that holds between indiscernible particulars (whether or not numerically different, i.e. whether or not i-particulars) in *different* worlds *cross-world indiscernibility*. Thus, with respect to worlds **BW** and **BW***, *a* (*b*) and *c* (*d*) are cross-world indiscernible and, of course, a particular can be cross-world indiscernible of itself with respect to two worlds.[12] But cross-world indiscernibles which are numerically different I shall call *alien-duplicates*, i.e. alien-duplicates are cross-world i-particulars.[13] Thus *a* (*b*) and *c* (*d*) are alien-duplicates with respect to **BW** and **BW***. But there might be particulars *x* and *y* which are alien-duplicates with respect to worlds **W** and **W*** and such that both *x* and *y* exist in both **W** and **W***. Thus

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[12] In general *x* and *y* are not cross-world indiscernible *simpliciter*, but cross-world indiscernible with respect to some worlds **W** and **W***. In other words, cross-world indiscernibility is a *tetradic* relation: it has two particular-places and two world-places.

[13] Alien-duplication is, of course, also a tetradic relation with two particular-places and two world-places.

consider a world **W** containing two particulars *a* and *b* which are almost indiscernible, since they differ only in that *a* has temperature *t* and *b* has temperature *t**. Now consider a world **W*** exactly like **W** except that in it *a* has temperature *t** and *b* has temperature *t*. *a* and *b* are alien-duplicates with respect to worlds **W** and **W*** but they both exist in both **W** and **W***.

All i-worlds **W** and **W*** are such that to every particular in one of them there corresponds a cross-world indiscernible particular in the other. If **W** and **W*** are spatially permuted worlds then for every particular *x* in **W** at least one of the cross-world indiscernibles of *x* in **W*** is *x* itself. Indeed if **W** and **W*** are spatially permuted worlds, since they differ only in the spatial position of (at least some of) their particulars, then the particulars existing in them are cross-world indiscernible from themselves with respect to **W** and **W***. But there are i-worlds **W** and **W*** which are not like this, since they are such that some particulars in one of them have *only* alien-duplicates in the other, i.e. they are such that some particulars in **W** are not cross-world indiscernible from themselves in **W*** and vice versa. I shall call i-worlds like these *alien-duplicated worlds*. **BW** and **BW*** are thus alien-duplicated worlds. Other alien-duplicates worlds are the worlds **W** and **W***, described above, such that **W** contains two particulars differing only in that one has temperature *t* and the other temperature *t** and **W*** differs from **W** only in that the particular with *t* in **W** has *t** in **W*** and vice versa (notice that although alien-duplicated these two worlds contain exactly the same particulars).

We saw that **BW** has no spatially permuted world but has alien-duplicated worlds. It should be clear that alien-duplicated worlds are the only i-worlds that **BW** has. As I have defined the notion, having different particulars is a sufficient condition (though not a necessary one) for i-worlds to be alien-duplicated. But no i-world of **BW** can have exactly the same particulars as **BW**. For, as we saw, the spatial position of the particulars of **BW** cannot be altered without altering some of their pure relational properties and so **BW** has no spatially permuted i-world. Furthermore every i-world of **BW** must have exactly two particulars, one with all the same pure properties as *a* has in **BW** and one with all the same pure properties as *b* has in **BW**; but since *a* and *b* are indiscernible in **BW**, any indiscernible world from **BW** containing *a* and *b* would not be numerically different from **BW**. Thus the only i-worlds for **BW** are alien-duplicated worlds.

Since **BW** does have an i-world, though it lacks spatially permuted ones, **BW** is not a counterexample to premise (4). So, it seems, alien-duplicated worlds in general allow Leibniz's argument go through, provided every world containing i-particulars (or at least every such world lacking spatially permuted i-worlds) has alien-duplicated i-worlds. But in fact this is not the case, as we shall see: accepting alien-duplicated worlds makes Leibniz's argument collapse.

To see how Leibniz's argument collapses on admitting alien-duplicated worlds let me introduce the notion of a *ϕ-particular*, where ϕ is a set of *intrinsic* properties of particulars: a *ϕ-particular* is a particular which satisfies ϕ, in the sense that all and only its intrinsic properties are members of ϕ. By a *possible* ϕ-particular I mean a particular satisfying ϕ in some possible world, whether or not the actual one. A world **W** is a *saturating world* if and only if for every ϕ satisfied in **W**, **W** contains all the possible ϕ-particulars and they all satisfy ϕ in **W**. A world **W** is *un*saturating if and only if it is not saturating, i.e. if and only if either for some ϕ satisfied in **W** it does not contain all the possible ϕ-particulars or else for some ϕ satisfied in **W** there is some possible ϕ-particular which exists in **W** but does not satisfy ϕ in **W**. Imagine, for the sake of illustration, that modal space comprises only eight possible worlds, as illustrated below (ϕ and φ are sets of intrinsic properties of particulars):[14]

$\mathbf{W_1}$: ϕ*a*
$\mathbf{W_2}$: ϕ*b*
$\mathbf{W_3}$: φ*a*
$\mathbf{W_4}$: φ*b*
$\mathbf{W_5}$: ϕ*a*, φ*b*
$\mathbf{W_6}$: φ*a*, ϕ*b*
$\mathbf{W_7}$: ϕ*a*, ϕ*b*
$\mathbf{W_8}$: φ*a*, φ*b*

In this model $\mathbf{W_7}$ and $\mathbf{W_8}$ are saturating worlds: $\mathbf{W_7}$ contains all the possible ϕ-particulars and they all satisfy ϕ in it, and $\mathbf{W_8}$ contains all the possible φ-particulars and they all satisfy φ in it. The other six worlds are unsaturating worlds.

Clearly saturating worlds contain i-particulars. But there are no alien-duplicated worlds for them: for every ϕ satisfied in them they contain all the possible ϕ-particulars and they all satisfy ϕ in them, so it is impossible to generate i-worlds for them by replacing one of their particulars by a ϕ-particular not belonging to them. There are alien-duplicated worlds for **BW** because it does not contain all the possible particulars having exactly the same intrinsic properties the particulars in **BW** have. Thus there are worlds which duplicate **BW**, but (at least some of) whose particulars are not in **BW**. But this, as we have just seen, is impossible in the case of a saturating world.

On the other hand, every *un*saturating world has an alien-duplicated world. For an unsaturating world **W** is such that for some ϕ satisfied in **W** either (a) **W** does not contain all the possible ϕ-particulars or (b) there is some possible ϕ-particular which exists in **W** but does not satisfy ϕ in **W**. If (a) then for some ϕ satisfied by some *x* in **W** there is a world **W*** which differs from **W** only in that in **W*** a particular *y*, instead of *x*, satisfies ϕ. If so **W** and **W*** are alien-duplicated worlds. Now suppose (b) is the case, i.e. although, for every ϕ satisfied in **W**, all possible ϕ-particulars exist in **W**, in **W** some possible ϕ-particular *x* satisfies not ϕ but another set φ of intrinsic properties. Then there is a world **W*** which differs from **W** only in that in **W*** *x* satisfies ϕ and some other particular *y* (which might as well exist in **W**) satisfies φ. If so **W** and **W*** are alien-duplicated worlds. Thus to every unsaturating world there corresponds an alien-duplicated world. Our model above illustrates this: there all unsaturating-worlds have alien-duplicated worlds.

[14] For the sake of simplicity I ignore worlds differing as to the relational properties of *a* and *b*.

But if to every unsaturating-world there corresponds an alien-duplicated world, to every unsaturating-world there corresponds an i-world. And then Leibniz's argument for the Identity of Indiscernibles collapses. For either the actual world is saturating or it is unsaturating. If it is unsaturating it has an i-world and so line (3) in Leibniz's argument is false and, consequently, either premise (1) or (2) or both are false. And if the actual world is saturating then it contains i-particulars and thus not only premise (4) is false but so is also the conclusion of the argument, i.e. the Identity of Indiscernibles is false. Either way the argument collapses. And I am not presupposing that saturating-worlds are possible, which depends on difficult questions which I cannot and need not touch here, like the cardinality of the set of ϕ-particulars and the size of spacetime: all I presuppose is the uncontentious claim that either the actual world is saturating or is not.

IV. Conclusion

We have seen that invoking alien-duplicated worlds makes Leibniz's argument collapse. But rejecting alien-duplicated worlds – in case any good reasons for this can be found – leaves Leibniz with a counterexample to premise (4): there is a world containing i-particulars, **BW**, which lacks any non-alien-duplicates i-worlds and so Leibniz cannot, *on the basis of his argument*, rule out **BW** as being the actual world. It does not matter that there are empirical or other reasons to believe that the actual world is not **BW** – and indeed there may be such reasons internal to Leibniz's system for, as an anonymous referee has pointed out, **BW** is not rich in phenomena. What matters is that Leibniz's argument is unable to establish that the actual world is not **BW** and so he has not derived the Identity of Indiscernibles from the Principle of Sufficient Reason as he tried to in his letters to Clarke.[15]

REFERENCES

1. Alexander, H. G. (ed.) *The Leibniz-Clarke Correspondence* (Manchester: Manchester University Press, 1956)
2. Black, M., 'The Identity of Indiscernibles', in his *Problems of Analysis* (London: Routledge and Kegan Paul, 1954)
3. Broad, C. D., 'Leibniz's last Controversy with the Newtonians' in Woolhouse, R. (ed.), *Leibniz: Metaphysics and Philosophy of Science* (Oxford: Oxford University Press, 1981)

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4. Clatterbaugh, K., ‘Leibniz’s Principle of the Identity of Indiscernibles’, *Studia Leibnitiana* 3 4 (1971) 241-252.
5. Couturat, L. (ed.) *Opuscules et Fragments inédits de Leibniz* (Paris: Alcan, 1903)
6. French, S., ‘Why the Principle of Identity of Indiscernibles is not contingently true either’, *Synthese* 78 2 (1989) 141-166.
7. French, S. and Redhead, M., ‘Quantum Physics and the Identity of Indiscernibles’, *The British Journal for the Philosophy of Science* 39 2 (1988) 233-246.
8. Gerhardt, C. (ed.) *Die philosophischen Schriften von G. W. Leibniz* (Darmstadt: Georg Olms, 1965)
9. Grover, S., ‘West or Best? Sufficient Reason in the Leibniz-Clarke Correspondence’, *Studia Leibnitiana* 28 1 (1996) 84-92.
10. Ishiguro, H., *Leibniz’s Philosophy of Logic and Language* (London: Duckworth, 1972).
11. Khamara, E. J., ‘Indiscernibles and the Absolute Theory of Space and Time’, *Studia Leibnitiana* 20 2 (1988) 140-159.
12. Mates, B., *The Philosophy of Leibniz. Metaphysics and Language* (New York, Oxford: Oxford University Press, 1986)
13. Parkinson, G. H., *Logic and Reality in Leibniz’s Metaphysics* (Oxford: Oxford University Press, 1965)
14. Rescher, N., *Leibniz. An Introduction to his Philosophy* (Oxford: Basil Blackwell, 1979)