Journal of the American Philosophical Association (2021) 40–58 © American Philosophical Association
DOI:10.1017/apa.2019.53

The Modal Status of Leibniz's Principle of Sufficient Reason

ABSTRACT: *Leibniz's principle of sufficient reason (PSR) is the claim that everything has a sufficient reason. But is Leibniz committed to the necessity or to the contingency of his great principle? I argue that Leibniz is committed to its contingency, given that he allows for the absolute possibility of entities that he claims violate the PSR. These are all cases of qualitatively indiscernible entities, such as indiscernible atoms, vacua, and bodies. However, Leibniz's commitment to the contingency of the PSR seems to stand in tension with his inference of the PSR from his theory of truth. I argue that this apparent tension can be resolved satisfactorily. When it comes to his modal views on the PSR, Leibniz's position is entirely consistent.*

KEYWORDS: Leibniz, principle of sufficient reason, identity of indiscernibles

Introduction

Leibniz's principle of sufficient reason (PSR) is the claim that everything has a sufficient reason. As Leibniz puts it in §32 of the *Monadology* (1714), the PSR is the principle 'by virtue of which we consider that we can find no true or existent fact, no true assertion, without there being a sufficient reason why it is thus and not otherwise' (Leibniz 1875–: VI 612 [G]/1989: 217 [AG]). Leibniz wielded his great principle to great effect. On the one hand, he used it to rule out rival ontological commitments, such as mind-body occasionalism and gravitational force (G VI 316/Leibniz 1985: §340 [T]; 1903: 11–12 [C]/1973: 172 [MP]). On the other hand, he used it to support his own ontological commitments, such as the existence of God (G VII 302–303/AG 149–50). But what is the modal status of Leibniz's PSR? That is the question I shall attempt to answer.

The question is an important one for the following reason. Leibniz clearly saw the PSR as a principle that he could employ to refute the views of his rivals. A particularly clear example is his rejection of Newton's view of the physical

I am grateful for helpful comments from Donald Ainslie, Deborah Black, Marc Bobro, Michael Della Rocca, Karolina Hübner, Martin Lin, Robert Mason, Jeff McDonough, Stephen Puryear, William Seager, two anonymous referees, and, most especially, Marleen Rozemond. I am also grateful for helpful feedback from audiences at the Leibniz Society of North America meeting at the University of Houston, the Princeton-Penn-Columbia Graduate Conference in Early Modern Philosophy at Princeton University, the Berlin-Groningen-Harvard-Toronto Workshop at the University of Groningen, and the American Philosophical Association (Eastern) meeting in Savannah. Financial support was generously provided by the Social Sciences and Humanities Research Council of Canada, as well as by the Balzan Styles of Reasoning project at the University of Toronto.

world. According to Leibniz, there are all sorts of entities in the Newtonian world that violate the PSR, such as atoms, vacua, gravitational force, and absolute space (G VII 420/Leibniz 2000: L5.127 [LC]). If the PSR is a necessary truth, then Leibniz could simply reject the Newtonian world as being impossible. As with most arguments based on claiming that something is impossible, this seems like a tall order. However, if the PSR is a contingent truth, then Leibniz has a slightly more modest strategy available to him: concede that a Newtonian world is possible, but deny that a perfectly wise God would ever create a world that contains violations of the PSR. Although this paper is more concerned with the possibility of violations of the PSR than with whether such violations conflict with God's wisdom, we shall see that this is a strategy Leibniz pursues.

Now the modal status of Leibniz's PSR has not, so far as I know, received any extended discussion. At the same time, commentators of Leibniz's philosophy have certainly made claims about its modal status, if only in passing. The great majority of commentators seem to think that, for Leibniz, the PSR is a necessary truth (Russell 1900: 35–36; Sleigh 1983: 202–203; Rutherford 1992: 43–44; Adams 1994: 175; Savile 2000: 34–37; Jauernig 2008: 214; Rodriguez-Pereyra 2014: 82). Yet there are a few commentators who recognize that Leibniz's position on the matter is not straightforward. Adams (1994: 175), for instance, concedes that the modal status of Leibniz's PSR is difficult to determine. Della Rocca (2015) goes further, arguing that the necessity of the PSR poses problems for divine freedom and that Leibniz's views on the modal status of the PSR merit further investigation. And Jorati (2016: 194–97) goes further still, presupposing the contingency of the PSR in her account of Leibnizian compossibility.

In this paper I will take an even further step: I will argue that Leibniz is in fact committed to the contingency of the PSR. More precisely, Leibniz is committed to violations of the PSR being absolutely possible. While Leibniz does not explicitly state this claim, it is implied by claims that he does explicitly state. Given both his intelligence and the systematic nature of his thought, there is a good chance that Leibniz realized that he was committed to the absolute possibility of violations of the PSR. But whether or not he actually realized this is not a question that I will attempt to answer.

I will proceed as follows. In section 1 I begin by briefly describing what Leibniz meant by 'absolute possibility'. The purpose of this is to clarify in what sense Leibniz is committed to the contingency of the PSR. In section 2 I identify various sorts of entities that Leibniz thought are absolutely possible. These include vacua, atoms, and indiscernible bodies generally. Given that Leibniz thought that all of these are examples of qualitatively indiscernible entities ('indiscernibles'), the upshot of this section is that indiscernibles are absolutely possible. In section 3 I describe how, according to Leibniz, indiscernibles violate the PSR. Because indiscernibles are absolutely possible, violations of the PSR are therefore absolutely possible as well. In section 4 I consider a reason to think that Leibniz is nevertheless committed to the absolute necessity of the PSR. This reason is that Leibniz infers the PSR from his theory of truth, which is presumably absolutely necessary. If so, then Leibniz is seriously confused in his modal commitments.

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I will argue, however, that this apparent tension can be resolved satisfactorily. Leibniz's position is in fact entirely consistent.

1. Absolute possibility

My claim is that, for Leibniz, violations of the PSR are absolutely possible. But what is meant by 'absolutely possible'? The first point to observe is that Leibniz does not analyze absolute possibility in terms of possible worlds (cf. Adams 1994: 46–50). Instead, he analyzes it in terms of the implication of contradictions. In his *Conversation with Steno* (7 December 1677), Leibniz describes the distinction between absolute necessity and hypothetical necessity as follows:

> Absolute necessity is when a thing cannot even be understood to be otherwise, but it implies a contradiction in terms, e.g., three times three is ten.
>
> Hypothetical necessity is when a thing can be understood to be otherwise, in itself, but *per accidens*, because of other things already presupposed outside itself it is necessarily such and such. (Leibniz 2005: 118–19, emphases removed [CP])

It is worth noting that Leibniz slides here between attributing modal properties to things [*res*] and to the terms or propositions that are true of things. Thus something is absolutely necessary when the negation of the relevant proposition about the thing implies a contradiction. Something is absolutely possible when the negation of the relevant proposition does not imply a contradiction. Something is hypothetically necessary, by contrast, if the negation of the relevant proposition does not imply an internal contradiction though it is nevertheless necessitated by something else. Notice that this allows for something to be both absolutely contingent yet hypothetically necessary.

Leibniz maintained these modal distinctions his whole life. For instance, in the year of his death he wrote the following in his fifth letter to Clarke (18 August 1716):

> For we must distinguish between absolute and hypothetical necessity. We must also distinguish between a necessity that takes place because the opposite implies a contradiction (which necessity is called logical, metaphysical, or mathematical) and a necessity which is moral, by which a wise being chooses the best and every mind follows the strongest inclination. (G VII 389/LC L5.4)

Here again we have the distinction between absolute and hypothetical necessity. But then Leibniz seems to invoke an entirely different type of necessity, which he calls 'logical, metaphysical, or mathematical'. This difference is, however, only apparent. For Leibniz defines such necessity in the same terms as absolute necessity, stating that its negation implies a contradiction. And, a few sections later, Leibniz explicitly identifies absolute necessity with metaphysical necessity (G VII 391/LC L5.10). Leibniz also contrasts absolute necessity with moral

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necessity. Such moral necessity is not equivalent to hypothetical necessity, but is rather a species thereof. For something is morally necessary not when its negation implies an internal contradiction, but when it is necessitated by some being (usually God) thinking it good for what is morally necessitated to obtain.

As an example of how Leibniz applies these distinctions, consider what he has to say regarding whether God can create just a single monad. On the one hand, it seems as if God can for there is nothing logically inconsistent in the existence of such a monad. On the other hand, it seems as if God cannot for the perceptions of the single monad would not correspond to any other monads. Leibniz describes both the problem and its solution in a letter to Des Bosses (29 April 1715):

> The other objection is this: if all monads have their perceptions from their own states, so to speak, and without any physical influence of one on another, and, further, if the perceptions of each monad correspond precisely to all the other monads that God has already created or to their perceptions, then God could not have created any of those monads that now exist without having produced all the others, etc. The response is easy and has already been given: he could absolutely, but not hypothetically, because he decided to act always most wisely and most harmoniously. (Leibniz 2007: 338–39 [LDB])

Leibniz's solution is to say that it is absolutely possible for God to create a single monad, but that it is hypothetically impossible. This is because God has decided to act in a wise manner. And the existence of only a single monad conflicts with God's wisdom. Although he does not say so explicitly, presumably the conflict here has to do with the fact that a wise God will create the best possible world, the goodness of which is at least partly a function of its plenitude. A world with a single monad would not be plenitudinous at all. Thus it is really moral necessity that is doing the work: the existence of the best possible world is morally necessitated by God's wisdom and goodness, which make the existence of a single monad hypothetically impossible.

On my view, violations of the PSR have precisely the same modal status in Leibniz's philosophy as the single monad. Both are absolutely possible, given that their negation does not imply an internal contradiction. Yet they are hypothetically impossible, given that the existence of the best possible world is morally necessitated. Because God is perfectly wise, he will not actualize violations of the PSR. It is not part of my argument, however, that the absolute possibility of such violations implies that there are possible worlds in which they occur. While that may be the case, it depends on precisely what is required to count as a Leibnizian possible world. This is a difficult issue that I will not try to resolve here. Rather, the important point is that, were it not for his wisdom, God could have created violations of the PSR, regardless of whether they occur as part of possible worlds or not. They are absolutely possible, though never actual.

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2. The absolute possibility of indiscernibles

There is a great deal of disagreement over whether Leibniz was committed to the absolute possibility of indiscernibles. Many commentators think that Leibniz was indeed committed to their absolute possibility (Russell 1900: 55–56; Vinci 1974: 100; McRae 1976: 110; Chernoff 1981: 135; Carriero 1995: 21n68; Vailati 1997: 117, 125; Lodge 2010: 25; Lin 2016: 450; Jorati 2017). Other commentators deny this (Parkinson 1965: 132–33; Broad 1975: 40–41; Jolley 2005: 86; Rodriguez-Pereyra 2014: 118–26). And yet other commentators prefer to present a variety of interpretive options (Jauernig 2008). Such interpretive disagreement is partly Leibniz's own fault. For Leibniz sometimes claims that it is necessary that there are no indiscernibles in nature (Leibniz 1923–: 6.4.1645 [A]/AG 32). But at other times he drops the 'in nature' qualification, claiming only that it is necessary that there are no indiscernibles (C 8/MP 133; Leibniz 1996: 57 [NE]; G VI 608/AG 214). Still, the necessity in question could just be moral necessity: it is morally necessary that there are no indiscernibles in the actual world given God's wisdom. I believe that this is indeed what Leibniz had in mind, for in several texts Leibniz commits himself to the absolute possibility of indiscernibles. I will consider three such texts here.

The first text is from a letter to Bernoulli (13/23 January 1699):

> I don't say that the vacuum, the atom, and other things of this sort are impossible, but only that they are not in agreement with divine wisdom. For even if God were to produce only that which is in accordance with the laws of wisdom, the objects of power and of wisdom are different, and should not be confused. From an infinity of possibles, God chose, in accordance with his wisdom, that which is most appropriate. However, it is obvious that the vacuum (and likewise atoms) leaves sterile and uncultivated places, places in which something additional could have been produced, while preserving everything else. For such places to remain contradicts wisdom. I think that there is nothing sterile and uncultivated in nature, even if many things seem that way to us. (Leibniz 1855–: III 565 [GM]/AG 170)

Now it is generally agreed that Leibniz is here granting that vacua and atoms are possible (Carriero 1995: 21; Lodge 2010: 34n7; Brown 2016: 210). They are the sorts of things that are within God's power to produce though he did not produce them because they allow for 'sterile and uncultivated places'. But did Leibniz really think that numerically distinct vacua (or numerically distinct regions of a single vacuum) would be qualitatively indiscernible and that the same is true for numerically distinct atoms? Some commentators, particularly Rodriguez-Pereyra (2014: 119), question whether Leibniz really thought at the time of writing that vacua and atoms are cases of indiscernibles. After all, there is a long tradition, going back to Epicurus at least, according to which atoms have different shapes and sizes. And in the letter to Bernoulli Leibniz does not rule out vacua and atoms

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on account of their indiscernibility. Rather, he rules them out on account of the restrictions they place on ontological plenitude.

Still, there is good reason to think that, at the time of writing to Bernoulli, Leibniz did believe that vacua and atoms are cases of indiscernibles. Ten years earlier he had written, 'There is no vacuum. For the different parts of empty space would then be perfectly similar and mutually congruent and could not be distinguished from one another. And so they would differ in number alone, which is absurd.' (A.6.4.1647/AG 33, emphasis removed). And only a year earlier he had written, 'Nowhere are there things perfectly similar (which is among my new and more important axioms). Another consequence of this is that, in nature, there are neither corpuscles of maximal hardness . . .' (G IV 51/AG 164). Although Leibniz does not explicitly refer to atoms here, the use of 'corpuscles [*corpuscula*]' does suggest that he is thinking of bodies that are at least very small. And his claim that such corpuscles are maximally hard might suggest that he is thinking of atoms as well.

Some five years after writing to Bernoulli, Leibniz reiterates the possibility (but not actuality) of a vacuum in his *New Essays on Human Understanding* (1704):

> Although I deny that there is any vacuum, I distinguish matter from extension, and I grant that if there were a vacuum inside a sphere the opposite poles within the hollow would still not touch. But I believe that divine perfection does not permit such a situation to occur. (NE 151)

Leibniz here grants that if there were a vacuum inside a sphere, then the opposite poles would not touch. But it might be objected that when Leibniz says 'if there were a vacuum' he is referring to something that is counterpossible, not merely counterfactual. Yet Leibniz goes on to make the same move as he did to Bernoulli: the reason why a vacuum does not exist is that it conflicts with God's perfection. This suggests that the existence of the vacuum is not a counterpossible; if it were, then the conflict with God's perfection would not be needed to explain why a vacuum does not exist.

The preceding texts concern the possibility of vacua and atoms. As we have seen, Leibniz does take such entities to be cases of indiscernibles. In his fifth letter to Clarke (18 August 1716), however, Leibniz suggests that indiscernible bodies in general are possible but not actual:

> This supposition of two indiscernibles, such as two pieces of matter perfectly alike, seems indeed to be possible in abstract terms, but it is not consistent with the order of things, nor with the divine wisdom by which nothing is admitted without reason. . . .
>
> When I deny that there are two drops of water perfectly alike, or any two other bodies indiscernible from each other, I do not say that it is absolutely impossible to suppose them, but that it is a thing contrary to the divine wisdom, and which consequently does not exist. (G VII 394–95/LC L5.21, 25)

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This text has split commentators into two camps. Some think that it shows that Leibniz genuinely believed that indiscernibles are possible (Russell 1900: 55–56; Vinci 1974: 100; McRae 1976: 110; Chernoff 1981: 135; Carriero 1995: 21n68; Lodge 2010: 25; Lin 2016: 450; Jorati 2017: 912). Others think that Leibniz is simply conceding that they are possible for the sake of argument without believing so himself (Parkinson 1965: 132–33; Broad 1975: 40–41; Jolley 2005: 86). As I see it, the chief interpretive difficulty lies in the fact that Leibniz does not say that indiscernibles are possible, but only that the supposition of indiscernibles is possible. That is, indiscernibles are supposable. This is a difficulty because Leibniz did not think that supposability entails possibility. To use one of his own examples, a wheel turning with the fastest motion is supposable but not possible. This is because one can always extend one of the wheel's spokes beyond its rim, such that any point on the spoke beyond the rim will be moving faster than the wheel itself (G IV 424/AG 25; cf. NE 438).

It is indeed difficult to adjudicate Leibniz's precise intentions in this passage from his fifth letter to Clarke. Leibniz was uncharacteristically frustrated by this stage in the correspondence and may therefore have tried to bring it to a close by conceding claims that he did not believe himself. Nevertheless, I think that this text does speak in favor of Leibniz holding indiscernibles to be absolutely possible. For we have already seen that Leibniz thought that vacua and atoms are absolutely possible and that he held these to be cases of indiscernibles. Thus there is good precedent in Leibniz's own writings to interpret the passage above as expressing a genuine belief that indiscernibles are absolutely possible. Moreover, in this passage Leibniz gives precisely the same reason for the nonexistence of indiscernibles as he did for vacua and atoms. This is not that they are absolutely impossible but that they conflict with God's wisdom. It would be odd to give this as a reason for the nonexistence of indiscernibles if in fact they are absolutely impossible.

I will now consider an objection to my claim that, for Leibniz, indiscernibles are absolutely possible. The objection concerns a famous text from the *Discourse on Metaphysics* (1686). In §8 and §9 of that text Leibniz appears to infer that there are no indiscernible individuals because each individual has a complete concept. Given that it seems to be an absolutely necessary truth that each individual has a complete concept, it follows that the qualitative discernibility of individuals is absolutely necessary. This is, indeed, the standard reading of this text (Russell 1900: 57–58; Parkinson 1965: 130; Adams 1979: 12; Look 2011b: 94–95). But despite its initial plausibility, I believe that this standard reading is ultimately mistaken. The reading derives its plausibility from the fact that Leibniz does discuss complete concepts, and he does make an inference to discernibility. Where the reading goes wrong is that it fails to take the full context of the passage into account. Once that context is provided, it becomes clear that Leibniz does not infer discernibility from complete concepts at all, but rather from an entirely different set of claims. Because not all of these claims are absolutely necessary, my reading also has the advantage of rendering Leibniz's modal views on indiscernibles consistent.

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Let us now consider the relevant passage in §8 and §9 of the *Discourse* in its full context (the letter divisions are my own):

> [A] We can say that the nature of an individual substance or of a complete being is to have a notion so complete that it is sufficient to contain and to allow us to deduce from it all the predicates of the subject to which this notion is attributed . . . . [B] Also when we consider carefully the connection of things, we can say that from all time in Alexander's soul there are vestiges of everything that has happened to him and even traces of everything that happens in the universe, even though God alone could recognize them all.
>
> [C] 9. That each singular substance expresses the whole universe in its own way, and that all its events, together with all their circumstances and the whole sequence of external things, are included in its notion.
>
> [D] Several notable paradoxes follow from this; among others, it follows that it is not true that two substances can resemble each other completely and differ only in number . . . . It also follows that a substance can begin only by creation and end only by annihilation; that a substance is not divisible into two . . . . [E] Moreover, every substance is like a complete world and like a mirror of God or of the whole universe, which each one expresses in its own way, somewhat as the same city is variously represented depending upon the different positions from which it is viewed. Thus the universe is in some way multiplied as many times as there are substances, and the glory of God is likewise multiplied by as many entirely different representations of his work. (A.6.4.1540–42/AG 41–42)[1]

This is a long and difficult text, which I interpret as follows. In [A] Leibniz claims that it is the nature of an individual substance to have a complete concept. In [B] Leibniz claims that because everything is connected, Alexander's soul contains traces of everything that happens in the universe. In [C], which is the title of §9, Leibniz generalizes the claim about Alexander's soul to all substances, suggesting that they each express the entire universe; he also repeats his claim that the concepts (or notions) of substances are complete. In [D] Leibniz infers three features of substances: that they are qualitatively discernible; that they can only begin by creation and end by annihilation; and that they are indivisible. In [E] Leibniz repeats his claim that substances express the whole universe and adds that the diversity of such expressions multiplies the glory of God.

[1] I have replaced Ariew and Garber's translation in [B] of 'Thus when we consider carefully the connection of things' with 'Also when we consider carefully the connection of things'. This is because the sentence begins with *Aussi*. While *Aussi* can be translated as 'Thus', I prefer 'Also' because Leibniz's inference in [B] to the marks and traces found in Alexander's soul is from the fact that everything is connected, not from the fact that each thing has a complete concept (Woolhouse and Francks opt for a similar translation: 'And, moreover, if we consider carefully the interconnectedness of things' [Leibniz 1998: 60 (WF)]). Also note that Ariew and Garber provide headline capitalization and italics for [C].

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Our concern is obviously with Leibniz's inference to the qualitative discernibility of substances in [D]. But in [A] and [B], respectively, as well as in [C], Leibniz presents *two* claims about substances: they have complete concepts, and they express the entire universe. The standard reading takes Leibniz to infer the qualitative discernibility of substances from the first claim, namely, from their having complete concepts. But this reading faces the following problem. While Leibniz does indeed infer the qualitative discernibility of substances, he also infers that substances only begin by creation and only end by annihilation and that substances are indivisible. Yet how could the existence of a complete concept prevent a substance from naturally ceasing to exist or from having parts?

This difficulty is avoided on my interpretation. For as I interpret the text, Leibniz indirectly infers the qualitative discernibility of substances from the second claim, namely, from their expressing the entire universe. I say 'indirectly' because he uses this second claim to draw an implicit inference: if substances express the entire universe, then substances must be like souls. This is because the type of expression that Leibniz has in mind is that of perceptual representation as is suggested by his analogy in [E] of different people variously representing the same city from different viewpoints. This is also why Leibniz speaks of Alexander's soul as that which is doing the expressing. His body, being a purely material entity, is not able to perceive anything at all, much less the entire universe. Elsewhere Leibniz provides various arguments against matter being naturally able to perceive, such as his famous mill argument. How exactly these arguments work is not my concern here (for a detailed discussion see Rozemond 2014). All that matters for our purposes is that Leibniz denies that bodies can naturally perceive.

It is from the conclusion of this implicit inference that Leibniz then infers the three features of substances in [D]. But this time, his inferences make sense. For souls are mereologically simple. Unlike bodies, they cannot be divided into parts. Therefore they cannot cease to be of themselves as that would require the dissolution of their parts. For the same reason they cannot be divided into two either. What about the inference to the qualitative discernibility of substances? Here the inference seems less obvious. For even if substances are like souls, it does not seem to follow that they cannot express the universe in precisely the same way. There is, however, a solution to this problem. For in [E] Leibniz suggests that God is more glorified by substances having 'entirely different [*toutes differentes*]' expressions of his work. So the fact that substances are qualitatively discernible follows both from the fact that they are like souls (this being a necessary condition for them to express the entire universe) and from the fact that God is more glorified by a variety of different expressions. What Leibniz writes in §8 and §9 of the *Discourse*, then, does not commit him to the absolute impossibility of indiscernibles. For while such indiscernibles do not exist, the reason why they do not exist is that they do not maximize God's glory. It is not because they are absolutely impossible. This fits very well with the persistent theme of the texts that we have considered: indiscernibles are absolutely possible, but inconsistent with the perfection of God.

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3. Indiscernibles and the PSR

So far I have argued that, according to Leibniz, indiscernibles are absolutely possible. In this section I will argue that, according to Leibniz, indiscernibles violate the PSR. There are two lines of evidence for this claim. The first is from *Primary Truths*, in which Leibniz argues that indiscernibles in general violate the PSR. The second is from his correspondence with Clarke, in which Leibniz argues that vacua and atoms in particular violate the PSR as well.

Let us first consider what Leibniz writes in *Primary Truths* (1689):

> From these considerations it also follows that, *in nature, there cannot be two individual things that differ in number alone*. For it certainly must be possible to explain why they are different, and that explanation must derive from some difference they contain. And so what St. Thomas recognized concerning separated intelligences, which, he said, never differ by number alone, must also be said of other things, for never do we find two eggs or two leaves or two blades of grass in a garden that are perfectly similar. (A.6.4.1645/AG 32, emphasis in original)

Leibniz begins this text by appealing to certain 'considerations'. This clearly refers to the preceding part of *Primary Truths*, in which Leibniz infers the PSR from his theory of truth (we shall consider this part in the next section). That Leibniz is relying on the PSR is also confirmed by the way in which the argument proceeds. For suppose that there are two indiscernible individuals. There must be an explanation for their numerical distinction: 'For it certainly must be possible to explain why they are different [*Utique enim oportet rationem reddi posse cur sint diversae*]'. According to Leibniz, the explanation must appeal to some difference in their intrinsic qualities. But by hypothesis there is no such difference. Thus, given that the PSR is true, there are no indiscernibles in nature. As Leibniz also claims, he thinks that this conclusion is confirmed by empirical investigation as well.

Indiscernibles therefore violate the PSR by lacking a sufficient reason for their numerical distinction. Yet Leibniz does not conclude from this that indiscernibles are absolutely impossible. He only concludes that indiscernibles are impossible 'in nature [*in natura*]'. To use Leibniz's examples, this allows for indiscernible eggs, leaves, or blades of grass to be absolutely possible. It is just that there is no sufficient reason for why they are numerically distinct. If the PSR is true in the actual world, then the actual world will lack such indiscernible entities.

In his correspondence with Clarke, Leibniz focuses on vacua and atoms as violations of the PSR. Leibniz actually gives a list of violations of the PSR in his fifth letter (18 August 1716). These include 'an absolute real time or space, *a vacuum*, *atoms*, attraction in the scholastic sense, a physical influence of the soul over the body, and a thousand other fictions either derived from erroneous opinions of the ancients or lately invented by modern philosophers.' (G VII 420/LC L5.127, emphasis added). We already know one reason why vacua and atoms might appear on this list: they are cases of indiscernibles, which by the argument in *Primary Truths* means that there is no sufficient reason for their numerical

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diversity. But there are other possible reasons as well. In the postscript to his fourth letter (2 June 1716), for example, Leibniz argues that vacua and atoms violate the PSR in a different way:

> I shall add another argument grounded on the necessity of a sufficient reason. It is impossible that there should be any principle to determine what proportion of matter there ought to be, out of all the possible degrees from a plenum to a vacuum, or from a vacuum to a plenum. Perhaps it will be said that the one should be equal to the other, but, because matter is more perfect than a vacuum, reason requires that a geometrical proportion should be observed and that there should be as much more matter than vacuum, as the former deserves to be preferred. But then, there must be no vacuum at all, for the perfection of matter is to that of a vacuum as something to nothing. And the case is the same with atoms: what reason can anyone assign for confining nature in the progression of subdivision? (G VII 378/LC L4.PS)

This is a slippery text, which I interpret as follows. Leibniz first gives an argument against vacua. For let us suppose some particular proportion of matter to vacua. This proportion is no better than any other proportion. Thus God would violate the PSR by picking one proportion rather than another. Leibniz then considers an objection: there is a best proportion, namely, an equal amount of matter and vacua. He responds that since matter is better than vacua, God would prefer a material plenum. Either way, vacua would not exist.

Leibniz then claims that atoms violate the PSR as well. But the problem is not with the proportion of atoms to nonatoms. Rather, the problem is that there is no nonarbitrary stopping point for the division of matter. To expand on what Leibniz says, suppose that a piece of matter is divided in half, and that one of those halves is itself divided into half. Now suppose that this process is repeated a thousand times. By the thousandth division there will only be a tiny piece of matter left. Yet it would be arbitrary for this piece of matter to count as an atom for presumably it too can be divided into even smaller parts. Given that matter is in fact infinitely divisible, any point at which it is said to be an atom would in fact be arbitrary. In this way atoms violate the PSR as well.

4. The contingency of the PSR and Leibniz's theory of truth

I have argued that, according to Leibniz, indiscernibles are both absolutely possible and violate the PSR. Leibniz is therefore committed to the contingency of his great principle. But this commitment seems to be in conflict with another one of Leibniz's commitments, namely, the claim that the PSR follows from his theory of truth.[2] If Leibniz's theory of truth is both absolutely necessary and entails the

[2] There is another possible tension in Leibniz's commitments: in early writings such as *Demonstration of Primary Propositions* (A.6.2.483, from 1671–72), Leibniz tries to prove the PSR from the concepts of a

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PSR, then the PSR must be absolutely necessary as well. Consider, for instance, what Leibniz writes in *Primary Truths* (1689):

> For the received axiom that *nothing is without reason*, or *there is no effect without a cause*, directly follows from these considerations; otherwise there would be a truth which could not be proved a priori, that is, a truth which could not be resolved into identities, contrary to the nature of truth, which is always an explicit or implicit identity. (A.6.4.1645/AG 31, emphasis in original)

The 'considerations' to which Leibniz appeals are those that constitute his theory of truth. This is the theory that truths have a priori proofs, which Leibniz conceives of as the resolution of the truth to be proved into an identity statement (or at least to converge upon an identity statement if the truth in question is contingent). Given that it is impossible for there to be such an a priori proof of a truth that lacks a sufficient reason, Leibniz thinks that his theory of truth implies the PSR.

Now it is undeniable that Leibniz infers the PSR from his theory of truth. But in order for this to show that the PSR is absolutely necessary, Leibniz's theory of truth must itself be absolutely necessary. Yet there is no consensus concerning the modal status of Leibniz's theory of truth. Some commentators do think that passages such as this support the absolute necessity of Leibniz's theory of truth and therefore of the PSR as well (Couturat 1901: 208–10; Jauernig 2008: 214; Rodriguez-Pereyra 2014: 82). Other commentators have expressed doubts over whether Leibniz's theory of truth as it is expressed in such passages is indeed absolutely necessary (Carriero 1995: 21n68, 23–26; Jorati 2017: 921n53). In what follows I will join the latter group in expressing doubts concerning the absolute necessity of Leibniz's theory of truth. First, I will consider the key reason for thinking that Leibniz's theory of truth is absolutely necessary, which is that he describes it as the 'nature [*naturam*]' of truth. I will argue that even though it might seem obvious to the contemporary mind that this is an endorsement of absolute necessity, this is far from obvious for an early modern thinker such as Leibniz. To support this argument I will identify a distinction found in Leibniz's philosophy between two senses of the word 'nature'; the one sense implies absolute necessity, whereas the other does not. I will suggest that Leibniz thinks of the nature of truth in the second sense. I will then conclude by contrasting Leibniz's theory of truth with another theory of truth that Leibniz also endorses, which he attributes to Aristotle. Unlike his own theory, Leibniz takes Aristotle's theory to be absolutely necessary, though it does not imply the PSR.

Let us begin, then, by showing that Leibniz uses the term 'nature' in a couple of different ways. In his preface to the *New Essays on Human Understanding* (1703–

requisite and a sufficient reason, which would presumably show that the PSR is absolutely necessary. However, as many other commentators have also noted, Leibniz's youthful proof is obviously problematic (Sleigh 1983: 203–204; Frankel 1986: 333–34; Adams 1994: 68; Blumenfeld 1995: 374; Look 2011a: 204; Rodriguez-Pereyra 2018: 55). Thus there is at least some reason to think that the mature Leibniz came to abandon this proof.

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5), Leibniz considers whether gravity and curved motion can be modifications of matter. He suggests that they can, but only by a miracle. This is because such modifications cannot be explained in terms of the nature of matter, namely, extension, alone. Given that God's wisdom precludes him from doing many miracles, we can therefore expect matter not to have such modifications in the actual world. As Leibniz puts it:

> We know that magnitude, shape, and motion are obviously limitations and variations of corporeal nature [*nature corporelle*]. For it is clear how a limitation of extension produces shapes, and that the change which takes place there is nothing but motion. And every time we find some quality in a subject, we ought to think that, if we understood the nature [*la nature*] of this subject and of this quality, we would understand how this quality could result from that nature. Thus in the order of nature (setting miracles aside) God does not arbitrarily give these or those qualities indifferently to substances; he never gives them any but those which are natural to them, that is to say, those that can be derived from their nature [*nature*] as explicable modifications. Thus we can judge that matter does not naturally have the attraction mentioned above [gravity], and does not of itself move on a curved path, because it is not possible to conceive how this takes place, that is to say, it is not possible to explain it mechanically. (G V 58–59/AG 304)

Let us say that it is the *absolute nature* of matter to be extended. It is absolute in that to deny extension of matter entails a contradiction. Not even God can produce unextended matter. As Leibniz suggests, the nature of matter admits of two kinds of modifications. Explicable modifications are modifications that are explicable in terms of the absolute nature of matter, such as magnitude, shape, and motion. Miracles, by contrast, are modifications that are explicable only in terms of God's direct intervention. These would include gravity, curved motion, and, as Leibniz later writes, thought as well (cf. G VI 326/T §355).

Read on its own, the above passage from the *New Essays* seems to suggest that the nature of matter consists solely in extension. All modifications of matter would therefore have to be explicable modifications of extension or miracles. But matter also has some properties that do not fit neatly into this taxonomy. Consider the force of resistance. Matter clearly has such a force—it pushes back, so to speak. Yet the force of resistance is not an explicable modification of extension. Nor is it a miracle, because then God would be doing miracles all the time, contrary to his wisdom. What Leibniz writes in the *New Essays,* then, cannot be the whole truth. Rather, Leibniz thinks that the nature of matter consists of both extension and force. In §12 of the *Discourse on Metaphysics*, for instance, he writes that 'the nature [*nature*] of body does not consist merely in extension, that is, in size, shape, and motion, but [we will find] that we must necessarily recognize in body something related to souls' (A.6.4.1545/AG 44). Leibniz puts the point more explicitly in terms of force in his *Specimen of Catholic Demonstrations* (1683–6?): 'the true notion of body . . . consists not in extension but in the force to act and be

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acted upon, that is, in the power to move and resist' (A.6.4.2326/Leibniz 2016: 106 [LGR]) Notice that Leibniz does not explicitly deny that extension is part of the nature of matter. If he did, then there would be a serious tension between what he writes in these texts and what he writes in the *New Essays*. Rather, what Leibniz denies is the Cartesian view that extension entirely constitutes the nature of matter. For Leibniz, the nature of matter consists of both extension and force.

At the same time, Leibniz did not think that force is part of the absolute nature of matter. This is because he believed that it is absolutely possible for matter not to have force. Leibniz makes this point with respect to the force of resistance in a letter to De Volder (24 March/3 April 1699):

> Such a world, at any rate possible, in which matter at rest obeys that which puts it in motion without any resistance can indeed be imagined, but such a world would be merely chaos. And so, two things on which I always rely here, success in experience and the principle of order, brought it about that I later came to see that God created matter in such a way that it contains a certain repugnance to motion, and, in a word, a certain resistance, by which a body opposes motion *per se*. . . . And so the resistance of matter contains two things, impenetrability or antitypy and resistance or inertia, and since they are everywhere equal in body or proportional to its extension, it is in these things that I locate the nature [*naturam*] of the passive principle or matter. (G II 170–71/AG 172–73)

Notice that Leibniz concedes that there is a possible world in which matter lacks the force of resistance. Thus it cannot be the absolute nature of matter to have such a force. However, Leibniz also knows that in the actual world matter does have such a force. He knows this both from repeated observation ('success in experience') and from the fact that God has created the best possible world ('the principle of order'). As Leibniz writes, a world in which bodies do not resist motion at all would be chaotic. So why does matter in the actual world have such a force? Leibniz's answer is that God created matter so as to have a force of resistance. And because matter always exhibits such a force, we may say that it is the nature of matter to do so. Let us call such a nature a *decreed nature*: a property is part of a thing's decreed nature if God decreed that the thing always have that property, barring a miracle in which God temporarily revokes that initial decree.

Now it is tempting to think that this use of the term 'nature' is a mere aberration and possibly only restricted to the nature of matter. Leibniz wrote an awful lot, and he used the word 'nature' a lot too. So it would not be surprising if he occasionally used the word in strange ways. I think that this concern can be blunted by considering what Leibniz writes in the *Discourse on Metaphysics* (1686). In §7 we find Leibniz discussing what it means to say that an operation of the actual world is 'natural'. His view is that an operation is natural if it agrees with a thing's nature. This is hardly illuminating. But what is illuminating is what he says next.

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For Leibniz suggests that natures are only God's 'maxims' or 'custom', which God can discard or violate if he so desires:

> [Natural operations] are called natural because they are in conformity with certain subordinate maxims that we call the nature of things [*la nature des choses*]. For one can say that this nature [*nature*] is only God's custom, with which he can dispense for any stronger reason than the one which moved him to make use of these maxims. (A.6.4.1538–39/AG 40)

I take it that Leibniz does not mean that the nature of a thing is identical with a divine maxim, but only that it is the way it is because of a divine maxim. I also take Leibniz to be claiming that only some features of a nature are due to a divine maxim, not all of them. What is important for our purposes, however, is that Leibniz thought that not all natures are absolute, but that some are decreed. They are the result of God's decree for how things should be in the actual world.

Before proceeding any further, it is worth addressing another worry that arises from this talk of decreed natures. As is well known, Leibniz was very critical of Descartes' voluntarist view that God decrees the natures of things. So how can he say that God decrees the nature of matter to have a force of resistance or that there are natures that are due to God's maxims? The answer, I think, is found in considering what exactly Leibniz finds so objectionable about Cartesian voluntarism. Leibniz has at least two concerns (cf. A.6.4.1532–33/AG 36). The first is that if God determines the nature of the good, then God is no longer praiseworthy. For there is something empty or superfluous about praise directed toward a being that determines the standards of goodness and thus of what is to be praised in the first place. Leibniz's second concern is that God, being perfect, must act for reasons. Yet by hypothesis there cannot be a reason for why the Cartesian God chooses the natures that he does. After all, any such reason would have to appeal to certain standards of value, but on the Cartesian view God is the one who chooses those standards.

But notice that Leibniz's own position avoids both of these concerns. Nowhere does Leibniz claim that the nature of the good is a decreed nature—for him, the nature of the good is definitely absolute. This is true both of moral goodness, such as giving each person their due, as well as of metaphysical goodness, such as the value of ontological plenitude and nomological simplicity. By acting according to the nature of the good, God can be genuinely praiseworthy. Moreover, nowhere does Leibniz claim that God decrees natures for no reason whatsoever. In fact, our discussion of the decreed nature of matter has shown precisely the opposite to be the case: God decrees that it be the nature of matter to have a force of resistance because this makes the world much less chaotic. Leibniz's God always wills according to the best reason, whereas this is not always the case for Descartes' God. This is a considerable difference between their respective views on the divine will.

Let us now bring all of this back to Leibniz's theory of truth. As we have seen, commentators on Leibniz's philosophy are divided over whether Leibniz's theory

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of truth is absolutely necessary. The key point concerns what Leibniz means by describing his theory of truth as the 'nature' of truth. But as we have also seen, there is a distinction in Leibniz's philosophy between absolute natures and decreed natures. If it is the absolute nature of truth to have a priori proofs, then indeed the PSR is absolutely necessary. If, on the other hand, this is only the decreed nature of truth, then the PSR obtains in the actual world but is not absolutely necessary. Which one is it?

It would be rash, I think, to come down hard on this issue. Leibniz uses the term 'nature' in both senses, and it is difficult to know which sense he had in mind while writing texts such as *Primary Truths*. However, there are two considerations in favor of reading the nature of truth as a decreed nature. First, if it were an absolute nature, then it would be a logical contradiction to say that a truth lacks an a priori proof. This is a very strong claim, and I know of no text in which Leibniz makes such a claim. Second, we have already seen that Leibniz is committed to the absolute possibility of truths that violate the PSR: the truth that two indiscernible bodies are in fact two, the truth that there is a best proportion of matter to a nonzero amount of vacua, and the truth that there is a nonarbitrary stopping point in the division of matter. Leibniz thinks that these would all be brute truths, and no a priori proof can be given of a brute truth. Given that Leibniz also thinks that such entities are absolutely possible, this reading preserves the coherence of his philosophy.

Thus, although the issue is a delicate one, there is reason to think that not all truths about that which is merely possible have a priori proofs. They are simply brute truths. But then what would the nature of truth look like in worlds in which the PSR fails? This is not a question that Leibniz tackles at great length. We can, however, find an indication of an answer from another inference that Leibniz draws in *Primary Truths*. This is from his own theory of truth to a theory of truth that he attributes to Aristotle:

> All remaining truths [nonidentities] are reduced to primary truths [identities] with the help of definitions, that is, through the resolution of notions; in this consists *a priori proof*, proof independent of experience. . . . Therefore, the predicate or consequent is always in the subject or antecedent, and the nature of truth in general or the connection between the terms of a statement, consists in this very thing, as Aristotle also observed. (A.6.4.1644/AG 31, emphasis in original)

While Leibniz infers Aristotle's theory of truth from his own theory, the inference is not from one way of putting Leibniz's theory to another. While in the *Categories* (1^a23–25, Aristotle 1984: 3) Aristotle does say that the predicate is in the subject, he does not say that all truths have a priori proofs that involve a reduction to or convergence upon identity statements. Rather, I think that Leibniz is inferring Aristotle's theory of truth as a necessary condition for his own theory. Such an inference makes perfect sense: in order for a truth to have an a priori proof in Leibniz's sense, the concept of the subject must contain the predicate in the first

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place. So by virtue of endorsing his own theory of truth, Leibniz is committed to endorsing Aristotle's theory of truth as well.

Like his own theory, Leibniz describes Aristotle's theory as the 'nature of truth [*natura veritatis*]'. Unlike his own theory, however, there is no reason to think that Leibniz is using 'nature' here in the sense of a decreed nature. Rather, Aristotle's theory is of the absolute nature of truth, which is necessary for Leibniz's theory but not sufficient for it. For just because the concept of a subject contains a particular predicate does not mean that the predicate is provable in Leibniz's sense from other predicates also contained in the concept of that same subject. For example, we may suppose that both Aristotle's theory and Leibniz's theory apply to the truth that (say) the sphere on Archimedes's tomb is a foot in diameter. According to Leibniz, the sphere on Archimedes's tomb has a complete concept that contains all the predicates that are true of it (G II 39/AG 70). Thus the concept of Archimedes's sphere contains the predicate of being a foot in diameter, thereby satisfying Aristotle's theory. Presumably there is also an a priori proof of this fact, one that proceeds by analyzing the concept of Archimedes's sphere in order to identify those predicates that jointly entail the predicate of being a foot in diameter, all of which are contained in the sphere's concept. To take a simplified example, the analysis might reveal the following predicates: being thirteen inches wide at construction, being eroded by wind and rain for several centuries, and being a foot in diameter later on. The example is simplified because Leibniz saw an isomorphism between the infinite complexity of the physical world and the length of a priori proofs concerning contingent truths about that world (C 18–19/MP 98; G VI 612–13/AG 217; cf. Carriero 1993: 11–26). Thus the full proof will be infinite in length, identifying all the relevant predicates about the wind and rain, past weather conditions, and so on. The example is also subject to Humean worries concerning how any set of physical predicates can entail (as opposed to simply being correlated with) other physical predicates. It is worth noting, however, that as a pre-Humean Leibniz had little difficulty in understanding causal relations as conceptual relations.

Now consider, by contrast, a counterpart of Archimedes's sphere in some merely possible world, which we may call sphere*. Although sphere* is also a foot in diameter, its width is a brute fact. In that case Aristotle's theory may still apply to the truth that sphere* is a foot wide. Being a foot in diameter is contained in the concept of sphere*, and by knowing this concept, God knows its width. But God cannot identify other predicates contained in the concept of sphere* that fully explain why sphere* is a foot in diameter. This is for the simple reason that there are no such predicates contained in sphere*'s concept in the first place. Thus Leibniz would be within his rights to hold that Aristotle's theory of truth applies to all possible worlds, whereas his own theory of truth only applies to worlds in which the PSR is true.

5. Conclusion

In this paper I have argued against the dominant view that, for Leibniz, the PSR is absolutely necessary. There are simply too many texts in which Leibniz either

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claims or implies that various sorts of entities are absolutely possible, entities that Leibniz explicitly identifies as violations of the PSR. While these entities are of different kinds and violate the PSR in different ways, one way in which they all violate the PSR is by being cases of indiscernibles. Yet the contingency of the PSR seems to be in tension with Leibniz's inference of the PSR from his theory of truth. I have argued, however, that such a tension is only apparent. With respect to the PSR, Leibniz's modal commitments are perfectly consistent.

OWEN PIKKERT
UNIVERSITY OF TORONTO
owen.pikkert@mail.utoronto.ca

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