Leibniz on the Modal Status of Absolute Space and Time[1]

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Leibniz is a relationalist about space and time. He believes that nothing spatial or temporal is more fundamental than the spatial and temporal relations that obtain between things. These relations are direct: they are unmediated by anything spatially or temporally absolute such as points in space or moments in time. Some philosophers, for example, Newton and Clarke, disagree. They think that space and time are absolute. Their absolutism can take different forms. Newton, for example, believes that space is a substance, or more accurately, something substance-like.[2] A substance is not a relation of any kind. Therefore, if space is a substance or substance-like, then it is absolute. Other absolutists, such as Clarke, believe that space is a monadic property of God. A monadic property is not a relation and thus if space is a monadic property, then it is absolute.

Leibniz clearly thinks that absolutism is false. What is less clear is his attitude toward its modal status. Are absolute space and time merely contingently non-actual or are they impossible? In his correspondence with Clarke, Leibniz makes a number of claims regarding this issue that appear, on the face of it, to be inconsistent with one another. He argues that the Principle of the Identity of Indiscernibles (the PII) follows from God's wisdom. God's wisdom is the basis of only contingent truths, thus it would follow that the PII is a contingent truth. He argues against absolute space and time by way of the PII. This suggests that relationalism is also a contingent truth and so absolute space and time

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[2] It is typically assumed in such debates that space and time are analogous with respect to the issue of relationalism vs. absolutism. Whatever goes for one goes for the other. I will thus frequently omit references to time for the sake of brevity.

must be merely contingently non-actual. And yet he also appears to claim that absolute space and time are impossible. What justifies his claim that they are impossible? Is Leibniz being inconsistent?

This seeming inconsistency has long puzzled readers of Leibniz and has led some commentators to claim that Leibniz has two independent arguments for relationalism.[3] One is based on God's wisdom and the other on the PII. These commentators argue that instead of deriving from God's wisdom, the PII has an independent ground either in logic or in a kind of verificationism. The argument from the PII is the official argument and it entails that absolute space and time are impossible. The argument from God's wisdom is, such commentators allege, a second best argument and is designed to convince someone who cannot be persuaded to give up the belief that absolute space and time are possible.

My focus in this paper will be the correspondence with Clarke but I will also try to situate the views that Leibniz expresses there with respect to his other writings. I do not, however, take it to be a condition of the success of my interpretation that it is consistent with everything Leibniz has written. His thought develops throughout his career and sometimes not in a wholly linear fashion. He is also an experimental thinker who pursues multiple lines of thought concurrently and it is unrealistic to expect perfect harmony between all of them. I will thus content myself to show that there is a consistent and philosophically interesting line of thought developed in the correspondence that fits with many, if not all, of the themes of Leibniz's mature philosophy.

1. The Debate with Clarke

The correspondence is occasioned by a letter from Leibniz to Caroline, Princess of Wales, in which he alleges that Newton's natural philosophy is detrimental to religion. Caroline invited Samuel Clarke, the public face of the Newtonian philosophy at that time, to respond to Leibniz on behalf of Newtonianism.

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[3] See, for example, C.D. Broad, "Leibniz's Last Controversy with the Newtonians," in *Gottfried Wilhelm Leibniz: Critical Assessments*, vol. 3, Roger Woolhouse ed., (New York: Routledge, 1994), pp. 7-12; and Nicholas Jolley, *Leibniz*, (New York: Routledge, 2005), pp. 85-87; John Earman, *World Enough and Space-Time*, (Cambridge: MIT Press, 1989), 119-120.

Among the Newtonian views that Leibniz attacks is the doctrine of absolute space. Newton believes that absolute space possesses the geometrical structure of three-dimensional Euclidean space. He denies that this geometrical structure is founded on the spatial relations that obtain between bodies. Rather, he takes this structure to be unmediated by anything nonspatial. It is realized instead by points of space. He further believes that the points of this space persist through time, so that it makes sense to identify a single point of space at different times.[4] For this reason, he believes in absolute motion and rest in addition to absolute space.[5] Although Clarke's own views on absolute space differ from Newton's in subtle ways,[6] he seems to agree with Newton that space has the above-described features.

Leibniz believes that the doctrine of absolute space is untenable because it conflicts with a number of metaphysical principles that he endorses: The Principle of the Best (the PB), the Principle of Sufficient Reason (the PSR) and the Principle of the Identity of Indiscernibles (the PII). The PSR says that there is a sufficient reason for every truth or event. The PB says that the sufficient reason for every contingent truth is that God knows that it is part of the best possible world and so chooses to create it. The PII says that in nature there are no numerically distinct but qualitatively identical things.

The argument between Leibniz and Clarke on absolute space, as it develops in the correspondence, is a bit convoluted. Here is a rough sketch of the dialectic: Leibniz introduces the PSR as the basis for resisting the materialism of Hobbes and his ilk (although its connection to materialism is left unspecified).[7] Clarke at first concedes the PSR but makes it clear that, by his lights, an unmotivated divine volition can be the sufficient reason for something. Leibniz points out that an unmotivated divine volition itself violates the PSR. God must choose what he perceives to be the best. That is, the PB provides the sufficient reason for God's choices. Clarke then objects to the PB (or the PSR, for as we shall see, the two interlocutors do not, in their correspondence, clearly

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[4] Isaac Newton, *Philosophiae Naturalis Principia Mathematica*, (London, 1726), Part I, Def. VIII, Scholium §4.

[5] See Robert Disalle, "Newton's Philosophical Analysis of Space and Time," *the Cambridge Companion to Newton*, (New York: Cambridge University Press, 2004), pp. 37-42; Earman, *World Enough*, pp. 7-12; Tim Maudlin, *Philosophy of Physics: Space and Time*, (Princeton: Princeton University Press, 2012), pp. 4-17.

[6] For example, he denies that space is an object and asserts instead that it is an attribute of God.

[7] LC, L 2.1.

distinguish them—in what follows, I will sometimes write PB/PSR to mark this conflation) as understood by Leibniz by pointing out that the principle is incompatible with the existence of indiscernible but numerically distinct particles of matter. Leibniz replies that he does not believe in the existence of such particles and, Clarke has just unwittingly reproduced the general form of his argument against absolute space and time.

Initially, Leibniz presents his argument against absolute space and time as parallel to Clarke's argument to the effect that the PB/PSR is incompatible with the existence of indiscernible non-identicals. By the time we reach his fourth paper, Leibniz presents his arguments as though they contain the PII as a premise. As we shall see, however, these two ways of presenting his arguments are more or less equivalent. Absolute space and time are incompatible with the PB because they allow for numerically distinct but indiscernible states. That is, absolute space and time allow for violations of the PII and so are incompatible with the PB/PSR.

Here is how Leibniz argues for the PII in the correspondence:

> I infer from that principle, among other consequences, 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.[8]

To what does the phrase 'that principle' refer? It is not entirely clear. In the preceding passages, Leibniz is discussing both a very general form of the PSR and the claim that the sufficient reason for God's free decisions must be that he perceives (accurately) that his choices are the best, i.e., the PB. But it is clear from context that Leibniz's argument for the PII presumes the wisdom of God's choices, that is, that they are for the best, and so 'that principle' must refer to the PB.

The idea is this. Suppose God creates two indiscernible twins: Tweedle Dee and Tweedle Dum who are perfectly alike in all intrinsic qualitative respects. Suppose further that Dee was born first and Dum second. Why did God decide to create a world in which Dee was born first rather than Dum? It couldn't be that it is better that he be born first since his

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[8] LC, L 5.21.

being born makes no qualitative difference to the history of the world and, presumably, the goodness of a world is grounded only on its qualitative features. A world in which Dee was born first would then be no better than a world in which Dum was born first and vice versa. Thus neither can be part of the best possible world. In the ranking of worlds according to perfection any such world will be tied with another world that is just like it in every respect except the indiscernible items are switched. But God only creates what is best. Thus, God creates no world in which there are two indiscernible beings.[9]

Note that this argument strongly suggests that the PII is contingent. The best possible world is actual. Worlds that are less than best are non-actual. An argument that rules out a scenario by showing that it cannot be part of the best world, at most shows that the scenario is contingently non-actual. If Leibniz meant to argue that the PII was necessary, it would be more appropriate to appeal to the Principle of Contradiction.

Some commentators have doubted that the view of the modal status of the PII articulated in the correspondence with Clarke could have been Leibniz's considered view while others contend that the contingency of the PII represents a genuine and significant strand of Leibniz's thought.[10] I will, in what follows, take Leibniz's remarks on the PII in the correspondence at face value. For my own part, I am inclined to side with those who view the contingency of the PII as a genuinely Leibnizian doctrine, even if he does vacillate on the issue. But even those who hold that the necessity of the PII is Leibniz's considered view, cannot deny that it is of genuine interest to see what sense can be made of the line of thought pursued by Leibniz in the context of the correspondence.

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[9] For an interesting argument for the claim that neither the PB nor the PSR entails the PII see Gonzalo Rodriguez-Pereyra, "Leibniz's Argument for the Identity of Indiscernibles in his Correspondence with Clarke," *Australasian Journal of Philosophy*, 1999, 77 (4), pp. 429-38.

[10] Commentators who argue that the PII is necessary include Bertrand Russell, *A Critical Exposition of the Philosophy of Leibniz, with an Appendix of Leading Passages*, (London: Routledge, 1992), p. 55; Parkinson, *Logic and Reality*, p. 134; Nicholas Rescher, *The Philosophy of Leibniz* (Englewood Cliffs, NJ: Prentice Hall, 1967), p. 48; Ian Hacking, "The Identity of Indiscernibles," *Journal of Philosophy* 72/9 (1979), 249–56; Robert Adams, "Primitive Thisness," *Journal of Philosophy*, 76 (1979), 5–26; C. D. Broad, *Leibniz: An Introduction* (Cambridge: Cambridge University Press, 1975), 41. Commentators who either argue either that there is a contingent version of the PII or a significant strand of Leibniz's thinking according to which it is contingent include Fred Chernoff, "Leibniz's Principle of the Identity of Indiscernibles," *Philosophical Quarterly*, 31 (1981), 126–38; Jan Cover and John O'Leary-Hawthorne, *Substance and Individuation*, (Cambridge: Cambridge University Press, 1999), chaps. iv, v; Anja Jauernig, "The Modal Strength of Leibniz's Principle of the Identity of Indiscernibles," *Oxford Studies in Early Modern Philosophy*, Daniel Garber and Steven Nadler eds., (Oxford: Clarendon, 2008) pp. 191-244.

The conclusion that the PII is contingent is confirmed by the following text where Leibniz says that indiscernible non-identicals are *not* absolutely impossible:[11]

> […] that there are two drops of water perfectly alike, or any two other bodies indiscernible from each other; *I don't say, it's absolutely impossible to suppose them*; but that it's a thing, contrary to the divine wisdom, and which consequently doesn't exist. (my emphasis) (LC, L, 5.25)

Let us turn now to how Leibniz applies the PB, PSR and the PII to the issue of absolute space and time. First of all, he argues that absolute space would violate the PB/PSR. He writes:

> [I]f 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 differ absolutely in any respect whatsoever from another point of space. Now from hence it follows, […] that *it is impossible there should be a reason, why God, preserving the same situations of bodies among themselves, should have placed them in space in a certain particular manner, and not otherwise*; why everything was not placed in the quite contrary way […]. But if space is nothing else but that order of relations; and is nothing at all without bodies, but the possibility of placing them; then those two states, the one such as it now is, the other supposed to be the quite contrary way, would not at all differ from one another. Their difference therefore is only to be found in our chimerical supposition of the reality of space itself. But in truth the one would be the same as the other, they being absolutely indiscernible; and consequently *there is no room to enquire after a reason of the preference of the one to the other*. (LC L 3.5, my emphases.)

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[11] Someone might object that this text doesn't say that the two perfectly alike drops of water aren't absolutely impossible. Rather what is not absolutely impossible is just *supposing* them. It is perfectly reasonable to suppose absolutely impossible things. The technique of *reductio ad absurdum* often makes use of such suppositions and Leibniz clearly believes that *reductio* is a legitimate technique. But Leibniz intends to say that perfectly alike drops of water, not just their supposition, are not absolutely impossible. This should be clear from the fact that he contrasts the absolute impossibility of the thing in question with its being contrary to divine wisdom. Leibniz cannot be saying that the supposition was contrary to the divine wisdom because he himself makes the supposition for the sake of his argument. Whatever is contrary to the divine wisdom is non-actual yet Leibniz actually supposes it. We must conclude that Leibniz denies that perfectly alike drops of water themselves are absolutely impossible and, thus, the PII is only contingent.

Admittedly, this text could be read as saying that allegedly different scenarios described using the framework of absolute space are not genuinely distinct possibilities (because of the necessity of the PII) and hence God can't really prefer one to the other. But Leibniz here appears to presuppose his argument for the PII, which, as we have seen, only supports the conclusion that the PII is contingent.

A more plausible interpretation is that Leibniz here argues that if space were absolute then every point of space would be exactly like any other. It would thus be possible to rotate the entire world in space. Since every point of space is just like every other point of space, there would be no reason for God to prefer any orientation to all the other possible orientations. Thus God would have created the actual world without a sufficient reason. This argument is essentially the same as the argument for the PII but for the specific case of absolute space.

And yet in many places in his correspondence with Clark, Leibniz appears to insist that absolute space is impossible. We have, for example, the following passage from Clarke's translation of Leibniz's fourth paper:

> [T]he hypothesis (that space and time are anything absolute) is contradictory, that is, an impossible fiction. (LC L4.16)

The ground of the non-absolute character of space and time is God's wisdom. The divine wisdom is the ground of contingent truths. So why does Leibniz say that absolute space and time are impossible? It can almost appear as though Leibniz, who at times fails to hide his hostility toward Clarke, expresses himself too emphatically in calling them impossible—perhaps goaded on by the prospect of more completely rejecting the position defended by his rival. In fact, however, it is not so. Leibniz does not get carried away in deeming absolute space and time impossible. A more careful consideration of Leibniz's account of modality reveals that Leibniz is completely consistent both in grounding the relativity of space and time in the PSR and in calling them impossible.

2. Leibniz on Modality

The issue of modality comes up in the correspondence in the following way. Clarke objects that demanding a sufficient reason for God's choice makes God and other rational agents subject to fate and necessity by making them passive with respect to reasons and

motives. Rational agents, if they are to be free, Clarke insists, must have a power to choose between competing motives and not simply be determined by them.

> This notion [the idea that intelligent beings cannot choose between indiscernible options] leads to universal necessity and fate, by supposing that motives have the same relations to the will of an intelligent agent, as weights have to a balance; so that of two things absolutely indifferent, an intelligent agent can no more choose either, than a balance can move itself when the weights on both side are equal. But the difference lies here. A balance is no agent. (LC C 4.1)

Clarke's worry here is that, on Leibniz's view, reasons necessitate action. If actions are necessitated, then intelligent agents do not choose their actions and so, presumably, are not free. Leibniz responds by complaining that Clarke has not taken into account what he has said about spontaneity, contingency, and intelligence in the *Theodicy*.[12] He also refers to a distinction between absolute, hypothetical, and moral necessity, which he claims will sort out these issues.[13]

Leibniz has two distinct accounts of modality. One is the famous account according to which a proposition is necessary if it can be demonstrated by analysis in a finite number of steps. The other is that of possibility *per se*. I will begin by explaining the latter.

According to the *per se* possible account, modality depends upon essence.[14] A substance is possible just in case it has a coherent essence.[15] A substance *s* is necessarily *F* just in case *s* is *F* in virtue of its essence. A possible substance *s* is possibly *F* just in case *F*-ness is consistent with the essence of *s*.[16]

For example, Adam is necessarily human because he is human in virtue of his essence. Adam possibly doesn't eat the apple because, although he eats the apple, he does not do

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[12] LC, L, 5.2.

[13] LC, L, 5.4.

[14] My exposition of the *per se* possible account is deeply indebted to Adams, *Leibniz*, pp. 10-15.

[15] Gr 289/AG 20-22

[16] T 171.

so in virtue of his essence. It is impossible that Adam is a dolphin because his not being a dolphin is a consequence of his essence.

We can expand this notion of modality to analyze the possibility of worlds. The nature of a world is a sum of finite essences with some distribution of accidents over them. Just as with individual substances, a world is possible just in case its nature is coherent.

In order to avoid necessitarianism, we must hold that the nature of a world excludes (at least some) information about how that world relates to other worlds and to God. It is, however, unclear exactly how much and what kind of information must be excluded. Nevertheless, we can say that, at minimum, information about the goodness of other worlds and the features of God that lead him to select the best are excluded.

Although Leibniz does not analyze modality in terms of possible worlds like the modern modal logician does, possible worlds do, nevertheless, provide some conditions on modality. If a truth is necessary, then it is true in all possible worlds.[17] This entails that if a truth is not true in all possible worlds then it is not necessary. This in turn means that if something is true in the actual world but false in at least one possible world, then it is merely contingently true.

A curious but intended feature of the *per se* possibility account of modality is that just because something is entailed by something necessary, that doesn't mean that it is itself necessary. Consider the following: suppose that *x* is necessarily *F* entails that *y* is *G*. If we replace the modal operator with its analysis in terms of essence, we will see that the entailment does not make that *y* is G necessary. Just because that *x* is *F* in virtue of its essence entails *y* is *G*, it need not be the case that *y* is *G* in virtue of its essence. For example, God is necessarily good and wise. Suppose that the goodness and wisdom of God entails that Adam eats the apple. It is important to Leibniz that it would not follow that Adam eats the apple in virtue of his essence. This is of crucial importance to Leibniz's effort to avoid necessitarianism. And we can see that nothing in Leibniz's account of necessity requires that it be transmitted by logical entailment. Once we have given up the idea that essentiality can be analyzed in terms of necessity, we no longer have

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[17] C 18.

any reason to believe that just because a truth about essence entails some further truth that the second truth must also be about essence.

Some have found this consequence scandalous. After all, it amounts to the denial of the characteristic axiom of every modern modal logic. But let us consider some of the reasons why the view appealed to Leibniz. Early in his philosophical life, Leibniz flirted with necessitarianism.[18] This was due, at least partially, to his commitment to the PSR. Every created thing, Leibniz believes, has a sufficient reason in God's choice. According to the PSR, God's choice must have a sufficient reason. What is the sufficient reason for God's choice? It is explained by the fact that God is perfectly good and sees that the actual world is the best possible world. But if God is a necessary being and he is essentially good, then the existence of the actual world, the young Leibniz reasons, is itself necessary. The appeal of *per se* necessity for Leibniz is to provide objects of deliberation for God. Because the less than best options are internally coherent, God can consider them when he decides to create the world. Because he is considering alternatives to his actual choice, God's action is intelligent and responsive to the goodness of his options. This, for Leibniz, is enough to render his choice free.

Leibniz concedes that there is a kind of necessity that attaches to what is entailed by something necessary. He calls it *hypothetical necessity*. But he is careful to deny that hypothetical necessity is not metaphysical necessity, which is, for Leibniz, absolute and not hypothetical. Thus, what is the best is hypothetically necessary. It is necessary only on the hypothesis of God's wisdom and goodness.

Leibniz's other account of contingency is that of infinite analysis. According to Leibniz, every true proposition of subject-predicate form is such that the concept of the predicate is contained in the concept of the subject.[19] As such, every truth is analytic and the denial of every truth is incoherent or contradictory. How then can any truth be contingent? According to the infinite analysis account, a proposition is necessary just in case it is provable by analysis in a finite number of steps. A proposition is contingent just in case it

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[18] Letter to Wedderkopf, 1671, A 2.2.117; R. C. Sleigh, Brandon Look, and James H. Stam (eds. and trans.) *Confessio philosophi: Papers Concerning the Problem of Evil, 1671–1678*, (New Haven: Yale University Press, 2005), pp. 3-4.

[19] G II 56/L 337

is not provable by analysis in a finite number of steps.[20] Analysis here is the process of replacing the terms of a proposition with definitions or partial definitions. A demonstration by analysis is arriving at an identity statement via this process of substitution.

According to Leibniz, every truth is such that the predicate is contained in the subject, but not every truth is demonstrable because there are some analyses that cannot be completed in a finite number of steps. Leibniz attempts to elucidate this notion with a mathematical analogy. Just as the solution of certain mathematical problems, such as the calculation of incommensurable proportions, surd roots, and asymptotes involve infinite series, so too the analysis of some concepts involve infinite series.[21] Leibniz concedes that the analogy is inexact inasmuch as such mathematical problems do yield provable results and his point about infinite analysis is that the conclusions are not provable. But he never gives a more exact formulation of the notion.

What motivates the infinite analysis account? Leibniz was probably drawn to it because it has an attractive feature when applied to the proposition that the actual world is the best possible world.[22] Even though the truth of this proposition does not depend on God's wisdom, it nevertheless comes out contingent on the infinite analysis account. To see this, consider what would be involved in demonstrating this proposition. We would add up infinitely many features to arrive at a degree of goodness for the actual world and compare that degree to infinitely many other worlds. It is hard to see how we could carry out such a task in finitely many steps.

Which of Leibniz's two accounts of contingency is relevant to our present concerns? There are three main reasons for thinking that it is the *per se* possibility account and not the infinite analysis account. First, the context in which modality comes up in the correspondence concerns the theological argument for necessitarianism and the question of divine freedom. As previously indicated, I regard the *per se* possibility account as Leibniz's main resource for addressing these issues. Secondly, in the correspondence,

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[20] A VI iv 1656/AG 96

[21] A VI iv 1657/AG 97

[22] Gr 336, 493. See Adams, pp. 23-25.

Leibniz directs Clarke to his *Theodicy* for explication of his views on modality. The *per se* possibility account is the account most prominently on display in the *Theodicy*.[23] Thirdly, although it is possible that Leibniz regarded them as equivalent, the *per s*e possibility account and the infinite analysis account come apart in certain cases. In particular, there are certain things that are possible *per se* but that they are *not* the best is demonstrable in a finite number of steps. Leibniz writes:

> The damnation of the innocent is indeed possible in itself, or something that does not imply a contradiction; but it is not possible for God. [. . .] For we do not need to examine the whole harmony of things in order to know whether God is going to damn someone innocent eternally.[24]

There is a proposition, that the innocent will not be damned, which is contingent according to the *per se* possible account and yet it would not require a comparison with infinitely many alternatives to demonstrate that it is not part of the best possible world. Thus, by the infinite analysis account, it would be a necessary truth. Another such proposition is that there are no indiscernible objects. As we have seen, in the correspondence with Clarke, Leibniz regards this proposition as contingent. But it would only require finitely many steps to prove it. Any world in which there are two indiscernible objects has a counterpart in which those objects are switched. The second world is just as good as the first world. Therefore, neither world is the best. In order to be consistent, Leibniz ought be working with the *per se* possible account of modality in the correspondence. This is a happy "ought" because, as I have just described, there are independent reasons to think that Leibniz is in fact working with that account in those texts.

4. Resolution of the Alleged Contradiction

My claim is that when Leibniz speaks in the correspondence with Clarke of impossibility of absolute space and time, he only intends its *hypothetical* impossibility and not

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[23] See T 44, 45, 228, 235, and 367. He also states in correspondence to Christian Goldbach that the view of modality present in the *Theodicy* that of *per se* possibility. The only gesture toward the infinite analysis account is in § 14 of the remarks on King.

[24] Gr 300.

impossibility *per se*. Just as two indiscernible drops of water are not absolutely or metaphysically impossible but only impossible on the hypothesis of divine wisdom, so too absolute space and time are not *per se* impossible, but only impossible on the hypothesis of divine wisdom.

Most of the texts where Leibniz asserts the impossibility of absolute space and time can be plausibly read as merely asserting hypothetical impossibility because they always include God's creation of the world as part of the scenario the modal status of which is under consideration. There is, however, at least one text where Leibniz appears to say that absolute space and time are *contradictory* and impossible. Something contradictory is absolutely and not merely hypothetically impossible. Let's look at the text where Leibniz appears to claim that absolute space and time are contradictory and hence impossible:

> If space and time were anything absolute, that is, if they were anything else besides certain order of things, then indeed my assertion [that if God moved the entire world along a straight line, then it wouldn't move] would be a contradiction. But since it is not so, the hypothesis (that space and time are anything absolute) is contradictory, that is, it's an impossible fiction. (LC L 4.16)

It is important to note that the parenthetical explication of the hypothesis in question is an interpolation made by Clarke in his influential translation of Leibniz's paper. Subsequent translators from Garber and Ariew to Jonathan Bennett have retained Clark's interpolation. But I believe that Clarke misrepresents what Leibniz refers to by 'the hypothesis'. To see this, let's look at some of the texts that directly precede the above quoted passage and which shed light on what hypothesis Leibniz has in mind.

> To say that God can cause the whole universe to move forward in a right line, or in any other line, without making otherwise any alteration in it is another chimerical supposition. For two states indiscernible from each other are the same state and consequently it's a change without any change. Besides, there is neither rhyme nor reason in it. But God does nothing without reason. (LC, L 4.13)

> It is a like fiction, (that is) an impossible one, to suppose that God might have created the world some millions of years sooner. They who run into such kind of fictions can give no answer to one that should argue for the eternity of the world. For since God does nothing without reason, and no reason can be given why he did not create the world sooner, it will follow either that he has created nothing at

> all or that he created the world before any assignable time, that is, that the world is eternal. (LC, L 4.15)

In both cases, the impossible fiction is that God does something for which no reason is possible. In the first case it is that God moves the world in absolute space and the second that God creates the world sooner than he did. Clarke understands the passage as follows:

> If space and time were anything absolute, that is, if they were anything else besides certain orders of things, then indeed my assertion [that if God moved the entire world along a straight line, then it wouldn't move] would be a contradiction. But since it is not so, the hypothesis (*that space and time are anything absolute)* is contradictory, that is, it's an impossible fiction.

But the correct interpretation is:

> If space and time were anything absolute, that is, if they were anything else besides certain orders of things, then indeed my assertion [that if God moved the entire world along a straight line, then it wouldn't move] would be a contradiction. But since it is not so, the hypothesis (*that God moves the world in a straight line)* is contradictory, that is, it's an impossible fiction.

What is absolutely impossible is that God does something for no reason. But the whole point of Leibniz's modal theory is to show that even though God has a sufficient reason for what he does, those things that he does not do are not therefore impossible *per se*. They are only impossible with respect to God's wisdom and goodness. But those things that are impossible on the (necessary) condition of God's wisdom and goodness are still possible *per se* so long as they are internally coherent. Absolute space and time are internally coherent but incompatible with God's wisdom and goodness. They are thus morally and hypothetically impossible (on the hypothesis of God's wisdom and goodness) but possible *per se.*

This interpretation has what I take to be a decisive advantage over the standard account. It resolves a seeming tension in Leibniz's text whereas the standard account retains the tension and explains it in dialectical terms. But Leibniz's exposition contains none of the rhetoric that one would expect if he were offering two arguments. He makes no statement to that effect and he makes no display of conceding for the sake of argument premises that

he does not believe or that are weaker than those that he believes. This is because there is only one argument and no inconsistency results from it.

To summarize: The initial puzzle was that Leibniz argues for the nonactuality of absolute space and time on the basis of God's wisdom. Whatever is nonactual because of the divine wisdom is, according to Leibniz, merely contingently nonactual. This appears to entail that absolute space and time are merely contingently nonactual. And yet readers of Leibniz, including Clarke, have understood him to flatly claim that absolute space and time are contradictory and hence absolutely impossible. My solution is to show that Leibniz has been misread. He does not claim that absolute space and time are contradictory and impossible *per se*. What is absolutely impossible is that God moves the entire world in a straight line because such an action is without rhyme or reason and God does nothing without a reason. The point can be easily seen by considering the following propositions:

1. Space and time are absolute.
2. God creates a world in which space and time are absolute.

(1) is possible *per se* and contingently false. (2) is contradictory and impossible *per se*. (1) is like every other less than best option that God considers and rejects when he creates the world. Such options are impossible on the hypothesis of God's goodness and wisdom but possible *per se*.

5. Extrinsic and Intrinsic Denominations

A significant difficulty for my interpretation stems from Leibniz's commitment to the dependence of relations upon intrinsic denominations. The problem is that, according to absolutism, points of space are (1) numerically distinct from each other, (2) intrinsically indiscernible, and (3) differ from each other with respect to their relations. But, because Leibniz thinks that relations supervene on intrinsic properties, one might think, it is impossible for two things to be intrinsic duplicates and yet differ with respect to their relations to things. Therefore, there cannot be a system of intrinsically indiscernible yet numerically distinct points of space.

First let us consider the claim that absolutism requires intrinsically identical points of space to differ in their relations. Strictly speaking, this is false. Every point of space stands in all the same relations as every other point of space. Every point of space stands in, for example, the "*x* is two inches from *y*" relation to something. Points of space differ from each other only with respect to the particular points of space or objects in space to which they stand in these relations. For example, while every point of space stands in the "*x* is two inches from *y*" relation to something, only some space points stand in it to, for example, space point p_1. It is thus more accurate to say that while every space point is indiscernible from every other space point with respect to its relations, it differs from every other space point in terms of some of its extrinsic properties, such as "*x* is two inches from p_1." So if the objection from the reducibility of relations is to cut against the possibility of absolute space, it must be expansive enough to also require the reducibility of extrinsic properties as well.

Leibniz's attitude toward the relationship between intrinsic and extrinsic "denominations"[25] is a complex and vexed issue over which there is much scholarly disagreement.[26] All parties to the debate agree, however, on this much: abstract relations are ideal. That is, they belong to the least fundamental stratum of reality. As such, there must be something more fundamental which grounds their reality. Beyond this, disagreements proliferate. What is the relationship between abstract relations and their more fundamental grounds? Reduction, supervenience, some other relation of dependence? What is the more fundamental reality that grounds abstract relations? Can they be grounded by extrinsic properties or must their grounds be intrinsic? The situation is made even more complicated by the fact that Leibniz never defines notions such as "intrinsic" or "extrinsic" and he is careless about distinguishing between linguistic, conceptual, and metaphysical issues.

The issue of the ideality of abstract relations does come up in the correspondence with Clarke. Here is what Leibniz says:

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[25] An "intrinsic denomination" is an intrinsic property. Leibniz uses "extrinsic denomination" both to refer to extrinsic properties and to relations.

[26] For an excellent discussion of the debate among Leibniz scholars, see Anja Jauernig "Disentangling Leibniz's views on relations and extrinsic denominations," *Journal of the History of Philosophy* 48.2 (2010): 171-205.

> The ratio or proportion between two lines L and M, may be conceived three ways; as a ratio of the greater L, to the lesser M; as a ratio of the lesser M, to the greater L; and lastly, as something abstracted from both, that is, as the ratio between L and M, without considering which is the antecedent, or which the consequent; which the subject, and which the object […] In the first way of considering them, L the greater; in the second, M the lesser, is the subject of that accident, which philosophers call relation. But, which of them will be the subject, in the third way of considering them? It cannot be said that both of them […] are the subject of such an accident; for if so, we should have an accident in two subjects, with one leg in one, and the other in the other, which is contrary to the notion of accident. Therefore we must say, that this relation, in this third way of considering it, is indeed out of the subjects; but being neither a substance, nor an accident, it must be a mere ideal thing, the consideration of which is nevertheless useful. (LC, L 5.47)

This passage indicates that while Leibniz views the abstract relation between the two lines as a merely ideal thing, he does not regard the extrinsic monadic properties "*x* is greater than M" and "*x* is lesser than L" to be similarly ideal. As such, they can legitimately figure in substance/accident metaphysics and can provide the needed ground for the abstract relation. Indeed, some commentators allege that Leibniz's views on relations require only a reduction to such extrinsic properties.[27] If this is so, then it is clear that there is no difficulty for the possibility of absolute space. As discussed above, a difficulty arises only if we think that extrinsic properties must reduce to or supervene on intrinsic properties of the bearers of the extrinsic properties.

Many commentators, however, hold that although Leibniz thinks that extrinsic properties are *more* fundamental than relations, they themselves are not fundamental *tout court*. They are fundamental relative to abstract relations but non-fundamental relative to some more basic level of reality. And if extrinsic properties are non-fundamental, then they are somehow determined by a more fundamental basis. Since we are searching for a basis distinct from the extrinsic properties, we naturally seek to ground them in intrinsic properties of some kind. Let us now assume that something like this rough sketch is correct and see how such an assumption affects the possibility of absolute space and time.

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[27] D'Agostino, "Compossibility," 101; Laurence McCullough, "Leibniz on the Ideality of Relations" ["Ideality"], Southwestern Journal of Philosophy 8 (2) (1977): 31–40, 37; Kulstad, "Closer Look," 424; Wong, "Relations," 241–42; Ishiguro, "Ideality," 200–205; Burdick, "Leibniz's Problem," 6–9; McCullough, Individuals, 172–176; Plaisted, *Denominations*, 6–8; Maunu, "Soft Reduction," 145.

The main philosophical motivation for Leibniz's views on the dependence of extrinsic denominations on intrinsic denominations is his commitment to the view that, fundamentally, there is nothing but substances and their accidents. Thus, assuming Leibniz's monadology, at the lowest level of reality there are nothing but monads and their perceptions.[28] And whatever there is at higher levels of reality, extrinsic denominations included, must ultimately depend upon monads and their perceptions. None of this suggests that extrinsic denominations at higher levels of reality must depend upon intrinsic denominations at the same level of reality. Indeed, Anja Jauernig has persuasively argued that Leibniz is not committed to the dependence of extrinsic denominations on intrinsic denominations at the same level of reality.[29] Leibniz is merely committed to the claim that extrinsic denominations are ultimately grounded by intrinsic denominations at the most fundamental level.

Space and time are ideal. This means that they are abstracted from bodies. Bodies are phenomenal; they are constructed from the perceptions of monads. A possible world in which space and time were absolute would be a world in which the phenomenal realm, that is, bodies and their motions, determines such space and time. This in turn requires that bodies and their motions be suitably constructed from the perceptions of the monads. What would the perceptions of the monads have to be like such that they would determine absolute space and time? It is difficult to say with certainty because Leibniz is not specific in his account of how the ideal depends on the phenomenal or, ultimately, the real. It seems to me, however, a reasonable conjecture that what would be required is that all the monads consistently and coherently have perceptions as if of bodies behaving in a way best described by a physics that posits absolute space and time. Consider, for example, perceptions as if of a world in which there are distinguished points of space that are typically empty and have a lawlike tendency to attract matter.[30] Although the points of space themselves are, of course, unobservable, the motions of the bodies in such a world would not be invariant under spatial translation. Thus an adequate account of its laws

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[28] Although this is a controversial issue, I shall assume for the sake of argument that perceptions are intrinsic denominations.

[29] Jauernig, "Disentangling."

[30] I am grateful to an anonymous referee for this suggestion.

would require absolute space. The possibility of such monadic perceptions gives Leibniz a good reason to say that absolute space and time, while nonactual, are nonetheless possible.

6. Further Objections and Replies

Objection: Leibniz in the correspondence with Clarke argues from a verificationist perspective according to which absolute space and time would be unobservable and hence impossible.[31]

It is true that Leibniz sometimes makes remarks that have a vaguely verificationist air. But I think that interpreters who wish to show that Leibniz is some kind of verificationist ask those remarks to bear more weight than they can comfortably support. Let us consider one such text, which is often adduced as the central piece of textual evidence by those who attribute verficationism to Leibniz. In his Fifth paper, Leibniz writes:

> [...] motion indeed does not depend upon being observed, but it does depend upon being possible to be observed. There is no motion when there is no change that can be observed and when there is no change that can be observed, there is no change at all.

Although such a text may well remind the modern reader of the sort of thing that verificationists like to say, there is no explicit affirmation of any principle of verification in this text. There is merely the claim that every actual change depends upon being possibly observed. Although such a claim could be grounded by a principle of verification, it could equally well be grounded by, for example, phenomenalism about body. What is more, Leibniz explains in the lines immediately after the above quoted text that the alternative view is premised on the hypothesis of absolute space, which he takes himself to have already refuted. Given that there is no absolute space, there can be no unobservable motion or change. This means that his refutation of absolute space is evidently not meant to be premised on the above quoted text. Rather, the claims asserted in that text are premised on the refutation of absolute space. So even if that text did express

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[31] See John Earman, *World Enough*, pp. 118-119; Jolley voices a version of the verificationist reading of Leibniz when he states that the official argument for relationalism assumes that allegedly numerically distinct but qualitatively identical things are merely a matter of two names for a single thing in his *Leibniz*, p. 86. Broad articulates a different version of the verificationist claim when he says that Leibniz might be claiming that the theory of absolute space and time are meaningless verbiage, *Introduction*, p. 58.

verificationism, Leibniz clearly did not think that his refutation of absolute space had a verificationist basis.[32]

Verificationism is not the issue. Leibniz does not wish to subject metaphysics to epistemology. The restriction to qualitative properties is entailed by what Leibniz thinks could provide reasons for God's creative act. He thinks that God creates the actual world because it is the best possible world and only qualitative features contribute to the goodness of the world. This is not implausible. Suppose that there were two people alike in every qualitative respect. Could they differ with respect to virtue? It is natural to think that they could not.[33] Similarly, two worlds that differed only in non-qualitative ways could not differ in perfection or moral goodness. Thus no world with a qualitative twin could be the best, since it could do no better than to be tied for first place with its twin.

Objection: Leibniz also argues in the correspondence with Clarke against absolutism by citing various features of the metaphysics of substance and attributes. Presumably such a metaphysics is meant to be necessary. Therefore, Leibniz's more basic metaphysical commitments make absolutism impossible.

It is true that Leibniz argues against Clarke by citing general and presumably necessary features of substance/attribute metaphysics. Leibniz argues against Clarke that if space is an "absolute reality" then there are eternal and unchangeable things (parts of space) other than God. He also objects that if infinite space is the immensity of God, then finite space will be the extent of some finite thing. But this is problematic since, for example, a finite body can leave the space that it presently occupies but it can't leave its own extent. Leibniz also wonders what substance will be the subject of an empty space.[34] Leibniz further notes that space has parts. If space were an essential property of God, then the essence of God would have parts. Leibniz thinks that this is absurd.[35]

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[32] Further evidence that Leibniz is no verificationist can be found in NE II xiv where Leibniz states that there could be *termporal vacua* (i.e., intervals of time in which no change takes place) although they would be impossible to measure. I am grateful to an anonymous referee for this suggestion.

[33] Perhaps, being virtuous is partially a matter of fulfilling obligations to specific individuals, e.g., one's children or parents. In this case, virtue would not be fully determined by purely qualitative facts.

[34] LC, L, 5.38.

[35] LC, L, 5.42.

I reply that most of these criticisms are directed at a very specific version of absolutism: Clarke's version according to which space is the immensity of God. The only exception is the one that says that if space were an "absolute reality" then it would have more reality than substances and there would be eternal and unchanging beings (parts of space) other than God. Leibniz does indeed think that it is impossible for absolute space to be an "absolute being" in the sense of having as much or more reality than a substance. But as we have already seen, space and time, absolute or otherwise, must be at the least fundamental level of reality, the ideal, and thus have less reality than substances, which reside at the most fundamental level. The relevant sense of "absolute" is distinct from the notion of what is most real. It is, rather, the notion of a space and time such that motions are not invariant under spatial and temporal tranlations.

Objection: Absolute space would be a continuum made of parts, which Leibniz thinks is an impossibility, the supposition of which leads us into an "inextricable labyrinth."

Absolute space would indeed be a continuum. As such, it cannot be composed of parts. Once again, the response to the objection involves the ideality of space and time, absolute or otherwise. The ideal is the realm of the continuous: numbers, geometry, space, and time all reside there. Continuous wholes cannot be composed of parts, for Leibniz, because such wholes would fail to be unities and consequently fail to be wholes. But, in some sense, they can *have* parts without being *composed* from them. Such parts are merely potential ways of dividing up the continuous whole. They are abstracted from the whole, or derived from it, just as fractions can be derived from the integers.[36] Is it worrying that the parts of absolute space will only be potential? Leibniz could not think so. After all, the relational space that he thinks is actual is a system of possible relations.[37] A space with only possible parts can support a system of possible relations as well.

Objection: It is nonsense to say that space and time are orders of relations but could have been something absolute, either an object or a monadic property. No relation might have been a

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[36] G II, 268. See Antionio Lamarra, "Leibniz on Locke on Infinity," in *L'infinto in Leibniz, problemi e terminologia*, (Rome: Edizioni dell'Ateneo, 1986), pp. 173-91 for more discussion of this issue.

[37] LC, L, 3.4.

monadic property and no attribute might have been an object. How then can Leibniz maintain that relationalism is only contingently true?

First of all, I think that the view that space is a monadic property is problematic. It is hard to know what to make of such a proposal and most of its adherents, including Clarke, do not spell out what such an account of space would look like in any meaningful detail.[38] For this reason, I will set aside all varieties of the monadic property view and instead focus on the putative possibility that space is an object of some kind.

If space is an object then it has (possible) parts that are spatial points or places. These parts exemplify an order of (possible) relations. The real dispute between the relationalist and the absolutist is whether the order of relations in question is exemplified by bodies or whether is exemplified by points of space. It is not nonsense to say that the order of relations that defines space could have been exemplified by, for example, the parts of an infinite substance wholly distinct from all the finite substances such as corporeal and psychical substances.

Leibniz cannot allow that space is possibly a substance. Leibniz presumably regards his striated model of reality, with its real, phenomenal, and ideal tiers, as a necessary truth. I think that it is also a necessary truth, for Leibniz, that whatever space is, it exists at the ideal level. No substances are ideal. So space is not a substance. Space can be, however, some kind of abstract or ideal object and hence absolute.

7. Conclusion

I have argued that, appearances to the contrary, Leibniz does not contradict himself regarding the modal status of absolute space in his correspondence with Clarke. He

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[38] A version of it has its present day defenders. It is, for example, proposed (although not directly defended) by Robert Stalnaker in his *Mere Possibilities: Metaphysical Foundations of Modal Semantics*, (Princeton University Press: Princeton, 2012), p. 68. On his view, spatial locations are pure intrinsic qualities and spatial relations are internal relations (analogous to relations of similarity and difference) determined by these qualities. The structure of these properties and relations are modeled by a multidimensional space. As far as I can make out, the space that models them will look just like physical space as it is conceived by the substantivalist. The question is whether such a space is a model of the spatial aspects of physical reality or the object of study, which is to be modeled. The intuitive and commonsensical view is that it is the object of study, which is to be modeled. Stalkner is driven to affirm the counterintuitive alternative due to recherché metaphysico-semantic considerations that don't concern us here.

argues that space is not absolute by showing that it would be contrary to God's wisdom. Anything that is nonactual because it would be contrary to divine wisdom is only contingently so. Thus space is only contingently relational. Leibniz also says that it is impossible for God to create absolute space, which appears to contradict its contingent nonactuality. In order to dispel the appearance of contradiction, I have argued that we need to distinguish what is necessary *per se* from what is necessary on the hypothesis of God's wisdom and goodness. Absolute space (and time) is therefore possible *per se* and impossible on the hypothesis of God's goodness and wisdom. Thus, it is absolutely impossible for God to create absolute space and yet absolute space remains possible *per se*. This solution reflects Leibniz's general strategy for avoiding the necessitarian conclusion that whatever is incompatible with God's wisdom and goodness is metaphysically impossible.

Abbreviations:

The following abbreviations are used in the notes:

A Leibniz, Gottfried Wilhelm (1923 –). *Sämtliche Schriften und Briefe*. Deutsche Akademie der Wissenschaften zu Berlin (eds.) (Berlin: Akademie-Verlag). References include series, volume, and page. So 'A6.4.1394' is series 6, volume 4, p. 1394.

AG Leibniz, Gottfried Wilhelm (1989). *Philosophical Essays*. Roger Ariew and Daniel Garber (eds. and trans.) (Indianapolis: Hackett).

C *Opuscules et fragments inedits de Leibniz.* Ed. by Louis Couturat. Paris: Felix Alcan, 1903. Reprint, Hildesheim: Georg Olms, 1966.

G Leibniz, Gottfried Wilhelm (1875 – 90). *Die philosophischen Schriften*, C. I. Gerhardt (ed.) 7 vols. (Berlin: Weidmann).

GM C. I. Gerhardt, ed., Mathematische Schriften von Gottfried Wilhelm Leibniz, Berlin: A. Asher; Halle: H.W. Schmidt, 1849–63.

Gr *Textes inedits*. Ed. by Gaston Grua. Paris: Presses Universitaires de France, 1948.

L Leibniz, Gottfried Wilhelm (1976). *Philosophical Papers and Letters*, Leroy E. Loemker (ed. and trans.) 2nd edn. (Dordrecht: Reidel).

LC Leibniz's letters to Samuel Clarke. From G VII, pp. 352-420, cited by letter (L is for let-

ters by Leibniz and C is for letters by Clarke) and section number, so that LC L 5.2 means Leibniz-Clarke correspondence, Leibniz's fifth letter, section 2. Clarke's translation is reprinted in *The Leibniz-Clarke Correspondence,* ed. by H. G. Alexander (Manchester: Manchester University Press, 1956).

T *Theodicy* (1710). Cited from G VI by section number.