

# LEIBNIZ ON COMPOSSIBILITY

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## Abstract

Leibniz's well-known thesis that the actual world is just one among many possible worlds relies on the claim that some possibles are *impossible*, meaning that they cannot belong to the same world. Notwithstanding its central role in Leibniz's philosophy, commentators have disagreed about how to understand the compossibility relation. We examine several influential interpretations and demonstrate their shortcomings. We then sketch a new reading, the cosmological interpretation, and argue that it accommodates two key conditions that any successful interpretation must satisfy.

At the heart of Leibniz's philosophy is the claim that the actual world exists contingently, as just one among many possible worlds. God has chosen to create this world because it is the best, but God could have chosen differently. Leibniz opposes his position to that of Spinoza, according to whom everything that could exist does exist and nothing could have existed differently than it does.<sup>1</sup> Leibniz regards Spinoza's denial of contingency as a conclusion to be avoided at all costs.<sup>2</sup> In order to rebut it, he must explain at a minimum why not all possibles are actual.<sup>3</sup> To this end, Leibniz invokes the notion of compossibility:

[N]ot all possibles are compossible. Thus, the universe is only a certain collection of compossibles, and the actual universe is the collection of all existing possibles, that is to say, those which form the richest composite. And since there are

different combinations of possibilities, some of them better than others, there are many possible universes, each collection of compossibles making up one of them.

(GP III 573/L 662)

Not all possibles are actual, because not all possibles are *compossible* with the set of actual substances. Those possibles that are compossible belong to the same possible world. Thus, the compossibility relation explains why some substances are merely possible and partitions possible substances into different worlds, among which God chooses the best.<sup>4</sup>

While there is general agreement about the role Leibniz assigns to the compossibility relation, there is no consensus about its basis. Commentators have distinguished two main ways of explicating Leibniz's view. On the *logical* interpretation, two substances are compossible if and only if the supposition of their joint existence is logically consistent.<sup>5</sup> On the *lawful* interpretation, two substances are compossible if and only if they are suitably related under some set of universal laws.<sup>6</sup> One of the chief issues dividing these accounts is whether a failure of compossibility, i.e. *incompossibility*, implies a logical restriction on the exercise of God's power, or whether it is a result merely of certain free decrees that God considers in organizing substances into worlds. On the logical interpretation, it is impossible for God to actualize two impossible substances, for the existence of one logically excludes the existence of the other. The lawful interpretation posits no such restriction on the exercise of God's power; rather, it assumes simply that in conceiving of a world God chooses to consider only those substances among which certain lawful relations would be observed.

In what follows, we provide an overview of the debate concerning Leibniz's doctrine of compossibility and propose a novel resolution of it. In sections I and II, we examine the logical and lawful interpretations, explain their respective motivations and document their shortcomings.

In section III, we consider two hybrid readings combining features of the logical and lawful interpretations, and show that these too are unsatisfactory. From this analysis, we extract two requirements, the Connection and Inclusion Conditions, which we argue any satisfactory interpretation of compossibility must satisfy. In section IV, we sketch a new account, the cosmological interpretation, which we claim meets these conditions while avoiding the problems faced by its rivals.

## I

In his influential discussion of compossibility and possible worlds, Benson Mates draws on Leibniz's complete concept theory to explain the nature of a possible world. According to Leibniz, each possible substance is represented by a concept that is complete, insofar as it entails everything that would be truly predicated of that substance were it to exist (A VI.iv 1540/AG 41; cf. A VI.iv 1546-49/AG 44-6).<sup>7</sup> Given Leibniz's principle of the identity of indiscernibles—that there cannot be numerically different, but qualitatively indistinguishable things—it follows that each substance is associated with a unique complete concept that is sufficient to distinguish it from every other possible substance. Mates defines a possible world as any maximal consistent set of complete concepts ('Leibniz on Possible Worlds' 340; *The Philosophy of Leibniz* 75).<sup>8</sup> He thus regards compossibility as a relation that holds between complete concepts. The fact that two possible substances are or are not members of the same world is fully determined by the content of their complete concepts.

For Mates, like others who espouse a logical construal of compossibility, the supposition of the joint existence of two impossible substances involves a logical contradiction: 'A pair of individual concepts, *A* and *B*, are compossible if no contradiction follows from the supposition

that there are corresponding individuals for both of them—that is, if the statements “*A* exists” and “*B* exists” are consistent with one another’ (*The Philosophy of Leibniz* 75). Such a reading is not without textual support, but it is less extensive than sometimes supposed.<sup>9</sup> The principal challenge for this account is to explain how complete concepts can exclude one another logically. The problem is especially acute if one maintains, as Mates does, that the complete concept of a substance includes only its ‘simple’ properties, i.e., those that are both non-relational and not analyzable in terms of more basic properties (‘Leibniz on Possible Worlds’ 339-40; *The Philosophy of Leibniz* 219-20). Leibniz himself highlights the problem in a well-known text: ‘It is as yet unknown to men whence arises the impossibility of different things, or of how different essences can conflict with each other, since all purely positive terms seem to be compatible with each other’ (GP VII 194).

Nicholas Rescher’s solution to this puzzle is to abandon the view that a complete concept includes only ‘simple’ or ‘purely positive’ properties. If complete concepts include relational properties in addition to monadic ones, then it is possible to make sense of a contradiction arising from the supposition of the joint instantiation of two impossible complete concepts. If complete concept *A*, corresponding to possible individual *a*, includes a relational property entailing  $aRb$  (i.e., if *a* exists, it is true that *a* bears *R* to *b*), and complete concept *B*, corresponding to possible individual *b*, includes a relational property entailing  $\sim(aRb)$ , then it would be logically inconsistent to suppose the existence of both *a* and *b* (Rescher 58). If, for example, the complete concept of Queen Elizabeth II includes the property of being the mother of Prince Charles (so it is true that, if she exists, she is the mother of the prince), then the Queen could not exist in a world in which the complete concept of Prince Charles\* (a counterpart of the

actual prince) includes the property of not being the son of Queen Elizabeth but rather the illegitimate son of her sister. Such complete concepts would be impossible.

For Rescher, a substance's various relations to other substances are built in to its complete concept by virtue of Leibniz's universal expression thesis. As Leibniz presents it in *Discourse on Metaphysics*, §9, the universal expression thesis states that 'each individual 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' (A VI.iv 1541/AG 41). Rescher understands this to mean that there is a 'conceptual linkage' between compossible complete concepts, such that 'no substance can—even in hypothesis—be pried loose from its world-environment and transposed into some other possible world' (49-50). According to Rescher, Leibniz's universal expression thesis implies not merely that it is logically impossible for two impossible substances to coexist, but that it is logically impossible for a substance to exist apart from the unique set of substances with which it is compossible. Thus, any world in which Queen Elizabeth II exists must be a world in which her son Prince Charles exists. Furthermore, there is only one such world, for any substance is individuated through the totality of its relations to the other members of its world. Change any one of these and everything must change. Consequently, any substance is 'world-bound': it belongs to one and only one possible world, which is a maximal set of compossible complete concepts.

Although Mates denies that relational properties are included in the complete concept of a substance, because he sees this as inconsistent with Leibniz's doctrine of the reducibility of relations, he agrees with Rescher about the significance of the universal expression thesis (*The Philosophy of Leibniz* 63, 219-20). Like Rescher, he takes the maximality constraint on possible worlds and the world-boundedness of individuals to follow from the fact that the complete

concept of a substance expresses, and so ‘needs’, all of its worldmates. Given this, the supposition of the existence of any one substance entails the existence of all its worldmates and the non-existence of the members of different possible worlds.<sup>10</sup>

Although Mates and Rescher stress that compossibility is to be understood as a logical relation among complete concepts, key features on their account stem from the role they assign to the doctrine of universal expression. Their assertion of the maximality of possible worlds does not follow from their definition of compossibility alone, but requires in addition the premise that any member of a world ‘mirrors’ the rest of its world through its complete concept (Mates, *The Philosophy of Leibniz* 76). Granting this assumption about the mutual relatedness of the members of a world, and the way such relations are represented directly (Rescher) or indirectly (Mates) by their complete concepts, it follows that the supposition of the existence of any one member of a world entails the existence of all the other members of its world and the non-existence of any substances that do not belong to that world.

The principal strength of the logical interpretation is that it provides Leibniz with a cogent response to Spinoza: not all possibles are actual, because possibles organized into different worlds on the basis of their mutual expression preclude each others’ existence. Given the contents of their complete concepts, the supposition of the existence of any one substance entails the existence of its worldmates and the nonexistence of the members of other possible worlds.

However attractive this result, the logical interpretation faces several important objections. There is, as we have noted, little direct evidence that Leibniz understands compossibility in the way that Mates and Rescher do. The interpretation also is at odds with at least one central Leibnizian doctrine: the ontological independence of substance. For Leibniz,

‘each substance is like a world apart, independent of all other things, except for God’ (A VI.iv 1550/AG 47; cf. A VI.iv 1541/AG 42; GP II 444/L 602). By this Leibniz seems to mean not merely that each substance is immune to causal influence by other substances, but that each substance could exist on its own apart from everything else but God. For Mates and Rescher, however, every substance is so firmly moored to its worldmates that it is impossible for it to exist without them. Aware of this problem, Mates concludes that Leibniz’s views on compossibility require him to abandon the traditional doctrine of the ontological independence of substance (*The Philosophy of Leibniz* 192, 221).

In addition to being in tension with the most natural reading of Leibniz’s world-apart doctrine, the logical interpretation places a significant restriction on the scope of God’s power. If it is logically impossible for a substance to exist without its worldmates, then not even God can separate them, by actualizing one and not the others.<sup>11</sup> However, various texts suggest that Leibniz is open to just this possibility. That God actualized all the members of the actual world rather than just some of them appears to be a matter of his wise and benevolent choice rather than logical necessity.<sup>12</sup>

While the logical interpretation holds out the promise of a simple and rigorous definition of compossibility, there is little evidence that Leibniz employs this definition in his philosophy or that he regards compossibility merely as a logical relation among complete concepts. As formulated by Mates and Rescher, the logical interpretation presupposes the holding of non-logical relations of expression among substances, and it entails consequences that are at odds with at least one central Leibnizian doctrine. For these reasons, we believe that the interpretation fails as an adequate account of Leibniz’s position.

## II

Advocates of the lawful interpretation deny that any logical contradiction is involved in supposing the existence of impossible substances. Absolutely speaking, God can actualize any substance or set of substances. However, there are certain sets of substances that God *would* not choose to create, because their actualization would fail to instantiate certain laws that God wishes to uphold. For proponents of the lawful interpretation, two substances are compossible if and only if they are suitably connected under some set of universal laws. As Ian Hacking puts the point, ‘it is not logical inconsistency that prevents compossibility.... [Instead], compossibility must be something like consistency under general laws of nature’ (193). The laws in question are not metaphysically necessary, but rather contingent laws that conform to God’s free decrees.

J. A. Cover and John O’Leary-Hawthorne defend such an account, motivated in part by the apparent incompatibility of the logical interpretation with Leibniz’s belief in the ontological independence of substance. They place a great deal of weight on the ‘world-apart’ passages, which they take to show not merely that each substance is ontologically independent and actualizable apart from other substances, but that God could constitute a world from *any* set of substances, including the set of just a single substance. They thus deny the maximality constraint on possible worlds, and allow one possible substance to belong to multiple possible worlds, contrary to the thesis of world-bound individuals that many commentators have found in Leibniz (135-40).

Since transworld identity would be impossible if a substance’s relations to a particular set of substances were built into, or required by, its complete concept, Cover and O’Leary-Hawthorne deny that the complete concept of a substance involves its relations to other



substances. Rather, the complete concept of a substance represents only its internal monadic properties, namely, its perceptual states. Such perceptual states carry with them no commitment to the existence of the things perceived (96-8). Once the complete concept of a substance is unhooked from any connection to its worldmates in this way, it is possible to see how one substance could belong to different worlds, while nevertheless retaining the same complete concept, entailing the exact same history of monadic states.

Although Cover and O’Leary-Hawthorne deny that there are any metaphysically necessary laws governing which substances can coexist in a world, they argue that compossible substances in general instantiate hypothetically necessary laws—laws necessary on the hypothesis of some possible divine decree. Such substances satisfy the condition they label ‘hypothetical compossibility’. Consistent with their account of substances as independent, mind-like entities, they construe the relevant laws as ‘laws of expression’: laws describing the relation between the contents of the perceptual states of different substances (98-9). They recognize, however, that it is not enough to say simply that *some* lawful relationship must hold between the perceptual states of any two compossible substances, for it is possible to find a lawful relationship among any set of things, as Leibniz points out in *Discourse on Metaphysics*, §6 (A VI.iv 1537-8/AG 39).<sup>13</sup> Cover and O’Leary-Hawthorne thus conclude that some more specific lawful correspondence must hold among the states of compossible substances, yet they have little to say about what exactly this involves (134, 137; see also Wilson 129-31).

Cover and O’Leary-Hawthorne base their version of the lawful interpretation on the notion of hypothetical compossibility. However, their account also reserves a place for the broader notion of absolute or ‘*per se* compossibility’. As they see it, any two substances are *per se* compossible, because they can be co-actualized by God (137; cf. 140). Cover and O’Leary-

Hawthorne are forced to say this in order to allow for the fact, which they take to be implied by the world-apart doctrine, that any substance or set of substances can constitute a world. The admission that all possible substances are *per se* compossible, though, leads to a serious difficulty. If the set of all possible substances is a legitimate possible world, then how does Leibniz's doctrine of compossibility overcome the threat of Spinozism that it was designed to avoid? Cover and O'Leary-Hawthorne have two responses open to them. First, since there is no maximality constraint on possible worlds, the possible world consisting of all possible substances is not the only possible world; there are alternatives, among which God can choose. Second, although all possible substances are absolutely compossible, they are not hypothetically compossible, since the actualization of all possible substances would not instantiate the sorts of laws of expression that God prefers. There would not be the appropriate level of agreement among the representational states of all possible substances for God to want to actualize them, although he could make a world from them in principle (135-7).

Neither of these responses gets around the main difficulty. The compossibility relation is introduced by Leibniz to explain why God does not actualize all possible substances. Rescher and Mates have a ready explanation: there is no such possible world, because certain possibles logically exclude one another. Cover and O'Leary-Hawthorne's account of compossibility, by contrast, does not so much explain God's choice as presuppose it. Furthermore, it is not obvious that God would not choose to actualize a world consisting of all possible substances if such a world were indeed possible. Cover and O'Leary-Hawthorne assume that God's preference for harmony would trump his interest in diversity and plenitude when faced with a world containing all possible substances. Yet there is evidence that Leibniz's God is disposed to actualize as many possibles as he can, consistent with those possibles forming a single world.<sup>14</sup>

The foregoing is an objection that applies to all versions of the lawful interpretation, not just Cover and O’Leary-Hawthorne’s. If the compossibility relation is to serve as the basis of a satisfying response to Spinoza, it cannot be ‘up to God’ which possible substances are compossible with one another. If there were no logical or metaphysical obstacles to God creating a world from all possible substances, then it is natural to assume that God *would* create such a world.<sup>15</sup> It is not a lack of will or desire that explains why God fails to do so, but rather the impossibility of certain substances. For proponents of the lawful reading, however, facts about which substances are compossible (and thus which substances can belong to the same possible world) are ‘up to God’. On their view, God freely decrees certain laws for a world, and the compossibility or impossibility of any set of substances is a function of whether or not they instantiate the relevant laws. In effect, proponents of the lawful reading simply assume that God would not choose to actualize a world consisting of all possible substances, rather than explain why he could not do so.

The version of the lawful interpretation defended by Cover and O’Leary-Hawthorne gives due weight to the ontological independence of substance and to the role played by laws in uniting substances in a world. As it stands, however, it lacks the resources needed to ground a suitably restrictive notion of compossibility. Taking ‘law’ in its most general sense, any collection of possible substances can be conceived as compossible for Leibniz. In order to meet this objection, proponents of the lawful interpretation may propose restricting the class of world-ordering laws to some proper subset of laws (‘laws of expression’, ‘laws of nature’). Such attempts, however, risk appearing arbitrary unless some further account is offered of the role played by laws in the constitution of a world.<sup>16</sup>

### III

In addition to the logical and lawful interpretations, there are hybrid readings that attempt to accommodate the notion of lawfulness within a logical account of compossibility. Margaret Wilson defends such a reading. While she believes the logical interpretation is ‘basically correct’ (121), she points to several passages that demonstrate the importance of the notion of lawfulness for the compossibility relation. One such passage occurs in Leibniz’s correspondence with Arnauld:

There were an infinity of possible ways of creating the world, according to the different designs which God might form, and each possible world depends upon certain principal designs or ends of God proper to itself, i.e. certain free primitive decrees (conceived *sub ratione possibilitatis*), or laws of the general order of this possible universe, to which they belong, and whose notion they determine, as well as the notions of all the individual substances which must belong to this same Universe. (GP II 51; quoted in Wilson 128)

Wilson takes this passage to confirm the role played by laws in uniting substances in a world, a role stressed by the lawful reading. At the same time, she believes that the lawful reading is inadequate because it fails to make room for the further claim that impossible substances are logically inconsistent. This claim is central to the logical interpretation.

Wilson presents two versions of a logical reading that incorporates considerations of lawfulness.<sup>17</sup> She ascribes the first to Bertrand Russell. On Russell’s account, two substances are compossible if and only if they stand in lawful relations with one another. Russell denies that the complete concepts of impossible substances directly contradict one another. In this he sides with the lawful reading. Nevertheless, Russell agrees with the logical reading that it is

metaphysically impossible for two impossible substances to coexist. This is because, by Russell's lights, the supposition that coexisting substances fail to instantiate lawful relations is incompatible with the Principle of Sufficient Reason (PSR). Because Russell takes PSR to entail that God cannot actualize a given set of substances without a sufficient reason, and because he believes that only sets of substances that instantiate laws have a possible sufficient reason for their existence, he concludes that impossible substances cannot be created (Russell 66-7).

Russell's reading is vulnerable to an objection we considered above: the requirement that compossible substances stand in lawful relations with one another is vacuous, because it is possible to find a lawful relation among any set of things. Wilson suggests a reply to this objection. She proposes that the laws relevant to compossibility are 'fairly simple lawful generalities', e.g.  $E = mc^2$ . Since such laws place strict limits on which substances can belong to a common world, Russell can evade the vacuity objection (Wilson 130-1). As we have argued, however, restrictions of this sort risk appearing arbitrary unless more is said about the role played by laws of nature in the constitution of a possible world.

The second hybrid reading that Wilson describes, which she herself favors, builds on Russell's account, while avoiding its reliance on the Principle of Sufficient Reason. Wilson argues that the complete concept of a substance contains the laws of nature of the world to which it belongs. She proposes that we regard these laws as possible facts. If two complete concepts contain incompatible laws of nature – e.g. one contains  $E = mc^2$ , while the other contains  $E = 2mc$  – then they are logically inconsistent, because they imply contradictory facts. Although Russell and Wilson both invoke considerations of lawfulness to explain how the supposition of the existence of impossible substances entails a contradiction, they differ on a crucial point. While Russell denies that the complete concepts of impossible substances are logically

inconsistent, Wilson claims that they are by virtue of containing incompatible laws of nature (Wilson 131-2).

Wilson's hybrid reading remains close to the logical interpretation of Mates and Rescher, and it faces the same challenges that we noted regarding their account. Her discussion nevertheless brings to light two plausible constraints on any adequate explanation of compossibility. First, any such explanation must incorporate the idea that compossible substances are united in a world by virtue of their mutual relation, or 'connection', under general laws of nature. We will call this the Connection Condition. The Connection Condition is explicitly acknowledged by the lawful interpretation and by Wilson's hybrid reading. Second, any adequate account of compossibility must accept that the complete concept of a substance includes its relations to its worldmates in a way that sets limits on which sets of complete concepts God can actualize as a world. We will call this the Inclusion Condition. The Inclusion Condition is supported by Leibniz's statement that the complete concept of a substance includes both its intrinsic and extrinsic denominations (GP II 56/M 63-4), and by the role he assigns to the compossibility relation in formulating a response to Spinoza. God is limited to creating one from among an infinity of possible worlds, because, given the content of their complete concepts, the existence of certain possibles precludes the existence of others as members of the same world. The necessity of the Inclusion Condition is stressed by proponents of the logical interpretation and by Wilson.

We regard the Connection and Inclusion Conditions as integral to Leibniz's account of compossibility and trace the weaknesses of previous interpretations to their failure to adequately meet both of these conditions. Standard versions of the logical interpretation neglect the Connection Condition and construe the Inclusion Condition too strongly, with the result that God

is unable to actualize the complete concept of a substance without actualizing those of its worldmates. This, we have seen, is at odds with Leibniz's 'world-apart' doctrine and his understanding of divine omnipotence. By contrast, standard versions of the lawful interpretation reject the Inclusion Condition, with the result that they are forced to admit as possible a world containing all possible individuals—thus robbing Leibniz of a cogent response to Spinoza. Wilson's hybrid reading goes beyond the logical and the lawful interpretations insofar as it aims to satisfy both conditions. Like the logical interpretation, however, Wilson's hybrid reading construes the Inclusion Condition too strongly, so that God is incapable of actualizing a substance apart from its worldmates.

On the face of it, it may seem doubtful that any interpretation can meet the requirements of both the Connection and Inclusion Conditions. In making the lawful relation of possibles sufficient for their compossibility, the lawful interpretation undercuts the force of Leibniz's response to Spinoza. On the other hand, by rendering those relations part of the complete concept of any substance, the logical interpretation threatens Leibniz's view of the ontological independence of substance and his commitment to divine omnipotence. Can any interpretation accommodate both of these requirements while remaining consistent with the central doctrines of Leibniz's metaphysics? We believe that the cosmological interpretation developed in the next section can.

#### IV

On the logical interpretation, Leibniz explains membership in a world in terms of compossibility. Two or more substances are members of the same world by virtue of the compossibility of their complete concepts. In our view, this reverses the correct order of explanation. The proper way

to frame the issue of compossibility, we believe, is to begin with the notion of a *world*, as an abstract relational structure according to which God conceives of possibilities of existence. On the cosmological interpretation we defend, two or more substances are compossible by virtue of the fact that God can conceive of them as belonging to the same world; by contrast, substances are impossible because God cannot conceive of them as belonging to the same world. The emphasis we place on what God can and cannot conceive signals our alignment with the logical reading on one key point. Since for Leibniz the set of things that God cannot conceive is coextensive with the set of things God cannot do, the cosmological interpretation is intended to provide an account of compossibility that is sufficiently strong to ground a response to Spinoza: not all possibles are compossible, because God cannot conceive of all possibles as belonging to the same world. This is in contrast to the conclusion of the lawful interpretation, which barring arbitrary restrictions, is limited to explaining compossibility in terms of what God would not choose to do, as opposed to what he cannot do.

The plausibility of the cosmological interpretation hinges on our being able to make good on the thesis that compossibility is best explained in terms of whether God can conceive of certain substances as belonging to the same world. This requires that we substantiate two main claims: first, that the notion of a world is conceptually prior to the notion of compossibility; second, that God's knowledge of any possible substance is structured such that, in knowing it, God conceives of the substance as it would exist in a world related to other substances, while at the same time conceiving of it in such a way that he could create that substance by itself separated from its world, though not as a member of some other world. Our defense of these two theses will demonstrate how the cosmological interpretation satisfies the Connection and Inclusion Conditions. We begin with the Connection Condition, which is closely associated with



the claim that for Leibniz the notion of a world is conceptually prior to the notion of compossibility.<sup>18</sup>

### *The Connection Condition*

The primary reason for taking the relation of connection as foundational to Leibniz's conception of a possible world is that it is how he presents his own position. In *Theodicy*, §9 he writes: 'For it must be known that all things are *connected* [*tout est lié*] in each one of the possible worlds: the universe, whatever it may be, is all of one piece, like an ocean: the least movement extends its effect there to any distance whatsoever, even though this effect becomes less perceptible in proportion to the distance' (GP VI 107/H 128; Leibniz's emphasis). By the 'connection' of all things, Leibniz means a mutual dependence among the states of substances, such that a change in any one substance is reflected in a corresponding change in every other. Although he denies that substances exert any real, or 'metaphysical', influence on each other, he holds that the members of a world condition each others' existence, in accordance with contingent laws of nature.<sup>19</sup> In the same section of the *Theodicy*, Leibniz further stresses that the ideal dependence of substances on one another is conceived by God prior to the decision to create those substances (or any others): 'God has ordered all things beforehand once for all, having foreseen prayers, good and bad actions, and all the rest; and each thing *as an idea* [*idealement*] has contributed, before its existence, to the resolution that has been made upon the existence of all things; so that nothing can be changed in the universe' (GP VI 107-8/H 128-9; Leibniz's emphasis). Thus, it is integral to God's knowledge of a set of substances *as a possible world* that they are conceived as conditioning each others' existence in a lawful manner.

This aspect of Leibniz's position is endorsed by the lawful interpretation, which goes on to claim that compossibility is fully explained by the laws that God decrees to exist among the states of substances. We reject this inference, both because (as we have argued) it supports too weak a conception of compossibility and because it does not adequately reflect Leibniz's understanding of the relational structure of a world. In *Theodicy*, §8 Leibniz makes it clear that, in addition to their connection, the substances that make up a world must be united within a common spatiotemporal order:

I call a *world* the entire series and entire collection of all existing things, lest it be said that several worlds could have existed at different times and different places. For they must be reckoned all together as one world or, if you will, as one *universe*. And even though one should fill all times and all places, it still remains true that one could have filled them in infinite ways, and that there is an infinity of possible worlds, from among which God must have chosen the best, since he does nothing without acting in accordance with supreme reason. (GP VI 107/H 128)

Although Leibniz begins by speaking of the actual world (the 'collection of all existing things'), he goes on to affirm that there is an infinity of possible worlds, which are distinguished (in part) by the ways in which things are spatially and temporally ordered within them. The implication is that for a set of things to count as 'one world' each of them must be spatiotemporally ordered with respect to every other member of the world, and nothing that is not a member of the world can have a spatiotemporal relation with respect to anything that is a member of the world.

We find explicit confirmation of this idea in many texts. For Leibniz, space and time—or as he also designates them, the order of coexistence and the order of succession—represent an abstract structure within which possible things can be conceived as belonging to the same world:

Space and time taken together constitute the order of possibilities of one entire universe, so that these orders—space and time, that is—relate not only to what actually is but also to anything that could be put in its place. (GP IV 568/L 583)

The description of space and time as ‘orders of possibilities of one entire universe’, requires comment. As is well known, Leibniz rejects the Newtonian view of space and time as real or absolute entities within which bodies are located. In his exchange with Samuel Clarke, he also insists that space and time cannot be reduced to any set of actual relations among things. Instead, space and time are ideal orders that specify the *possible* ways that things can be conceived to coexist or to succeed one another. To Clarke, he writes: ‘I hold space to be an order of coexistences, just as time is an order of successions. For space denotes, *in terms of possibility*, an order of things that exist at the same time, considered as existing together, without entering into their particular manners of existing’ (III, §4; GP VII 363/AG 324, emphasis added).<sup>20</sup>

The last qualification is critical to our defense of the cosmological interpretation. For Leibniz, space and time, the orders of coexistence and succession, have a broad metaphysical significance. They are relevant not just to physical theory, defining possible modes of existing of bodies, but to any conception of a world, including the most basic notion of possible worlds as collections of compossible substances. According to the cosmological interpretation, substances can be conceived as belonging to the same world, within which they are lawfully connected, only if they are related according to the orders of space and time. If individuals cannot be understood

as related in this way, then they cannot be members of the same world—a point Leibniz illustrates with the example of fictional worlds such as that of Thomas More's *Utopia*. While the worlds described in works of fiction are possible in themselves, they could not be part of our world because their inhabitants lack any spatiotemporal relation to us.<sup>21</sup>

A full account of the cosmological interpretation would require discussion of how Leibnizian substances (including soul-like monads) can be understood as spatiotemporally ordered.<sup>22</sup> Here we defer elaboration of the details of Leibniz's theory and focus on its application to the question of compossibility. The basic insight of Leibniz's position is that substances can be conceived as connected in a world, only if they are related with respect to a common spatiotemporal order. To the extent that substances are connected, they condition each others' existence. This means that the states of some substances are understood to explain the states of other substances, in accordance with the laws of their world. The general form of such laws will involve appeal to how dependence relations among the states of substances vary with respect to their relative spatiotemporal positions.

In Leibniz's view, all and only those substances are compossible that are conceived by God as related within the spatiotemporal and causal structure of a world. They must, in other words, be substances that condition each others' existence, relative to a common order of coexistence and succession. Whatever things cannot be conceived by God in this way are impossible. The addition of the constraint of a common order of coexistence and succession blocks in a natural way the threat of a single world consisting of all possible substances. Leibniz reasonably assumes that there are possible things that are not spatiotemporally related to us. If spatiotemporal relatedness is necessary for membership in a world, then not all possibles are members of one world. Hence, in conceiving of the laws governing the connection of

substances, we may limit ourselves to those that hold of spatiotemporally ordered worlds. In response to this restriction, it might be objected that limiting the notion of a possible world to sets of substances that have a well-defined spatiotemporal order is no less arbitrary than limiting it to sets of substances that are related by a privileged class of natural laws. The difference in our view is that there is evidence that this is the path by which Leibniz developed his answer to Spinoza: not all possibles are compossible, because not all possibles can be arranged within a common order of coexistence and succession. To the extent that the latter defines the relational structure of a world, and God chooses to create a single world, God is limited to creating some, but not all, possibles.<sup>23</sup>

According to the cosmological interpretation, in conceiving of an individual substance, God conceives of that substance as it would be related, spatiotemporally and causally, to the other members of its world. All of this information is contained in the complete concept of a substance. Hence in deliberating about whether to create *that* substance, God necessarily deliberates about whether to create the world of which it is a part. On the assumption that God's aim is to create a single world ('the best of all possible worlds'), God is bound to create all those substances to which a given substance is spatiotemporally and causally related and no substances to which it is not so related. The former follows from the fact that any substance is partly defined through the relations it bears to the other substances in its world; thus, to create a world in which that substance exists, God must create all the substances to which it is related.<sup>24</sup> At the same time, in creating a single world, God is limited to creating just the individuals to which that substance stands in the requisite spatiotemporal and causal relations. The thought that other substances besides these might be created is blocked by the requirement that to be members of the same world substances must be united by a common spatiotemporal and causal order.

### *The Inclusion Condition*

We have argued that the principal problem with the logical interpretation is that it construes the Inclusion Condition too strongly, so that not even God can pry a substance apart from its worldmates, by actualizing one and not the others. Defenders of the logical interpretation face this problem because they take the complete concept of a substance to include the actual relations it would stand in to its worldmates were it to exist. Given this understanding of how a substance's relations are contained in its complete concept, God cannot actualize any substance without actualizing its worldmates, since the existence of the latter is entailed by the existence of the former.

On the cosmological reading, every substance is conceived by God as belonging to a single possible world. The content of God's knowledge of each substance is such that were he to create it as part of a world, he would be bound to create all the members of that world and no substances that are not members of that world. Since we follow the logical interpretation this far, it might be thought that the cosmological interpretation also must be committed to the conclusion that God *cannot* create a substance without creating its worldmates. Since we have criticized the logical interpretation on this count, arguing that it is inconsistent with Leibniz's understanding of divine omnipotence and the 'world-apart' doctrine, this would be an unfortunate result. In fact, we believe that this conclusion does not follow on our reading, provided that one is careful to distinguish what God can do absolutely and what God can do in meeting the objective of actualizing a *world*.

In order to enforce this distinction, it is necessary to draw a sharp line between the way in which two different sorts of properties—those designated by intrinsic and extrinsic

denominations—are contained in the complete concept of a possible substance. In conceiving of a substance as possible, God conceives of both the internal states by which it would be modified were it to exist and the ways in which its states would be related, spatiotemporally and causally, to the states of the other members of its world, were that world to exist. God’s conception of the internal states of any substance presupposes nothing about the internal states of its worldmates; he conceives of the substance as ‘a world apart’. By contrast, God’s conception of a substance’s extrinsic denominations necessarily involves an idea of how it would be related to the other members of its world, in particular, the ways in which their states would be ‘connected’. Substances are connected in a world in accordance with contingent, causal laws that God freely decrees in choosing to actualize that world. Thus, in conceiving of the extrinsic denominations of a substance, God conceives of possible free decrees he would exercise in bringing its world into existence.<sup>25</sup>

The content of a substance’s complete concept tracks its membership in a world by representing the relational properties that the substance would have were its world to exist. If God chooses to create that world and to enact the free decrees associated with it, then the substance exists with those relational properties. Yet nothing in Leibniz’s complete concept theory precludes God from actualizing a substance apart from its worldmates and hence without the relational properties specified by its complete concept. To do so, God has only to decide not to enact the free decrees associated with the creation of that world and instead to enact different free decrees associated with the existence of a solitary substance. A substance created under this scenario (‘separated’ from its world) would have the same complete concept, specifying modally the relations it would stand in were its world to exist, but the divine free decrees on which those relations depend would remain merely possible.

On this way of understanding Leibniz's position, the content of a substance's complete concept is identified with God's *prevolitional* knowledge of the substance, that is, the knowledge God has of its properties independently of his knowledge of his own actual free decrees.<sup>26</sup> God knows a possible substance as an individual in knowing the intrinsic properties (e.g. perceptual states) it would have were it to exist and the relational properties it would have were the other members of its world to exist. Given this account of divine knowledge, we suggest, God *can* create the same individual under difference circumstances—with or without the other members of its world. The difference in God's knowledge of the two cases is explained by his knowledge of the different free decrees that would be exercised in them, not by the content of the relevant complete concept(s). If God chooses to create a world, specified in terms of the free decrees that define its contingent causal structure, he is committed to creating all and only those substances that comprise that world. But God could decide not to create a world, choosing instead to create one or more separated substances, which lacked the unity of a world. In this case God would actualize the individual substance without actualizing the free decrees contained in its complete concept. Thus, God would create the substance, without creating it as part of a world. As Leibniz emphasizes, there is no reason to think God would do this. Nevertheless, it remains something that God *could* do.

V

We have argued that any adequate account of Leibniz's notion of compossibility must accommodate both the Connection and Inclusion Conditions. The cosmological interpretation meets these conditions in a way that is illuminating of Leibniz's response to Spinoza's necessitarianism and consistent with the foundational commitments of his metaphysics. On our



account, compossibility is to be understood as the possibility of existence within a common *world*, where a world is defined in terms of a unified spatiotemporal and causal order. The abstract relational structure that defines a possible world implies for Leibniz that not all possibles are compossible, for all possibles are not related within a single order of coexistence and succession. Thus, on the assumption that God aims to create a unique world, he is limited to creating some but not all possible substances.

In conceiving of any possible substance, God conceives of that substance as it would be related to the other members of its world. Thus, the decision to create that substance as part of a world entails a decision to create all the other members of its world and no substances that are not members of its world. We have argued, however, that nothing in Leibniz's philosophy implies that God could not also create that substance by itself, separated from any world. This would require only that God choose not to actualize the possible free decrees that are definitive of the causal order of that world and choose instead to create the substance outside the structure of a world. The assumptions Leibniz makes about God's will—in particular, that God acts only for the best—leave us with no reason to believe that God would choose to act in this way. Nevertheless, it is a strength of our account that it makes sense of how, in Leibniz's view, this is something God could do.<sup>27</sup>

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## Notes

<sup>1</sup> *Ethics*, Part I, Proposition 29.

<sup>2</sup> Concern about Spinoza's necessitarianism permeates Leibniz's thought until the end of his life. See the notes composed shortly after their meeting in November 1676 (A VI.iii 582/DSR 105), as well as GP II 55-6/M 62-3 and *Theodicy*, §§173-174 (GP VI 217-8/H 234-6). Editions of Leibniz's writings are cited according to the following abbreviations: A = *Gottfried Wilhelm Leibniz: Sämtliche Schriften und Briefe*, cited by series, volume, and page; AG = *Philosophical Essays*; C = *Opuscles et fragments inédits*; DSR = *De Summa Rerum: Metaphysical Papers, 1675-1676*; GP = *Die Philosophische Schriften von Gottfried Wilhelm Leibniz*, cited by volume and page; Grua = *Textes inédits*; H = *Theodicy*; L = *Philosophical Papers and Letters*; LOC = *The Labyrinth of the Continuum: Writings on the Continuum Problem, 1672-1686*; M = *The Leibniz-Arnauld Correspondence*. Where a translation is cited, we have relied on it, though we have sometimes taken the liberty of modifying it slightly; where none is cited, the translation is our own.

<sup>3</sup> We say 'at a minimum', because the problem of contingency has several dimensions and elicits a variety of responses from Leibniz. For a discussion of these, see Adams 9-110.

<sup>4</sup> Wilson (119) notes these two explanatory functions of Leibniz's notion of compossibility. The claim that the compossibility relation 'partitions' possible substances into worlds is defended by Mates ('Leibniz on Possible Worlds' 341; *The Philosophy of Leibniz* 77). Talk of 'possible substances' may be read as shorthand for the complete concepts of possibles, as represented in the divine mind. To Arnauld, Leibniz writes: 'purely possible substances... have no other reality than that which they have in the divine understanding and in the active power of

God. However, you can see from that, Sir, that one is obliged to have recourse to divine knowledge and power in order to explain them properly' (GP II 54/M 61).

<sup>5</sup> Mates, Rescher, Hintikka, and D'Agostino defend versions of the logical interpretation.

<sup>6</sup> Hacking, and Cover and O'Leary-Hawthorne, defend versions of the lawful interpretation. Russell is also commonly associated with the lawful reading; however, Wilson (127-31) argues that Russell is better understood as offering a logical interpretation that incorporates elements of the lawful account. Wilson (120-1) proposes the contrast between 'logical' and 'lawful' construals of compossibility as an alternative to the distinction between 'analytic' and 'synthetic' readings introduced by D'Agostino. Wilson's terminology is adopted by Cover and O'Leary-Hawthorne (132).

<sup>7</sup> There is controversy about which properties of a substance are included in its complete concept and which follow from the concept, taken together with the concepts of other individuals and the laws of its world. Mates, and Cover and O'Leary-Hawthorne, maintain that a complete concept includes only the 'intrinsic denominations' of a substance, not its 'extrinsic denominations', or relational properties; Rescher maintains that a complete concept includes all of a substance's properties, including its relational ones.

<sup>8</sup> See also D'Agostino, and Rescher 55 for this point.

<sup>9</sup> The passage most often cited on its behalf is tentatively dated ca. 1687-96: 'The *compossible* is that which, with another, does not imply a contradiction' (A VI.iv 867/Grua 325). Mates (*The Philosophy of Leibniz* 75, n. 36) offers a number of other texts in support of the logical interpretation. None is conclusive. Of greatest interest is a note, cited by its Bodemann catalogue number (LH IV 7B 3, Bl. 17v), which has now appeared in the Akademie edition of Leibniz's writings: 'If, given the proposition "A exists", the proposition "B does not exist"

follows, then A and B are incompatible (*incomponibile*)' (A VI.iv 401). Di Bella (240-1) makes a convincing case that the notion of 'incompatibility' introduced here should not be identified with logical contradiction.

<sup>10</sup> Mates distinguishes between a concept 'needing' and 'including' another. One concept includes another if it is impossible for something to fall under the first without also falling under the second, or if analysis of the first reveals the second to be contained in it. The 'needing' relation is much weaker. According to Mates, 'The concept of *A* needs or leads to the concept of *B* if and only if some part of the first expresses the second' (*The Philosophy of Leibniz* 220). As his examples make clear, two complete concepts express each other just in case there would be a relation of agreement, or 'mirroring', between the perceptions of their corresponding substances (*The Philosophy of Leibniz* 76, 78).

<sup>11</sup> Addressing this point, Rescher writes: 'It is a fundamental tenet of Leibniz's philosophy that even omnipotence cannot accomplish the impossible' (54). We agree: the question is whether or not impossibility is to be analyzed in terms of logical impossibility.

<sup>12</sup> To Des Bosses's objection that 'God cannot have created any of these monads which now exist without having constituted all the rest', Leibniz responds: 'He can do it absolutely; he cannot do it hypothetically, because he has decreed that all things should function most wisely and harmoniously' (GP II 496/L 611). See also GP IV 530, and *Discourse on Metaphysics*, §14: 'This [sequence of thoughts and perceptions] would never fail, and it would happen to me regardless, even if everything outside me were destroyed, provided there remained only God and me' (A VI.iv 1550/AG 47).

<sup>13</sup> For a development of this point, see Brown 179.

<sup>14</sup> See *Theodicy*, §201 (GP VI 236/H 252-53); GP VII 289; GP VII 304/AG 151; A VI.iii 472/LOC 45; A VI.iv 1395/LOC 239.

<sup>15</sup> For an argument that this should be Leibniz's position, see Broad 162.

<sup>16</sup> Although it is tangential to our criticisms of the lawful interpretation, Cover and O'Leary-Hawthorne's allowance of transworld identity also raises problems. As they admit (93-4), several prominent texts suggest that Leibniz takes substances to be world-bound. However, they assert that (1) transworld identity is implied by the world-apart doctrine, and (2) transworld identity is not ruled out by Leibniz's complete concept theory, because the complete concept of a substance contains only its intrinsic properties and not its relational ones. With regard to (1), it is not obvious that transworld identity is implied by the world-apart doctrine. Leibniz says that any substance is like, or as it were, a world apart, not that any single substance could literally constitute a world. With regard to (2), there is good evidence that Leibniz believed that a substance's relations to other substances are included in its complete concept, and that he took this inclusion to be implied by his theory of truth (see GP II 37/M 40; GP II 49/M 55; and especially, GP II 56/M 63-4). Such evidence supports the conclusion that, while causally autonomous, substances are 'world-bound' in at least this sense: insofar as God conceives of them as belonging to a world, that world is unique.

<sup>17</sup> A different hybrid interpretation is developed by Brown.

<sup>18</sup> Koistinen and Repo advance a reading which like ours makes central the idea of a world. In doing so, they acknowledge (207, n. 34) the precedent of the view defended in Rutherford. In other respects, however, our accounts differ significantly. Koistinen and Repo argue (207-11) that the connection that unites substances in a world and renders them compossible is a universal harmony among their states. Sleight (170-82) offers reasons for doubting whether universal



harmony is a feature of every possible world for Leibniz. Over and above this, we question whether the notion of harmony is sufficiently precise or basic to ground an explanation of compossibility.

<sup>19</sup> According to Leibniz, the connection among substances depends upon God's free decrees (GP II 56/M 63), which are the basis of the 'laws of the general order' of any possible world (GP II 51/M 57). On the mutual dependence of substances, see *Primary Truths*: 'Every individual created substance exerts physical action and passion on all the others. From a change made in one, some corresponding change follows in all the others, since the denomination is changed.... Strictly speaking, one can say that *no created substance exerts a metaphysical action or influx on any other thing*.... What we call causes are only concurrent requisites, in metaphysical rigor' (A VI.iv 1646-7/AG 33); and *On Nature Itself*: 'In another place I shall give a better account of what can be said about the *transeunt actions of created things*. Indeed, elsewhere I have already explained a part of it, namely, that the *correspondence [commercium]* among *substances* or monads arises not from an influx, but through an agreement derived from divine preformation' (GP IV 510/AG 161).

<sup>20</sup> See also *New Essays*, II.xiv.24, 26: 'time and space pertain as much to possibles as to existents.... As I have just said, time and space indicate possibilities beyond any that might be supposed to be actual. Time and space are of the nature of eternal truths, which equally concern the possible and the actual' (A VI.vi 153-4).

<sup>21</sup> 'I do not agree that "in order to know if the romance of Astrea is possible, it is necessary to know its connection with the rest of the universe". It would be necessary to know this if it is *compossible* with the universe, and, consequently, if this romance has taken place, is taking

place, or will take place in some corner of the world, for certainly there would be no place for it without such a connection' (GP III 572/L 661). See also A VI.iv 1653-4/L 263; GP II 181.

<sup>22</sup> For more on this, see Rutherford 188-97.

<sup>23</sup> See A VI.iii 511/DSR 65; A VI.iv 1397. The supposition that God aims to create a unique world is critical to Leibniz's position. Although all possibles cannot be created by God as a single world, it might be objected that nothing prevents God from actualizing many spatiotemporally disjoint worlds (Kostinen and Repo 213-4). Leibniz explores this issue in texts composed during his most intense engagement with Spinoza's philosophy (1676-77). Whether or not he arrives at a compelling reason for rejecting this scenario, he is firm that God chooses to create only one from among an infinity of possible worlds. For a discussion of the relevant texts, see Kulstad.

<sup>24</sup> The last assumption might be questioned. In particular, it might be wondered why there could not be a possible world  $w_2$  whose members were qualitatively identical (by virtue of possessing the same intrinsic denominations) to a proper subset of the members of a maximal world  $w_1$ . This scenario is blocked by Leibniz's 'no purely extrinsic denominations' thesis, which itself is a corollary of the Connection Condition. According to the no purely extrinsic denominations thesis, any change in a relational property of a substance entails some change in an intrinsic property of it, by virtue of the way that substances condition each others' existence in a world (C 8, 520-1; A VI.vi 227). In the case of the imagined scenario, the members of  $w_2$  would not be conditioned by (all) the same substances as their counterparts in the maximal world  $w_1$ . Hence, their intrinsic denominations (e.g. their perceptual states) would have to be different from those of their counterparts in  $w_1$ . For further discussion of this point, see Rutherford 145.

<sup>25</sup> Leibniz develops this point in his letter to Arnauld of 4/14 July 1686 (GP II 49-51/M 54-7).

<sup>26</sup> For a defense of this reading, see Anfray.

<sup>27</sup> We thank Sam Rickless, Eric Watkins, and an anonymous reviewer for their comments on earlier drafts of this essay.