

Leibniz's Philosophy of Space and Time

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Although G.W. Leibniz maintains the ideality of space and time, this does not make space and time into mere fictions. Rather these idealities express truths about the real substances that make up the world. The following exposition is divided into three parts. In the first part of the paper I outline some of the reasons for Leibniz's rejection of absolute space and time. Here he is refuting very specific notions of space and time as absolutely subsisting entities. However, it is clear that we have an idea of space and time, so to what does that idea correspond? I answer that question in the following two parts where I outline Leibniz's positive theory of space (Part II) as the order of coexistents and time (Part III) as the order of succession. Ultimately, for Leibniz, space and time are relational. Because space and time are relational they are ideal, but this ideality expresses truths regarding the real intrinsic properties of substances.

I

Leibniz's Rejection of Absolute Space and Time

Leibniz's most sustained engagement with the notion of absolute space and time can be found in *The Leibniz-Clarke Correspondence*.¹ Samuel Clarke argues for a Newtonian conception of space and time. On this view, space and time are like infinite 'containers', subsisting independently of created substances. Clarke describes space and time as real qualities; he denies that they are beings and opts to describe them as properties and not substances. Space is infinite, time is eternal, and both eternally co-exist with God. According to

¹ Samuel Clarke, *The Leibniz-Clarke Correspondence: Together with Extracts from Newton's Principia and Opticks*, ed. H.G. Alexander (Manchester: Manchester UP, 1956).

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Clarke, space and time are, throughout their infinity, “uniform and alike, and one part does not differ from another.”² God is omnipresent both within the world and outside the world (immanent and transcendent); as Clarke writes, “he is in all, and through all, as well as above all”³ – but he is this through eternal time and infinite space. This is what Newton means when he describes space as if it were the *sensorium* of God.⁴ God exists “always and everywhere” and this ‘always’ and ‘everywhere’ is time and space.⁵

Furthermore, on this view of absolute time, contra Aristotle, time flows independently of change. Were there nothing but emptiness, devoid of any change whatsoever, time would continue to flow with each moment identical with the previous moment, yet still a different moment.

Leibniz predominantly employs two arguments against absolute space and time. However, his most substantial refutation lies in his commitment to a substance ontology and his particular brand of nominalism. Leibniz is a nominalist about relations and so he is interested in providing explanations in terms of simple substances; Leibniz attempts to explain relations and space and time with reference to simple substances (monads). For Leibniz reality is ultimately made up of substances and of their accidents for which the substances are necessary.

According to Leibniz, a substance is “a concrete being,” something “in which abstract beings inhere and which does not itself inhere in something else”.⁶ The difference between “concrete beings” (substantial beings) and “abstract beings” lies in the fact that concrete beings (substances) contain properties (accidents), and abstract beings correspond to relations among the

² *ibid.*, 32.

³ *ibid.*, 23.

⁴ *ibid.*, 13.

⁵ Bas C. van Fraassen, *An Introduction to the Philosophy of Time and Space* (New York: Random House, 1970), 24.

⁶ Michael Futch, *Leibniz's Metaphysics of Time and Space* (Berlin: Springer, 2008), 43.

different properties that inhere in the subject.⁷ Relations are neither substances nor accidents but rather they arise out of substances and their accidents. Marriage, for example, is an abstract or ideal thing that arises when two people (substances) engage in wedlock: it is neither substance nor accident but it represents something true about those involved. So too a spatial relation is a “mere ideal thing, the consideration of which is nevertheless useful.”⁸ So space and time cannot be “free-floating” accidents, subsisting in themselves for accidents or properties must inhere in some “concrete being.” And two subjects cannot share an accident (e.g. space) nor can one accident pass between subjects. This is what I take Leibniz to mean when he writes that absolute space or absolute time would be “a strange property or affection, which passes from one subject to another. Thus subjects will leave off their accidents, like clothes, that other subjects may put them on. At this rate, how shall we distinguish accidents and substances?”⁹ For this reason, absolute space (and time) cannot be a property: if it were it would have to inhere in multiple subjects.

Finally, any place in space or any point in time is either substantial or insubstantial. If places or points of time are insubstantial, then space and time are insubstantial insofar as they are composed of these insubstantial parts.¹⁰

Another reason Leibniz rejects absolute space and time involves his *Principle of Sufficient Reason* (PSR) and, through that, his *Principle of the Identity of Indiscernibles* (PII). According to PSR (which, incidentally, Clarke takes to be axiomatic as well), for everything that is the case, there is some sufficient reason why it should be the case rather than something else. From this principle, Leibniz derives PII. According to PII, if two things have all the same properties through and through, then they are in fact the same thing. For if two

⁷ This point will be important for Part II and III in identifying Leibniz's view of how space and time is conceived ideally through differentiating between properties and thereby deriving real relations among properties.

⁸ Clarke, *The Leibniz-Clarke Correspondence*, 71.

⁹ *Ibid.*, 67.

¹⁰ *Ibid.*, 36, 39.

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things are different, a sufficient reason must be given for the difference which identifies what distinguishes them. But if their properties are the same, then no sufficient reason can be given why they are different.¹¹

Leibniz's argument from this is quite straightforward and concise. If space stretches infinitely, is uniform, and is, as it were, like the 'container' in which God places the finite world, what reason would God have to create the world in substantial place X rather than in substantial place Y? Insofar as X and Y are indiscernible, there would be no reason. Rather, this would be an absolutely arbitrary act of the will.

Likewise, if time stretches eternally backwards, the successive moments of time being uniform, what sufficient reason could God have to create the world at time T1 rather than T2? If every point of time is indiscernible from any other point in time, there is no reason for creating at some point of time T1 rather than T2. Since there would be literally no reason, this violates the principle of sufficient reason.

II

Leibniz's Relational Theory of Space

As we begin examining Leibniz's positive relational views of space and time, I ask the reader to bear in mind Leibniz's view of substances and accidents and, in turn, his view of concrete beings and abstract beings. A concrete being is a being that subsists in itself and in which properties inhere. Abstract beings include relations among concrete beings and are themselves neither substances nor accidents; If there were no subjects and in turn no properties, there would be no abstract beings (or 'ideal beings', as Leibniz also calls them). For example marriage is an abstract or ideal thing that arises when two people are engaged in wedlock: it is neither a substance, nor an accident, but it represents something true about those involved. So too, a spatial relation is "a mere ideal thing, the

¹¹Futch, *Leibniz's Metaphysics of Time and Space*, 34-35.

consideration of which is nevertheless useful”¹².

According to Leibniz, “space is nothing else but an order of the existence of things, observed as existing together.”¹³ That is, space is the relation or 'situation' among coexistent things.¹⁴ Leibniz explains that people observe in the manifold of existing things a particular order of co-existence: when one of the co-existents alters in relation to the manifold of other co-existents and another co-existent “acquires the same relation to the others as the former had,” then we say that the two have switched places.¹⁵ Thus, if existent A, which stands in a particular relation to co-existents X, Y, Z, should change while X, Y, Z remain in the same relation with each other, and if B comes into a relation to X, Y, Z similar to the relation that A formerly held (a relation the mind considers an identity), then we say that B took A's place. This change in 'place' is a change among relations, which is in turn grounded in a change in the subject (substance) – or rather, a change in the subject's expressions.¹⁶ There are some co-existents that stand in a more or less fixed relation or order with each other; those more fixed co-existents provide a more stable basis by which we say the less fixed co-existents change place.

In turn, “that which comprehends all those places, is called *space*” or

¹² Clarke, *The Leibniz-Clarke Correspondence*, 71.

¹³ *Ibid.*, 63.

¹⁴ In this context, he uses 'situation' and 'distance' interchangeably. This is helpful because we understand 'distance' more intuitively; presumably Leibniz wants us to translate 'distance' into 'situation' and 'situation' into 'relation.' Thus rather than seeing space as an abstract independently subsisting being, Leibniz wants us to see it relationally. I understand this to be the point of interchanging these words.

¹⁵ Clarke, *The Leibniz-Clarke Correspondence*, 69.

¹⁶ I purposely keep it ambiguous whether a change in a substance's expressions implies a change or transformation of the substance itself. This seems to be a contentious issue in Leibniz scholarship, one that I do not attempt to resolve here. Michael Futch, however, seems to suggest that it implies second-order change (representational change), derivative of a first-order changelessness (the complete atemporal substance considered *in toto*). Futch, *Leibniz's Metaphysics of Time and Space*, 167.

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space is the result of “places taken together.”¹⁷ In other words, space is that abstract (ideal) thing through which certain properties of the subjects are distinguished, ordered, and placed in relation with each other.¹⁸ Through distinguishing these properties and observing the real order among those properties, we conceive of relations – relations of real properties. These situational relations constitute our notion of ‘place’. And when we conceive of these relations as a whole, that is, as the ensemble of places, we conceive of *space*. Thus, space can be analyzed in terms of places, places can be analyzed in terms of relations, and relations can be analyzed in terms of the real differentiae of properties.¹⁹ Thus space is an ideal thing – yet it expresses “real truth.” As Leibniz writes, “those genealogical places, lines, and spaces, though they should express real truth, would only be ideal things.”²⁰ But without any substances and consequently without any properties – in the absence of the created universe – there is no space.

The proponent of absolute space might object that it seems so difficult to imagine there is no space. For supposing all substances were destroyed, it still seems reasonable to suppose that there would actually still be *space*. But, according Leibniz, this supposition is at bottom incoherent. For insofar as space is an ideal thing that is derivative of substances and their accidents, when one imagines the annihilation of all substances and their accidents and tries to retain the notion of space, one is then conceiving of space not as an actuality, but as a possibility abstracted from but grounded in existing things;²¹ one is conceiving of space in connection to possible worlds of which a thinking subject is a part. The proponent of absolute space fails to comprehend this metaphysical nuance.

We are now in the position to consider the following scenario: Suppose

¹⁷ Clarke, *The Leibniz-Clarke Correspondence*, 69.

¹⁸ Leibniz uses ‘ideal’ and ‘abstract’ interchangeably.

¹⁹ Leibniz calls these relations ‘real relations’. Real relations represent real differences among properties.

²⁰ *ibid.*, 71.

²¹ Richard T.W. Arthur, *Leibniz* (Cambridge: Polity Press, 2014), 159.

that there are before me two bushels of apples, one to my left and one to my right. Suppose that those two bushels are identical in every way – that is, they share all the same properties. Surely, one might suppose that, although they are identical, they must be different because there are two of them, one on the right and one on the left. Yet, according to Leibniz's *Principle of the Identity of Indiscernibles*, because they share all the same properties, they are, in fact, one and the same bushel – or at least, so it seems. But, according to Leibniz, this scenario is incoherent. Now while this could be shown simply through an application of the *Principle of the Identity of Indiscernibles* (PII), I find that the incoherence of the scenario comes out more intuitively through consideration of Leibniz's theory of space. For insofar as the two bushels are placed differently, each of the two bushels stands in different relations to all other things. But because the differentiation in relations has its basis in differences in properties, those two things cannot stand in different relations to other things unless they have different properties. If the two bushels were in fact identical through and through, they would bear the same relation to all other things and they would consequently be indistinguishable in space. Thus, on Leibniz's view, we can know that two objects are different if for no other reason than that they are represented in distinct places through space.²² This is because they could only be represented in distinct places through space if there were in fact some distinction between their properties. In this way, space, although ideal, represents something real in the world.

III

Leibniz's Relational Theory of Time

When we move to Leibniz's views on time, we should expect that they will largely mirror his views on space. That being said, fleshing out Leibniz's

²²It is not space that metaphysically grounds this distinction, but rather ideal space is an epistemic tool for discerning that the two things are in fact different.

views on time is a bit trickier. Perhaps this is because time somehow seems more fundamental than space. Perhaps this is because we have experience that is not intricately connected to space (for example, discursive cognition) whereas we cannot help but experience things sequentially or successively. Some expositors of Leibniz have suggested that while monads (substances) are not spatial in themselves²³, they are in fact temporal in themselves because they undergo change – time being a necessary condition for change.²⁴ Thus even if Leibniz's theory of time largely mirrors his theory of space, there is still always an inclination to ground them differently. He describes space as the order or situation of co-existents whereas he describes time as “an order of successions.”²⁵ Leibniz must give an account of what is meant by ‘succession’ (and ‘simultaneity’) without resorting to temporal language. In order to flesh this out, I will outline Leibniz's causal view of time in which time is grounded in the causal relation – in an atemporal logical sense – between situations of co-existents.

In his *Confessions*, Book XI, St. Augustine considers the person who asks, “What was God doing before he made heaven and earth?” After firmly rejecting the retort that “He was preparing hell for people who inquire into profundities,” Augustine concludes that the creation of time accompanied the

²³ Leibniz's *monads* are simple immaterial substances, “the true atoms of nature and, in a word, the elements of things” (see Leibniz, G. W. *Leibniz's Monadology*, trans. Lloyd Strickland (Edinburgh: Edinburgh UP, 2014, 14).) Internally every monad mirrors the entire universe albeit from different points of view. Through the monad the entire universe is interconnected as each monad intrinsically reflects all the other monads and consequently each monad “is a perpetual living mirror of the universe” (*ibid.* 25). Thus the universe is multiplied within every monad, which is also to say that it is “multiplied in perspectives” (*ibid.* 25). Taken together the totality of monads culminates in “a single universe according to the different points of view of each monad” (*ibid.* 14-34).

²⁴ Lois Frankel is an expositor of this view. Futch, *Leibniz's Metaphysics of Time and Space*, 144.

²⁵ Clarke, *The Leibniz-Clarke Correspondence*, 26.

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creation of the world.²⁶ This move undermines the very question asked because it means there was no “before” creation; rather, time began at creation. Leibniz adopts a similar strategy in his dispute with Clarke. Clarke maintains that if Leibniz denies the subsistence of absolute time, then he also denies the creation of the world; if one asserts that God created the world then one can assert that God created the world at some time, and if God created the world at some time, then God could have created the world at some time prior to when he did. Leibniz does concede that one can indeed consider creation to be temporally preceded by some other event. However, as Bas C. van Fraassen points out, when one does so, one is conceiving “of an alternative world in which X (which in this world is the first event) is not the first event.”²⁷ That is, one is not conceiving of an actuality, but rather one is merely considering another possible world in which a similar creation event is preceded by some other event which, in that world, marks the beginning of time. When one keeps imagining an earlier event *ad infinitum* one keeps imagining different possible worlds *ad infinitum*; this is because time is an “ideal possibility.”²⁸

We can see, then, that just as that ideal thing we call space is grounded in concrete things (substances and their accidents), likewise this ideal possibility of time is grounded in these same concrete things. Time considered apart from concrete things is “an impossible fiction”.²⁹ While space is the order of co-existents or situations, time is the order of succession of those situations. Also, in the same way that the *ideality* of space ultimately encompasses all possible co-existents (all possible worlds), so too the *ideality* of time ultimately “encompasses all possible successions.”³⁰ While space is founded on the

²⁶ St. Augustine, *Confessions*, trans. Henry Chadwick (New York: Oxford University Press, 1991), 229.

²⁷ van Fraassen, *An Introduction to the Philosophy of Time and Space*, 25. Emphasis added.

²⁸ Clarke, *The Leibniz-Clarke Correspondence*, 75.

²⁹ *ibid.*, 77.

³⁰ Arthur, *Leibniz*, 159.

relations among things, time is founded on the changes among those relations. It is, as it were, the relation between different sets of relations.

However, for Leibniz, there is a crucial difference between time and space. Time has a particular “directional order” which space does not have; time, the order of successions, is linear and anisotropic.³¹ In order to explain this, Leibniz develops a causal view of time in which time is grounded in the causal relation among states. A state is temporally prior to another state if it is logically prior and incompatible with the other state.

The common objection to causal theories of time is that an explanation of causal order requires temporal order; thus the causal theorist cannot give an account of cause and effect without presupposing time.³² Leibniz insists that causal relations can be understood independently of temporal relations because he sees cause and effect as “logically prior to change and change in turn is logically prior to time;”³³ that is, the causal interconnectedness of all monads is built into the conceptual structure of the monad, intrinsically a particular state in one monad leads 'logically' to the consequent in another, according to the pre-established harmony of monads. The temporal order of things is grounded in the logical order of 'situations'.³⁴

If two states are incompatible with each other and one is logically prior to the other, then the logically prior one is temporally prior. If B is the cause of C, and both B and C are incompatible with each other, then B is temporally prior to C. But what about a state that might not be causally connected to C and yet seems to be temporally prior? How can one explain its being temporally prior if there is no causal connection? Any state that is simultaneous with a temporally

³¹ Futch, *Leibniz's Metaphysics of Time and Space*, 106.

³² Kant raises the same objection. But this question regarding the dependency on time for causal relations is a question that arose after Leibniz.

³³ Futch, *Leibniz's Metaphysics of Time and Space*, 107-108.

³⁴ We can think of this as the monads' or substances' intrinsic anisotropic force.

prior state is also temporally prior. Thus, if A is simultaneous with B, then A is prior to C because B is prior to C. Again, one might object that 'simultaneity' is an inadmissible temporal term; the causal theorist of time wants to analyze temporal language into language about cause and effect. Michael Futch shows how Leibniz attempts to solve this problem by developing a spatio-causal view of time in which 'simultaneous' means spatially related. Thus we can reformulate the way Leibniz construes temporal ordering in the following way:

If situation B is the cause of situation C, and if B and C are incompatible with each other, then situation B is temporally prior to situation C. If situation A is spatially related to situation B, then situation A is temporally simultaneous to situation B. Because situation A is temporally simultaneous with situation B and because situation B is temporally prior to situation C, situation A is temporally prior to situation C.³⁵

Because of the interconnectedness of everything, every state has a logically prior (and incompatible) state, according to the law or active force governing the logical sequence within a substance. This also means that the Leibnizian world-picture does not in any way allow indeterminacy.

Ultimately, Leibniz's causal account of time rests on whether the categories of cause and effect can be extricated from temporal notions. This is the primary difficulty for any causal theory of time – it is a difficulty with which causal theorists today still busy themselves. While Leibniz does have a thorough, complex philosophy of cause and effect and the different types of causal relationships, a sufficiently thorough exposition of Leibniz's view goes beyond the scope of this paper.

In conclusion, I have shown that the fact that G.W. Leibniz maintains the ideality of space and time does not make space and time into mere fictions for him. Rather, these idealities represent truths about the real substances that make up the world. In the first part I outlined some of the reasons for Leibniz's rejection of absolute space and time. Then in order to show that Leibniz is not

³⁵ *ibid.*, 124. This is my own formulation of Leibniz's view as explained by Futch.

saying space and time are illusory, I turned to an interpretation of his positive theory of space and time. It is clear that we have an idea of space and time, so to what does that idea correspond? I answered that question in the following two parts where I outlined Leibniz's positive theory of space (Part II) as the order of coexistents and of time (Part III) as the order of succession. Ultimately, I showed that, for Leibniz, space and time are relational and therefore ideal but this ideality expresses truths regarding the real intrinsic properties of substances in which that ideality is grounded.

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