Incongruent counterparts and the absolute nature of space in Kant's 1768 essay, *Directions in Space*

Contrapartidas incongruentes y naturaleza absoluta del espacio en el ensayo Direcciones en el Espacio *de Kant (1768)*

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Abstract: This article argues that Kant's argument from incongruent counterparts in his essay, *Directions in Space* (1768) yields not the conclusion that space is an objective reality, but rather that it is an absolute and dynamical framework that grounds spatial properties, a view which is neutral with respect to the objective/subjective nature of space. It is suggested that, so construed, Kant's argument in this essay can be made consistent with his later employment in support of transcendental idealism with regard to space.

Keywords: Kant, incongruent counterparts, space (subjective/objective, absolute/relational, dynamical).

Resumen: En este artículo se argumenta que el argumento kantiano de las contrapartidas incongruentes en el ensayo *Direcciones en el Espacio* (1768) no apunta a mostrar la realidad objetiva del espacio, sino más bien que el espacio es un marco referencial absoluto y dinámico, el cual determina activamente propiedades espaciales. Se sugiere que, así interpretado, el argumento kantiano de 1768 es perfectamente consistente con versiones posteriores, en las cuales el argumento es ofrecido como prueba de la idealidad trascendental del espacio.

Palabras clave: Kant, contrapartidas incongruentes, espacio (subjetivo/objetivo, absoluto/relacional, dinámico).

RECIBIDO: JULIO DE 2018 / ACEPTADO: JULIO DE 2019
DOI: 10.15581/009.53.2.002

I

From his 1746 writing *On the True Estimation of Living Forces* to 1768, Kant advocated a version of the Leibnizian relational conception of space.[1] In his 1768 essay *Concerning the Ultimate Ground of the Differentiation of Directions in Space*[2] (henceforth *DS*), he parts company with the Leibnizian view, apparently arguing for Newton's absolute realism about space. As most commentators agree, Kant's departure from Leibnizianism was prompted by his discovery of incongruent counterparts (henceforth IC(s)) —i.e. isomorphic objects which cannot be superimposed on one another— the existence of which would demonstrate that "absolute space, independently of the existence of all matter and as itself the ultimate foundation of the possibility of the compound character of matter, has a reality of its own (*eine eigene Realität*')" (Ak II: 378/WM 366).[3]

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1. Though relational, Kant's conception of space during these years was not strictly Leibnizian. Following Leibniz, Kant embraced relational space. Unlike Leibniz, however, he thought of the system of relations in which space consists as grounded on the *real* interaction among individual beings. See e.g. Ak I: 23, 5-9, where the externally determining force of substances is said to be a necessary condition of their interconnection, and the interconnection is said to be a necessary condition of the order in which space consists. For more details on Kant's pre-1768 views on space, externally determining forces, and things' interconnection, see G. Robert, *Armonía pre-establecida versus influjo físico* (Servicio de Publicaciones de la Universidad de Navarra, Pamplona, 2010) 55-70.
2. The term 'directions' in the title of this work renders the German '*Gegenden*', which for a long time was translated as 'regions'. Since recent decades, this translation has been subject to intense and persuasive criticism, both on textual and systematic grounds. For a summary of the main points telling against translating '*Gegend*' as 'region', see especially D. Walford, *Towards an Interpretation of Kant's 1768* Gegenden im Raume *essay*, "Kant-Studien" 92 (2001) 411 ff. See also P. Rusnock, R. George, *A Last Shot at Kant and Incongruent Counterparts*, "Kant-Studien" 86 (1995) 269.
3. References to primary sources are according to the following abbreviations and are in all cases to pages: Ak= *Kants gesammelte Schriften*. Ed. by the Preussischen Akademie der Wissenschaften (Bde. 1-22), Deutschen Akademie der Wissenschaften zu Berlin (Bd. 23), Akademie der Wissenschaften zu Göttingen (Bde. 24–25, 27–29) (Reimer, Berlin, 1902–1910 / Walter de Gruyter, 1910 ff). DS= *Concerning the ultimate ground of the differentiation of directions in space*, D. Walford (trad.) (in WM 361–72). Dissertatio= *De mundi sensibilis atque intellegibilis forma et principiis* (in Ak II: 385–419). Prolegomena= *Prolegomena zu einer jeden künftige Metaphysik, die als Wissenschaft wird auftreten könen* (in Ak IV: 253-380). WM= *Immanuel Kant: Theoretical Philosophy, 1755–1770*, D. Walford, R. Meerbote (eds.)

Kant's views in *DS* have come under attack from different flanks.[4] One of these flanks concerns the seemingly incompatible conclusions that Kant appears to draw from the existence of ICs in *DS* and other writings. As the passage from *DS* just quoted suggests, in this writing Kant appears to believe that the existence of isomorphic non-superimposable objects demonstrates that space has an independent, objective reality or, to use Kant's own words, an '*eigene Realität*'. But in the *Dissertatio*, published only two years later, he claims ICs to support the opposite idea: their existence reveals that space is only a modification of human sensibility, the particular order under which objects alone can be given to us. We find the same conclusion in the *Prolegomena* of 1783 and in the *Metaphysical Foundations of Natural Science* of 1786, where Kant further stresses the connection between ICs and idealism about space. Kant's remarks in these texts seem to be strikingly at odds with his position in 1768: that space has an objective reality clearly contradicts the claim that it is merely a subjectivity-dependent representation.

Ever since Louis Couturat's 1904 pioneering article *La Philosophie des mathématiques de Kant*, the mainstream of Kantian scholarly work has emphasised *DS*'s flaws and discontinuity with later critical writings. According to Couturat, Kant used ICs to support two incompatible doctrines, which can arguably "make us believe that either in both cases or in one of them at the very least the argument is invalid".[5] In this vein, Kemp Smith pointed out that conclusions drawn by Kant in *DS* and other writings are "directly opposite", whereas David Walford has accused a flagrant "incom-

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(Cambridge University Press, Cambridge, 1992). GP= *G. W. Leibniz. Die philosophischen Schriften* (1875-1900), C. I. Gerhardt (ed.) (Georg Olms, Hildesheim, 1965). GM= *G. W. Leibniz. Die mathematischen Schriften* (1849–1855), C. I. Gerhardt (ed.) (Georg Olms, Hildesheim, 1971). LC= *The Leibniz-Clarke Correspondence* (*with extracts from Newton's* Principia *and* Opticks), H. G. Alexander (ed.) (Manchester University Press, Manchester, 1956).

4. For the full picture, see J. Earman, *Kant, incongruous counterparts, and the nature of space and space-time*, in J. van Cleve, R. E. Frederick (eds.), *The Philosophy of Right and Left: Incongruent counterparts and the nature of space* (Kluwer Academic Publishers, Dordrecht, 1991) 131-50.
5. See L. Couturat, *La Philosophie des mathématiques de Kant*, "Revue de métaphysique et de moral" 12 (1904) 370.

patibility of purpose to which Kant put the paradox of incongruent counterparts".[6] In this lineament, Jonathan Bennett has observed that "Kant could not decide which if any of his doctrines about space can draw strength from especial facts about the right/left distinction".[7]

The overarching aim of this article is to offer an interpretation of *DS* which emphasises its merits and continuity rather than its flaws and discontinuity. It is my contention that this cannot be achieved by concentrating on ICs and their putative bearing on objective versus subjective conceptions of space. Many commentators have failed to recognise the value of Kant's argument from ICs in *DS* because they have interpreted it as an attempt to establish the conclusion that space has an objective or independent reality. In the ensuing pages I shall depart from this reading. Particularly, I shall defend the view that Kant's main discovery in his 1768 essay was *not* that space is an independent, objectively real entity, but rather that it is an absolute referential framework which actively grounds the spatial properties of objects. While the absoluteness of this referential framework rules out the Leibnizian relational conception, it remains non-committal as to whether space has a subjective or objective ontological status: it only implies that space must provide a primitive grounding for the spatial properties of objects.[8]

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6. See N. KEMP SMITH, *A Commentary to Kant's 'Critique of pure reason'* (Humanities Press, New York, 1923) 164 and D. WALFORD, *op. cit.*, 411.
7. See J. BENNETT, *The difference between right and left*, in J. VAN CLEVE, R. E. FREDERICK (eds.), *op. cit.*, 100.
8. A thorough defence of the view that ICs can accommodate both realism and idealism about space would require arguing that ICs were not intended at demonstrating the subjective nature of space in all those writings where Kant resorted to them, that is, not only in *DS* but also in the *Dissertatio*, the *Prolegomena*, and the *Metaphysical Foundations of Natural Science*. Space does not allow me to undertake such a defence here. However, one strategy that one could adopt towards it is, in outline, the following. By 1770, on grounds that are independent of ICs, Kant embraces (transcendental) idealism about space. Now, this conception entails that space is
(i) subjective (the form of outer sensibility),
(ii) primitive/absolute (the condition of the possibility of spatial objects), and
(iii) intuitive (a direct and immediate representation).
If this is so, then it is perfectly coherent to think —as Kant does from 1770 onwards— that the existence of ICs lends support to (transcendental) idealism about space *and* that it does not demonstrate the subjective status of space: ICs may well

I divide my argument into three further sections. In section II, I shall first introduce the notion of IC by drawing a contrast between Leibniz's and Kant's accounts of congruence. On this basis, I shall next present Kant's argument from ICs. In section III, I shall turn to the connection between ICs and the nature of space. I shall develop two complementary lines of argument aiming to show that Kant's IC argument is meant to demonstrate that space is the absolute determining ground of spatial properties —rather than the objective nature of the ground. Section IV deals with a potential objection that could be levelled against the reading defended in section III and offers some brief concluding remarks that will help me to underscore the importance of Kant's achievements in *DS* to his later critical philosophy.

II

In his *Characteristica Geometrica* (1679), Leibniz states that two similar and equal objects are congruent to one another except in case it is possible to distinguish them by reference to a third thing (GM V: 154, 155).[9] Things are "similar" (*similia*), he writes, "which cannot be discerned when observed in isolation to each other". "Equal" (*aequalia*), on the other hand, are those things "the magnitudes of which are the same" (GM V: 153). Soon afterwards, Leibniz adds that the internal characteristics of an object —i.e. those that belong to an object taken in isolation— correspond to the 'form' (*forma*) of that object, whereas its external characteristics —i.e. those which can only be determined by comparison— correspond to its 'magnitude' (*magnitudo*) (GM V: 180). For Leibniz, then, the relation of similarity

demonstrate (ii) and (iii) —thereby lending support to (transcendental) idealism about space— yet not (i). But the elaboration and discussion of this strategy must be left for another occasion.

9. In locating this and the following Leibnizian texts I have been helped by V. de Risi, *Geometry and Monadology: Leibniz's* Analysis Situs *and Philosophy of Space* (Springer, Basel, 2007) 137 ff. and L. Placencia, *La Ontología del Espacio en Kant: un estudio genético sistemático sobre los fundamentos metodológicos y metafísicos de la teoría del espacio como intuicion pura en la Estética Trascendental* (Servicio de Publicaciones de la Universidad de Navarra, Pamplona, 2007) 67.

is grounded on sameness of form, whereas the relation of equality is based on sameness of magnitude. We can summarise Leibniz's account of congruence in the *Characteristica geometrica* as follows:

> For any objects *a* and *b*, *a* and *b* are congruent to one another ↔ (i) *a* and *b* are similar ∧ (ii) *a* and *b* are equal ∧ (iii) *a* and *b* cannot be distinguished by reference to a third thing.

In *DS*, Kant has nothing to say against Leibniz's account of the notions of equality and similarity. However, he rejects the idea that conditions (i)-(iii) are sufficient conditions of congruence. For suppose *a* and *b* are a left and a right hand. Human hands —or anyhow ideal human hands— are exactly equal and similar, for they share exactly the same internal spatial properties (sameness of form) and reciprocal spatial relations to each other (sameness of magnitude). Yet, Kant observes, they cannot be enclosed within the same spatial limits: a left and a right hand cannot be made identical through a continuous motion.[10] Based on condition (iii) of their *definiens*, someone favorably disposed to the Leibnizian view could reply that, even if similar and equal, right and left hands can be distinguished by making reference to a third thing, namely the human body to which they are attached. Again, however, Kant thinks this is not sufficient for explaining their difference. For suppose now that a single human hand were the only created object.[11] Under this supposition, there is no third thing available which may serve as the ground of the difference between the hands. Yet the single human hand "would have to be either a right or a left hand" (Ak II: 382-3). This means that, though isolated, the hand has the sort of property which makes impossible for it to occupy the same limits of its (hypothetical) counterpart.[12]

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10. I shall not enter here into the issue of whether this happens in one (or some) type(s) of space only, particularly in our physical space as a model of Euclidean space. On this see Wittgenstein's famous remarks in *Tractatus* 6.36111 [reproduced in J. VAN CLEVE, R. E. FREDERICK (eds.), *op. cit.*, 49].
11. We will return to the single-hand argument later. See pp. 280-281.
12. Despite his criticism of the Leibnizian account of congruence, Kant's opening

Objects such as right and left hands are called by Kant 'incongruent counterparts': insofar as they are equal and similar, they are counterparts; given that the limits of one object cannot be made to coincide with the limits of the other, they are incongruent (Ak II: 381-2). According to Kant, these objects are discernibly different because they have different *directions* (*Gegenden*) in space, a spatial property which cannot be accounted for either by identifying a difference in their forms and magnitudes or in the way they are related to a third spatial thing. How can we then explain the topological difference between ICs? Kant thinks that the only possible answer to this question is to assume that there is an absolute space to which the isomorphic objects relate in different ways.[13] On this basis, Kant's argument from ICs can be put as follows:

(P1) There is a difference between isomorphic incongruent objects. This difference is a difference of 'direction in space'.

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remarks in *DS* are full of praise to Leibniz's project of *analysis situs*. According to Kant, Leibniz envisages the possibility of an enquiry into space —the outlines of which Leibniz actually sketched— which would take into account the concepts of situation, position, and the like. However, since it moved at the level of pure mathematical or conceptual reflection, Leibniz's analysis failed to capture the difference between equal and similar yet non-superimposable objects. For, Kant argues, a purely conceptual, *a priori* description of two isomorphic objects will never suffice to determine their difference: a complete enumeration of all their spatial determination (sizes, proportion, and relative position of their parts) "must apply indeed in all respect to the other" (Ak II: 381). In other words, Kant's suggestion is that Leibniz was unable to detect ICs because the difference between two isomorphic non-superimposable objects is not a logically analyzable difference: it can only be found, as Kant puts it, in "the *intuitive* judgments about extension" (Ak II: 378; my emphasis). Seen in this light, Kant's discovery of ICs is directly connected with his methodological essay of 1764, where he advocates the view that philosophical inquiry (metaphysics), cannot proceed through mere conceptual analysis, as mathematics do. Thus Kant explains the goal of his enquiry in *DS* by saying that "what I am trying to determine *philosophically* here is the ultimate ground of the possibility of that of which Leibniz was intending to determine the magnitudes *mathematically*" (Ak II: 377; my emphasis). For a brief summary of Leibniz's *analysis situs* and its relation to Kant's project in *DS*, see WM 458-9.

13. It is interesting to note at this point that Kant and Leibniz would have agreed that the difference between isomorphic incongruent objects can only be explained by making reference to a third item. However, while Leibniz thinks this item must be a spatial object, Kant believes it must be absolute space itself.

(P2) The only prima facie candidates for explaining ICs' difference in direction are (i) the internal spatial properties of the objects, (ii) the external spatial relations the objects bear to each other, (iii) the relation of the objects to a third spatial object, or (iv) a background framework of absolute space.

(P3) The direction of objects in space is not explained either by (i) or (ii) or (iii).

(P4) The direction of objects in space is explained by (iv).

(C) Space is absolute.[14]

III

Most of the literature on *DS* has taken the notion of 'absolute space' predicated in (C) to stand for something like Newtonian space. This would imply that, on Kant's view, the existence of ICs demonstrates that space is an independent, ontologically objective reality which grounds the spatial properties of objects.[15] To be sure, some of Kant's assertions in *DS* lend support to this reading. As indicated earlier, indeed, Kant explicitly says that the existence of ICs shows that "absolute space…, in itself the ultimate foundation (*erste Grund*) of the possibility of the compound character of matter, has *a reality of its own* (*eine eigene Realität*)" (Ak II: 378/WM 366; my emphasis). On the face of it, the suggestion here seems to be not only

14. A similar, though more detailed, version of Kant's argument can be found in R. E. Frederick, *Introduction to the Argument of 1768*, in J. van Cleve, R. E. Frederick (eds.), *op. cit.*, 2.

15. The scholars I have in mind are those quoted in the introduction. That they read Kant as endorsing a Newtonian conception of space (or at least the objective reality of space) is clear from the fact that they all see Kant's IC argument in *DS* as being in conflict with Kant's later versions of the argument. Exceptions to this trend are J. Buroker, *Space and Incongruence: The origins of Kant's Idealism* (Reidel, Dordrecht, 1981), R. Torretti, *Manuel Kant: Estudio sobre los Fundamentos de la Filosofía Crítica* (Ediciones de la Universidad Diego Portales, Santiago de Chile, 2005) and L. Placencia, *op. cit.*, 62-70. I owe much of the initial impetus for the present article to reading their books.

that space is the "ultimate foundation of the compound character of matter", but also that the ultimate foundation has an independent reality.

However tempting this appraisal, I think it is misleading. In this section I will try to explain why. To this effect, two complementary lines of argument will be developed. (1) The first will show that what is required in order to explain ICs is not Newton's absolute space, but only *one* idea entailed by it, namely that space is the absolute ground or condition of spatial characteristics. (2) The second line of argument will reveal that, even if Kant follows Newton in conceiving of space as the condition of spatial objects, his notion of condition, as applied to space, is different from that of Newton in an important respect. This will allow me to reinforce the connection between ICs and the view of space as an absolute ground, as well as spelling out the precise sense in which Kant thinks of space as a condition of spatial properties.

(1) In order to make progress in our understanding of Kant's argument from ICs, attention must be drawn to its key concept — that of *direction* in space— and its relation to the notion of an absolute space and ICs.

At the beginning of *DS*, Kant explains the concept of direction in space by drawing a distinction between the 'direction' (*Gegend*) of an object and its 'position' (*Lage*) (Ak II: 377–8). As is well-known, Leibniz's relational theory of space maintains that space is an order of co-existent objects.[16] On the Leibnizian view, this order is sufficiently determined by the relations the co-existent objects bear to each other, which explain both their positions *and* the ordering of their positions.[17] Kant begins his argument in *DS* by criticising this account. Following Leibniz, he concedes that a consideration of objects' reciprocal relations is sufficient for explaining the positions of objects in space. However, relations between objects fall short of accounting for the *way* in which these positions are ordered. In

16. See e.g. GP III: 622, GP II: 450.
17. See J. Buroker, *op. cit.*, 52. For Leibniz's relational conception of space, see especially GP VII: 400-1. See also GP II: 183, 336, 438; GP III: 595, 622; GP VI: 584; GP VII: 364, 377.

particular, the order of objects' positions depends on the 'direction' (*Gegend*) objects have in space, which in turn depends on space itself as an absolute referential framework:

> In the most abstract sense of the term, direction does not consist in the reference of one thing in space to another – that is really the concept of position – but in the relation of the system of these positions to the absolute space of the universe […] The direction […] refers to the space outside the thing. (Ak II: 377/WM 365)

Kant's distinction between position and direction seems to be this. Position is a spatial characteristic of an object —or of a region of an object— which consists in a relation of that object to another object —or of a region of that object to another region of it.[18] By definition, then, it is possible to explain the positions of two objects by reference to their external relations. However, the relations which determine the position of objects are not the only level of relativity that exists. There is also an *order of the positions of the objects*. This order of position is what Kant calls the 'direction of an object in space'. Unlike position, this second-order kind of order cannot be explained by pointing to a relation between the objects: it requires a reference to absolute space. So the direction of an object in space is the relation to absolute space in virtue of which the position of that object is ordered in a certain way. Now, the reason why the directions of objects cannot be explained by making reference to their spatial properties is precisely the existence of ICs. For isomorphic non-superimposable objects are of course similar —i.e. they share the same internal spatial properties— and equal —i.e. they share

18. 'Position' can refer to (i) relations between objects and (ii) relations between parts of an object —given that spatial objects are extended things and hence have metric characteristics, such as relative distances between their parts. The distinction between (i) and (ii) correspond, respectively, to that between 'external' and 'internal' position. In what follows I shall be concerned with (i) only. This suffices to draw the contrast between *Lage* and *Gegend* and thereby introducing the concept of absolute space. On the distinction between internal and external position, see D. Walford, *op. cit.*, 409-11.

the same external relations to each other— and yet they cannot be superimposed on one another. Hence, there is something in those objects the explanation of which lies beyond their spatial properties.

Kant's opening remarks in *DS* are very brief. But this much is clear: what the existence of ICs precludes is relational space; what it demands is absolute space. Kant's main goal in *DS* is to set out the sufficient explanatory conditions of the spatial properties of objects. Some of these properties can sufficiently be explained by making reference to other spatial properties. For example, the position of an object can be determined by its relation to other objects. Nevertheless, there is at least one spatial property, namely the direction of an object in space, which cannot be accounted for in this way. For, as the existence of ICs bears witness, the direction of an object in space does not depend on the inner spatial structure of that object, or on its outer relations to other objects. Thus, although a purely relational conception of space can explain some spatial properties, it fails to account for all of them. It follows from this that space cannot be a mere system of relations or a derivative order grounded on co-existent spatial things. Rather, it must be an absolute condition that makes spatial things possible.

(2) We have seen so far that, motivated by the IC paradox, Kant breaks with relationalism about space and follows Newton in maintaining that space is a condition of spatial objects. However, closer examination of Kant's ideas suggests that he also wants to distance himself from the way Newton thought of space as a condition of such objects.[19]

Newton conceives of absolute space as a 'similar' and 'everywhere uniform' objective entity. As D. Shapere explains, this conception implies that, to Newton's mind, absolute space has no dynamical properties.[20] That is, space can (i) neither be affected by the

19. F. Kaulbach has argued that Kant was never committed to a strictly Newtonian conception of space. What follows can be seen as an attempt to support his claim, as far as *DS* is concerned. See F. KAULBACH, *Die Metaphysik des Raumes bei Leibniz und Kant* (Kölner Universitäts-Verlag, Köln, 1960) 86.

20. Throughout the present paragraph I am indebted to D. SHAPERE, *The Causal Efficacy of Space*, "Philosophy of Science" 31/2 (1963) 115 ff.

objects it contains (ii) nor affect those objects. The import of (ii), as Shapere puts it, is that "space, for Newton, is *indifferent* to the phenomena which take place in it".[21] Of course, this is not to say that space is not a condition of spatial objects. The point, rather, is that, for Newton, space is only a *necessary* condition of the spatiality of object. For instance, Newtonian space allows objects to occupy *some* region of space. However, since space is similar and everywhere uniform, there is nothing in space itself which can explain why an object occupies *this* particular region of space rather than *that* particular region of space.

That Newtonian space, in the specified sense, is dynamically inert —or 'causally inert', in Buroker's words[22]— is particularly apparent in a passage from Leibniz's controversy with the Newtonian Samuel Clarke. In his second reply to Leibniz (§ 1), Clarke writes:

> 'Tis very true, that nothing is without a sufficient reason why it is, and why it is thus rather than otherwise…But this sufficient reason is oft-times no other, than the mere will of God. For instance: why this particular system of matter, should be created in one particular place, and that [sc. system of matter] in other particular place; when (all place being absolutely indifferent to all matter) it would have been exactly the same vice versa, supposing the two systems (or the particles) of matter to be alike; there can be no other reason but the mere will of God. (GP VII: 359/LC 20–1; my emphasis)

According to Clarke, two objects ("systems of matter") sharing the same characteristics ("alike") would be indiscernible ("exactly the same") regardless the place or part of space in which they are created. That is, for any objects *a* and *b*, if *a* and *b* are equal and similar, then each of them can respectively be located in places *A* and *B* or in places *B* and *A* without differing from one another. As the passage makes explicit, the reason for this is the indifference or dynamical

21. See D. Shapere, *op. cit*., 117.
22. See J. Buroker, *op. cit*., 10.

inertness of space with respect to the objects it comprises. For if *a* and *b* have exactly the same properties and space is deprived of all matter-affecting power that could explain the difference between *a* and *b*, then *a* and *b* will remain exactly alike and absolutely indiscernible regardless of the place or part of space they could possibly occupy. From this Clarke extracts the conclusion that there is no room to enquiry after a reason why God creates objects in one place of space rather than in another.[23]

This theological conclusion is not important or our purposes. Rather, what makes Clarke's views relevant here is the thesis about space that his conclusion supports, namely that space is 'everywhere uniform' and hence deprived of dynamical properties. For even a cursory glance at this thesis is sufficient to realise that Kant cannot have embraced the Newtonian conception of space as a condition.

Suppose that places *A* and *B* are defined by the limits of a right and a left hand, respectively. Further, suppose that the two objects (or "systems of matter") *a* and *b* are the right and left hands themselves. Under this supposition, and contrary to the Newtonian view, *a cannot* be enclosed within the limits of *B* and *b cannot* be enclosed within the limits of *A*. Now, since *a* and *b* are perfectly equal and similar, the impossibility of mutual superimposition cannot of course be due to any difference between *a* and *b*. So what is the reason? Again, the only available explanation is that *a* and *b* differ with respect to their relations to absolute space. As we saw in (1), this explanation undermines Leibnizian relational space. But now we can see that it also undermines Newton's dynamically inert space. Space cannot be indifferent to the objects that it comprises. If it were, then space could not ground the particular places that objects occupy in space, in which case there would be no explanation of the

23. Clarke's endorsement of this conclusion is one of Leibniz's main reasons for rejecting Newtonian space. As Leibniz argues in his *Third Paper* against Clarke (§ 5), Clarke's view boils down to the claim that "God wills something without any sufficient reason for his will", which is "contrary to the glory of God", who never operates without reason. See GP VII: 364/LC 26. See also GP VI, 222-7, 313-4, 322-3, 615-6. It is interesting to note that Kant's conception of space in *DS* allows him to eschew this problem, for he rejects the indifference of Newtonian space, as we shall see.

fact that *a* and *b* cannot occupy the same hand-space. So, as Kant sees it, space is the absolute determining ground of particular properties of objects. Hence, it is a dynamical, active entity.[24]

This point is important, so let me reinforce it by looking at it from another angle. Towards the end of *DS*, Kant invites the reader to try the following mental experiment. Let us suppose that there exists nothing in the universe except a single human hand. Since the hand is completely isolated and there is no intrinsic spatial property of the hand which could indicate us whether it is a right or a left hand, we would expect the leftness/rightness of the hand to remain undetermined: it is neither a right hand nor a left hand. According to Kant, however, the hand *must* be either a right hand *or* left hand (Ak II: 383). For if the hand is undetermined with respect to its rightness/leftness, then we would have to conclude that, if a human body were brought into existence, 'the hand would fit equally well on either side of the human body'. But this is absurd (Ak II: 383).

Kant's main target with this experiment is Leibnizian relationalism. If space, as Leibnizians have it, "simply consists in the external relation of the parts of matter which exist alongside each other" (Ak II: 383), then the hand would be undetermined with respect to its rightness/leftness, since there is nothing in the universe of the hypothetically isolated hand. But I think there is another important idea underwriting Kant's argument. Suppose, once again, that the universe contains nothing but a human hand. The hand, Kant tells us, must be either right or left. Now let us formulate the following question: can the rightness or leftness of the hand be determined through the analysis of its internal spatial characteristics? The answer, of course, is 'no', because right hands do not differ from their counterparts in relation to their internal spatial structures. The internal spatial relations of their parts are entirely similar. So, if we

24. One might object here that the argument I have developed in this paragraph is too abstract and lacks textual support. While it is true that (as far as I could see) there is no place in *DS* where Kant explicitly states that space is a dynamical entity which determines the properties of objects, he does explicitly say things which entail that statement, as we will see in what follows.

concede that Kant is right to think that the isolated hand must be either right or left, it follows that the relevant spatial property of the hand —its rightness or leftness— must depend on the *structure of absolute space itself*. In other words, as Buroker points out, right and left hands are not intrinsically enantiomorphic, but only insofar as they take on different properties depending on the way they relate to absolute space as a whole: space itself 'causes' a particular property of the hand.[25] If we generalise this idea and consider the notion of direction discussed earlier, it seems safe to conclude that, for Kant, the particular direction of an object depends on a property or properties of absolute space itself. Therefore, Kant's conception of absolute space in *DS* is different from that of Newton not only in that it remains non-committal as to whether space has an independent reality: while Newtonian absolute space is only a necessary condition under which objects can be indifferently placed, Kantian absolute space sufficiently determine particular spatial properties of objects: objects are directed by space itself.[26]

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25. See J. Buroker, *op. cit.*, 59. Nerlich puts the point well when he writes that, on Kant's view, "the hand is left or right because of its relation to space in respect of some property of space". See G. Nerlich, *Hands, Knees, and Absolute Space*, in J. van Cleve, R. E. Frederick (eds.), *op. cit.*, 153. See also L. Sklar, *Incongruous Counterparts, Intrinsic Features, and the Substantiality of Space*, in J. van Cleve, R. E. Frederick (eds.), *op. cit.* (1991) 173, for whom there is a "dependence of facts about handedness on global features of space". I am indebted to these scholars' works. The way in which I argue for the causal efficacy of Kantian space differs, however, from theirs both in scope and details. Moreover, here the claim that Kantian space is (unlike Newton's) dynamical is only one stage within a larger chain of reasoning whose aim is to demonstrate the consistency between Kant's employments of ICs and his post-1768 conception of space.
26. In connection with this, it is worth noting here that Kant thinks of direction as a property which plays an important role in the configuration of the identity of physical objects. Indeed, he expends almost two pages of *DS* —the writing has only seven pages in Ak— to show how "the particular direction in which the order of the parts is turned" is "sometimes employed to distinguish one species from another" (some kinds of snails, plants, among others, are Kant's favorite examples in *DS*) (Ak II: 380). In this sense, the idea that space is endowed with powers which determine the direction of objects gains even more importance.

IV

The aim of the previous section has been to show that Kant's position in *DS* demonstrates that space is an absolute determining ground of spatial properties. The argument I have developed in (2) reinforces this view, since it reveals that the existence of ICs requires a space that can actively affect the objects it comprises, a space that can determine the order of their positions or directions. In turn, this has allowed us to identify one important difference between the way in which Kant and Newton conceive of space as an absolute determining ground.

Let us now revert to the original issue set out at the beginning of this article and draw some conclusions. We saw there that many scholars have thought Kant's employment of ICs in *DS* to be inconsistent with the purposes to which he puts ICs in other writings. Particularly, Kant would have used ICs to prove both the objective reality of space (in *DS*) and its subjective nature (in later writings). Is this criticism fair?

The first thing that must be said about this question is that there is actually a number of textual and systematic reasons that suggest that, in *DS*, Kant was fairly willing to be taken as though he was arguing for a Newtonian conception, i.e. for a kind of space that is absolute, primitive, and objective in nature. At the very least, Kant does not overtly say anything that might suggest otherwise. On the contrary, note, for example, that Kant explicitly quotes Euler as one of his allies (Ak II: 378), who by the time was one of the most decided advocates of Newton's physics. Furthermore, towards the end of the essay Kant links the notion of space he has been defending to the space "construed by geometers" (Ak II: 383), where 'geometers' presumably stands for 'Newtonians'. Finally, in 1769, only one year after the composition of *DS*, Kant discovers the antinomy of pure reason, which arises precisely insofar as space — and time — is conceived as an objective reality.

I think, however, that none of this should make us believe that Kant's version of the IC argument in *DS* is wrong. For, as the foregoing analysis has shown, although it is true that, by the time of *DS*,

Kant was actually committed to the view that space is an 'independent reality' (*eine eigene Realität*), his *argument* in *DS* does not depend on, nor is directly related to, this view. In other words, I think that a distinction should be made between what Kant *believes* in 1768 and what he *does* in *DS*. In 1768, Kant believes in the following conditional: *if* space is absolute and primitive, then it is objective. Now, the IC paradox shows that space is absolute and primitive. Therefore, Kant is naturally led to affirm its objective nature. But, as developed in *DS*, the IC argument demonstrates only the *antecedent* of this reasoning, not its consequent. This is what explains that, very shortly after the composition of *DS*, Kant is able to consistently abandon the concept of space as an objective reality while continue to have recourse to the IC argument in order to show its subjective status: the argument only proves that space is the determining ground of spatial beings, that it is absolute and primitive, while remaining neutral with respect to the objective/subjective distinction. Two years later, in 1770, Kant will realise that the connection 'absolute-primitive-objective' is not necessary. Space can be absolute, primitive, and subjective at the same time: absolute inasmuch as it is a condition of spatial beings, primitive in an epistemological sense, and subjective because it is the form of outer sensibility.

Failure to see this detracts seriously from the value of the criticisms of Kant's argument in *DS*. Kant's leading question in *DS* is whether space is a derivative and relational order or an absolute and primitive being; in other words, whether space derives its nature from the objects it contains or, conversely, its structure and properties determine the spatial characteristics of objects. Before *DS*, Kant believes that the first horn of the dilemma was true.[27] From *DS* onwards, he switches to the second. For the impossibil-

27. Thus, in the *Thoughts on the True Estimation of Living Forces*, Kant defends the view that the structure and properties of space derive from the laws which regulate the dynamical constitution of individual substances (Ak I: 24, 2-9). See esp. Ak I: 27, 7-9, where Kant argues that the three-dimensional character of space derives from the fact that the forces with which substances are endowed act according to Newton's inverse square law. On this point, see R. TORRETTI, *op. cit*., 127-8, L. W. BECK, *Early German Philosophy: Kant and his Predecessors* (The Belknap Press, Harvard, 1969) 447, and G. ROBERT, *op. cit*., 65-70.

ity of understanding the enantiomorphism of counterpart objects through the analysis of their internal spatial configuration and reciprocal relations shows that space must be the determining ground of spatial properties: "[…] the ground of the complete determination of a corporeal form does not depend simply on the relation and position of its parts to each other; it also depends on the reference of that physical form to universal absolute space" (Ak II: 381/WM 369). Thus, the connection between ICs and the objective reality of space can be put aside, and a good case for the unity of the different versions of Kant's argument can be made: the later versions are a development of what Kant has seen in *DS*, a development which actually incorporates the core of his argument of 1768. The paradox of isomorphic incongruent objects has convinced Kant of an idea he will adhere to without change for the rest of his life: space is the absolute, "ultimate foundation of the possibility of the compound character of matter" (Ak II: 378).

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