Chapter 11

Absolute Space as a Necessary Idea: Reading Kant's Phenomenology through Perspectival Lenses

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1. Introduction

Kant's engagement with Newton's notion of 'absolute space' is fascinating, complex and spans over both the pre-Critical and the Critical period. The received view has it that in the pre-Critical period Kant shifted from an originally Leibnizian view of space (still visible in *Physical Monadology*, 1756/1992, and *New Doctrine of Motion and Rest*, 1758/2012) to a proper Newtonian view of absolute space via the incongruent counterparts argument in *Directions in Space* (1768/1992), for then abandoning absolute space in the *Inaugural Dissertation* (1770/1992). Indeed, the same argument from incongruent counterparts was later employed in the *Prolegomena* (1783) as an argument for space as "the form of outer intuition of […] sensibility" (Prol, 4:286).

In the first *Critique*, Transcendental Aesthetic, the Newtonians are praised for succeeding in making mathematical knowledge of nature possible by "opening the field of appearances for mathematical assertions" (KrV, A40/B57), but criticized for making the mistake of assuming "two eternal and infinite self-subsisting non-entities (space and time)" (ibid.). And in a passage of the *Critique of Practical Reason* discussing the relation between freedom and natural necessity, Kant returns to Newton's absolute space this time by offering an 'argument from Spinozism' against it (KpV, 5:101–3).[1]

Given the unequivocal criticism of absolute space in the two Critiques, it might seem *prima facie* surprising to see Kant returning to the topic in the *Metaphysical Foundations of Natural Science*

[1] See Brewer and Watkins (2012) for the threat of theological determinism, and its relation to both Leibniz and Spinoza. And Massimi (2017b) for a reading of this passage in the light of Kant's defense of idealism about space.

(1786/2004), final chapter on Metaphysical Foundations of Phenomenology, in a seemingly more conciliatory tone. For there we are told that "Absolute space is therefore necessary, not as a concept of an actual object, but rather as an idea, which is to serve as a rule for considering all motion therein merely as relative; and all motion and rest must be reduced to absolute space, if the appearance thereof is to be transformed into a determinate concept of experience" (MAN, 4:560). Absolute space is said to be a "peculiar concept" that acts as the "basis" for three other concepts: "*motion in relative* (moveable) *space*"; "*motion in absolute* (immovable) *space*" and "*relative motion* in general" (MAN, 4:559; emphases in the original).

What is surprising about this passage of MAN is not the fact that absolute space reappears or features prominently in the chapter on Phenomenology. For it is very clear from the passage that Kant is *neither* harking back to absolute space as an "essential determination of the original being itself" (which he criticizes adamantly in KpV, 5:101–10); *nor* is he retracting his earlier rebuttal (KrV, A39/B56) of absolute space qua an absolute (transcendental) reality of space. Thus, there is no inconsistency as such between the analysis of absolute space in MAN and the two *Critiques*.[2] Back to absolute space nonetheless Kant goes, this time defended as "a necessary concept of reason, and thus as nothing more than a mere *idea*" (MAN, 4:559).

What is then surprising (and worth exploring in more detail) are the reasons why *absolute space* as an idea of reason (i.e. neither a determination of God's omnipresence, nor an eternal and self-subsisting entity) is said to be *necessary* to determine the empirical concept of matter (qua the moveable in space) "with respect to the predicate of motion" according to the category of modality. In other words, why is absolute space – qua a "mere *idea*" (MAN, 4:559) – *necessary* to determine the motion of matter as *possible, actual*, or *necessary*? How can absolute space as an *idea* transform "appearance into experience" (MAN, 4:555)?

[2] Kant clearly says that absolute space qua empty space in the *phoronomical* sense "is therefore nothing at all that belongs to the existence of things, but merely to the determination of concepts, and to this extent no empty space *exists*" (MAN, 4:563).

Friedman (2013, 474–531) has persuasively explained this passage of MAN by observing that "Kant's notion of what he calls 'absolute space' is more like Newtonian absolute space than the modern conception of inertial frame. Yet Kantian absolute space differs from Newton's in being what Kant considers a limiting idea of reason rather than the concept of an actual object" (ibid., 503). In particular, Kant's absolute space as an idea of reason is said to be connected with Kant's argument for the first antinomy whereby "we can neither consider the sequence of (material) relative spaces as a completed infinite totality of cumulative rotating structures nor as a finite such totality terminating in empty space" (ibid., 501).

Friedman's (2013, 545) detailed analysis of absolute space as a purely regulative idea provides the springboard for my discussion in what follows. For while I entirely agree with Friedman's analysis of the regulative role of absolute space, I'd like to explore in more detail what is at stake in such regulative idea and why it is said to be *necessary* to determine the motion of matter according to modality. If absolute space as a "mere idea" has only a regulative and not a constitutive function, why is its use deemed nonetheless *necessary* for matter (the moveable) to become an object of experience? In other words, how can a purely regulative idea (such as absolute space) determine the empirical concept of matter with respect to the predicate of motion so as transform appearances into objects of experience? These questions take us right to the heart of one of the most important aspects of Kant's Critical philosophy: namely, the regulative role of ideas of reason. I offer a 'perspectivalist' reading of the regulative role of ideas of reason that will hopefully shed some light on Kant's stance on absolute space in the *Metaphysical Foundations of Natural Science.*

The Chapter proceeds as follows. In Section 2, I review some of the milestones in Kant's life-long engagement with the topic of absolute space, from the pre-Critical to the Critical period. In Section 3, I analyze some of the main theses at play in Kant's critical re-assessment of Newton's absolute space and the regulative role of the idea of absolute space in the *Metaphysical Foundations of Natural Science*. In Section 4, I return to the *Critique of Pure Reason,* Appendix to the Transcendental Dialectic to clarify my perspectivalist reading of the regulative role of ideas of reason as *foci imaginarii*, i.e. 'imaginary

standpoints' as I'd like to call them. And I explain how this reading can shed light on the stark assertions that Kant makes in the *Metaphysical Foundations of Natural Science* about the necessity of absolute space.

2. Kant's Life-Long Engagement with Absolute Space. A Primer

Kant's philosophy of nature evolved and developed from his very early contributions in the 1750s, to his mature Critical period. And the presence of distinctive Newtonian elements in Kant's writings on natural science can be traced back to what some scholars have portrayed as Kant's 'conversion to Newton' as early as in *Universal Natural History and Theory of the Heavens* (1755a/2012). But it was not just Newton's mechanics and his principles of attraction and repulsion that the young Kant received and engaged with in his original and often idiosyncratic ways. Kant's life-long engagement with Newton's view of absolute space deserves a special attention.[3]

Friedman (1992b) and Schönfeld (2000), among others, have documented how in the pre-Critical period Kant shifted from an originally Leibnizian / relationalist view of space (still evident in *Physical Monadology,* and *New Doctrine of Motion and Rest*) to a proper though (short-lived) Newtonian view of absolute space via the incongruent counterparts argument in *Directions in Space* (1768). By the time of the *Critique of Pure Reason*, Kant famously criticized Newton's conception of the absolute reality of space (as well as Leibniz's relationalism) in the name of transcendental idealism about space and time (KrV, A23/B37).

Did the young Kant convert to Newton's absolute space (ca. 1768), short-lived as the conversion proved to be? In Massimi (2017a) I answered this question in a more nuanced way by showing that in the relevant period around 1748–1768, Kant was in fact working with a thoroughgoing relational view of space ensuing from Kant's dynamical matter theory. While sufficiently distant from both Leibniz's and Wolff's relationalism, Kant's view of space was nonetheless elaborated primarily against the backdrop of the

[3] In what follows, I draw on (and summarise the main points from) Massimi (2017c).

Leibnizian–Wolffian tradition[4] and imbued with Kant's new dynamical theory of matter, which was in turn inspired by speculative Newtonian experimentalism (as I clarified in Massimi 2011).

Kant's pre-Critical view of space – from the original 1747 *True Estimation* to the 1768 *Directions in Space* – betrays his idiosyncratic blend of the Wolffian and the Newtonian traditions. For example, the relationalism about space advocated in *Physical Monadology* is at some distance from both Leibniz and Wolff and betrays Kant's debt to speculative Newtonian experimentalism in the treatment of physical monads as spheres of activity (with repulsion understood as a contact force and exemplified by the "ether, that is to say, the matter of fire," [MonPh, 1:487]). And, vice versa, Kant's enthusiasm for Newton's program in *Directions in space* requires a few caveats, and, in my view, should be read as containing some of the seminal seeds of Kant's later Critical treatment of space. Let me briefly substantiate these two claims.

In the 1756 *Physical Monadology*, Kant described physical monads as reciprocally acting substances, and responded to the proof of the Newtonian John Keill (1745), who in *An Introduction to Natural Philosophy* had offered a proof for the infinite divisibility of space. Kant argued that the infinite divisibility of space was compatible with the assumption that physical bodies are not themselves infinitely divisible on the ground that "space, which is entirely free from substantiality and which is the *appearance of the external relations of unitary monads*, will not at all be exhausted by division continued to infinity" (MonPh, 1:479). Kant argued that Newtonians erred in waving Keill's proof against the "metaphysicians," as much as the "metaphysicians" erred in maintaining against the "geometers" that the properties of space were imaginary.

Key to this idiosyncratic blend of Leibnizian metaphysics and Newtonian geometry was Kant's view of space understood as "a certain appearance of the external relations of substances." But how can physical monads fill the space via their spheres of activity, *and* space being in turn infinitely divisible without *either* jeopardizing the simplicity and unity of the monads (pace monadology); *or* reaching the contradictory

[4] For an excellent reconstruction of how Kant's matter theory of this period, especially evident in *Physical Monadology*, borrows from and, at the same time, distances itself from Leibniz, Wolff, and also Baumgarten, see Watkins (2006).

conclusion that the divisibility of space (qua external relations among substances) can only be finite (i.e. pace Keill's proof)?

As I argued in Massimi (2017a), this conundrum could be solved by bringing in considerations from Newtonian experimentalism. Against the standard Newtonian view of specific density of bodies as the ratio between mass and volume (whereby bodies with the same volume may nonetheless possess different specific densities because of the different amount of interstitial vacua), on Kant's view (MonPh, 1:485–86), specific densities were due to a perfectly elastic force "which is different in different things," and which constituted "a medium which is, in itself and *without the admixture of a vacuum*, primitively elastic" (Proposition XIII. Theorem, emphasis added). As a primary example of elastic bodies, Kant mentioned the ether, "that is to say, the matter of fire," with an unequivocal homage to Boerhaave's material fire, in continuity with his text *On Fire* (1755b/1986), where the ether was presented as both the matter of fire and the matter of light.[5] Kant's engagement with speculative Newtonian experimentalism (from Newton's optical ether to Boerhaave's material fire) made possible to understand the impenetrability of bodies in terms of a perfectly elastic repulsive force emanating from physical monads. In this way Kant could at once

(a) safeguard the simplicity and unity of physical monads by thinking of space along relationalist lines (i.e., as a bunch of external relations holding among monads' respective spheres of activity); and

(b) guarantee the infinite divisibility of space by thinking of impenetrability as a perfectly elastic repulsive force that fills the space (e.g. the ether).

However, Kant's view on space seems to have undergone a major overhaul in the following decade as several scholars have noted and commented upon. In the 1768/1992 text *Concerning the Ultimate Ground of the Differentiation of Directions in Space,* Kant seemed to side unequivocally with Newton and the Newtonians in rejecting this time the opinions of the "German philosophers," who claimed that space consisted solely in the external relations of the parts of matter. Twelve years after *Physical Monadology*, Kant defended the view that directions in space could not be reduced to mutual relations among objects but

[5] For an analysis of *On Fire* see Massimi (2011).

should be explained "in relation of the system of these positions to the absolute space of the universe" (GUGR, 2:377). This statement has often been read as marking a significant departure from Kant's earlier flirtation with the Leibnizian-Wolffian dynamical metaphysics, and as him taking a more decisive stance in defense of Newton's view of absolute space. Indeed, the declared goal of the essay was to offer a proof intended for "geometers" of the claim that absolute space has a reality of its own. Kant lamented that no metaphysical argument had been successful in establishing this claim. Nor were a posteriori proofs for absolute space available, Kant claimed, apart from Euler's attempt to provide one for the prize essay of the Berlin Royal Academy of Sciences in 1748,[6] which Kant discarded as a proof intended for engineers, and not for "geometers."

A charitable reading of Kant's above claim would be that Euler's proof for absolute space could cut no ice with the German metaphysicians because it presupposed precisely what the metaphysicians would question, namely the reality of absolute space. Kant then goes on to defend absolute space by using what might be called arguments from indexicality (I) and from incongruent counterparts (II):

(I) In Cartesian coordinates, Kant notes that if we take our body as the origin of the three axes, we can establish the distinction between *above* and *below*; *left* and *right*; *in front of* and *behind*. Similar reference to our situated body is inevitably presupposed in the indexical use of geographical maps and of the compass.

(II) Features found in some animal species (e.g., snails' shells) and vegetable ones (e.g., the growth of beans and hops) reveal incongruent counterparts, despite the objects having same size, same proportion, and even same relative arrangements of their parts.

These arguments are – to say the least – peculiar if intended as evidence for absolute space in *Newton's own sense* (or, for that matter, absolute space as intended by the "geometers" more broadly). If anything, considerations about indexicality and incongruent counterparts may work at best as arguments *against* the German philosophers (i.e., Leibniz), who by appealing to relations among parts were unable to

[6] See Stan (2012, 465).

account for handedness and chirality. But it unclear how (I)–(II) could function as arguments *for* Newton's absolute space. Indeed, it would be a *non-sequitur* to conclude from (I)–(II) that one must embrace Newton's absolute space.

In Massimi (2017a), I therefore argued that Kant's 1768 text should not be read as an endorsement of Newton's absolute space. Indeed, Kant begins the essay in a rather non-Newtonian sounding tone, by identifying absolute space with the "ultimate foundation of the possibility of the compound character of matter" where once again the whole problem about the compositionality of matter seems to belong more to metaphysics than to Newton's physics. And Kant referred to absolute space not as a real object, but as a *Grundbegriff,* i.e. "a fundamental concept which first of all makes possible all such outer sensation" (GUGR, 2:383). Two years later, in the *Inaugural Dissertation,* Kant presents the concept of space as "not abstracted from outer sensation" (MSI, 2:402) and as presupposed for the possibility of outer perceptions – a view that anticipates some key features of Kant's mature Critical treatment.

A decade later, in the first Critique – Transcendental Aesthetic, Metaphysical Exposition and Transcendental Exposition (KrV, A23/B38) – Kant returned to the topic and famously defended the apriority, necessity, and ideality of space. Space is there said to be a "necessary representation, a priori, that is the ground of all outer intuitions"; "the condition of the possibility of appearances, not as a determination dependent on them, as is an a priori representation that necessarily grounds outer appearances." Hence, the "ideality of space in regard to things when they are considered in themselves through reason, i.e. without taking account of the constitution of our sensibility" (KrV, A28/B44).

And this time, the Newtonians (described as "the mathematical investigators of nature") are praised for succeeding in making mathematical knowledge of nature possible by "opening the field of appearances for mathematical assertions" (KrV, A40/B57). However, Kant blames them for making the mistake of assuming "two eternal and infinite self-subsisting non-entities (space and time), which exist (yet without there being anything real) only in order to comprehend everything real within themselves" (ibid.). The metaphysicians of nature [i.e. the Leibnizians–Wolffians], on the other hand, are accused of identifying

space and time with relations of appearances abstracted from experience, at the cost of disputing "the apodeictic certainty of a priori mathematical doctrines in regard to real things (e.g. in space)" (ibid.).

Caution is in order when reading these passages. Kant's qualified nod to the mathematical investigators of nature does not amount to any endorsement of Newton's absolute space, of course. And that Kant was in fact at pain to avoid Newton's absolute space becomes even more evident if one takes into consideration the second Critique, where we find what is, in my view, one of the most profound and lucid explanations as to why Kant could not endorse Newton's absolute space: namely, what I called the argument from Spinozism (Massimi 2017b). If God is the cause of the existence of substance, *and* if we regard ourselves as substances (or things in themselves), then it turns out that God is also the cause, or the *determining ground* of our human actions. But if so, freedom would be jeopardized and fatalism of action would be rampant. This undesirable conclusion can only be avoided via a two-step maneuver that Kant outlines in a key passage of the second Critique (KpV, 5:101–3): first, Kant draws a distinction between the divine existence as *the existence of a being in itself* and our existence as *things in appearance*; and, second, he reallocates space and time from "essential determinations of the original being itself," to us and our outer sense.

Hence, Kant's conclusion that the ideality of space and time is the best antidote against the Spinozistic danger lurking in the view that space (and time) are "essential determinations of God." Interestingly, although no explicit mention is here made of Newton's absolute space, the notion of God as the cause of existence of substance chimes with Newton's General Scholium to the *Principia* where the Lord God Pantokrator is said to "endures always and is present everywhere, and *by existing always and everywhere he constitutes duration and space* (…). He is omnipresent not only *virtually* but also *substantially*; for action requires substance" (Newton 1999, 940). By reallocating space from an essential determination of God to *us* and *our* outer sense, the Spinozistic danger of fatalism of action could be eschewed.

Thus, there are three main themes of this short primer on Kant's life-long engagement with Newton's absolute space that bear on the rest of my story in Sections 3 and 4:

1. Kant never endorsed the Newtonian *metaphysical* view of absolute space as an expression of God's omnipresence in nature for what I take to be fundamentally moral grounds (i.e. to safeguard human freedom against what he feared was the risk of fatalism of action).
2. Kant never endorsed either the Newtonian *mechanical* view of absolute space as a physically empty space, in which physical bodies move or remain at rest. However, his enthusiasm for Newtonian speculative experimentalism (with the ether as a matter of light and fire) informed and shaped his matter theory as early as 1756 and – as I argue in Section 3 – laid the foundations for his mature Critical argument for the physical impossibility of a vacuum in the Phenomenology chapter of the MAN.
3. As early as 1768, Kant did seem to toy with the idea that there must be absolute space as a *Grundbegriff* to make sense of directions in space, indexicality, and chirality (which the Leibnizians, in his view, were incapable of explaining). A similar line of reasoning – inspired by indexical, or better, broadly perspectival considerations – reappears in the Phenomenology in MAN and (as I point out in Section 4) ultimately underpins Kant's view of absolute space as a necessary idea.

These three themes can all be found in the Phenomenology chapter of MAN, where Kant gives probably the most lucid and mature argument for absolute space understood this time as a "necessary concept of reason" (MAN, 4:559), and to which I am going to turn next.

3. Newton's Absolute Space in the Phenomenology Chapter of MAN

The chapter on Phenomenology that concludes MAN opens with a definition of matter as "the moveable insofar as it, as such a thing, can be an object of experience" (MAN, 4:554). The task of the chapter is to offer an explanation of how matter as the moveable – whereby motion is "given only as appearance" like anything else that is represented through the senses – can become an object of experience. In other words, the Phenomenology is designed to show how matter (as a material moveable thing) can be thought of as "*determined* with respect to the *predicate* of motion" (ibid.). The immediate problem with this task is that

motion as an appearance is only a "change of relation in space," as Kant clearly says at the outset. And three types of relations can be envisaged when something (let us call it A) moves with respect to something else (let us call it B):

- Either of the two correlates (be it A or B) can be said to be moved with respect to the other;
- Or, one of the two correlates (A or B) "must be thought in experience as moved to the exclusion of the other";
- Or, "*third*, both must be necessarily represented through reason as equally moved" (MAN, 4:554).

Appearances, however – Kant warns us – do not offer us any guidance in determining which of these three types of change of relations in space are at stake whenever we experience matter as the moveable in space. Yet for matter as the moveable in space to become an object of experience (and not just be an appearance), it "must be determined in one way or another by the predicate of motion" (MAN, 4:555). Thus, the task of the Phenomenology is to clarify the modalities through which we come to experience matter as a *material thing* (i.e. an *object*) moveable in space; or, in Kantian idiom, how we transform appearances into objects of experience.

In the ensuing three main Propositions, Kant sets for himself the task of answering this question by proceeding in a familiar systematic fashion and mapping three main kinds of motion (rectilinear, circular and "opposite and equal motion") as respectively *impossible, actual,* and *necessary.* Unsurprisingly, this has long been read as the chapter that gives a determination of motion with respect to the category of modality (see Friedman 2013, ch. 4 for a thorough analysis).[7] In what follows, I will not attempt to explicate each and every of these three main Propositions and my analysis will be very selectively confined to the role of absolute space in the Phenomenology.

[7] On this influential reading of the Phenomenology, modality does not in fact literally add any "further predicate (or conceptual 'determination')" (Friedman 2013, 414) over and above those already explicated in the Phoronomy (moveable in space), Dynamics (filling of space) and Mechanics (mechanical moving forces). Instead, according to Friedman, modality "describes how the object in question is related to one (and eventually all) of our three intellectual cognitive faculties: understanding, the power of judgment, and reason" (ibid.).

Absolute space makes indeed its debut right after Proposition 1, where Kant asserts that rectilinear motion of a matter "with respect to an empirical space, as opposed to the opposite motion of the space, is a merely *possible* predicate. The same when thought in no relation at all to a matter external to it, that is, *as absolute motion*, is *impossible*" (MAN, 4:555). In the following Proof, Kant develops the first aforementioned point by arguing that in experience "there is no difference at all between the motion of the body in relative space, and the body being at rest in absolute space, together with an equal and opposite motion of the relative space" (MAN, 4:555).

The argument is somehow reminiscent of Newton's argument in the Scholium at the outset of the *Principia,* where Newton discusses the difference between absolute and relative space, absolute and relative motion with reference to the motion of a body inside a sailing ship. For Newton too, like Kant, saw rest in absolute space (or what he called "true rest") as the "continuance of a body in the same part of that unmoving space in which the ship itself, along with its interior and all its contents, is moving" (Newton 1999, 409). And like Kant, Newton too had already stressed how difficult it might prove to tell apart relative space from absolute space just on the basis of appearances.[8]

But, with a surprising twist, Kant goes on to assert that "absolute space, in contrast with relative (empirical) space, is no object of experience, and in general is nothing" (MAN, 4:556) and that absolute motion qua motion in absolute space is *impossible* (by contrast with rectilinear motion in relative empirical space that is merely possible). Hence, the first pressing question:

(A) Why does Kant assert not just that absolute space is no object of experience, but that absolute space "in general is nothing"? He does not seem to have provided any argument for this conclusion until this point.

[8] "For we define all places on the basis of the positions and distances of things from some body that we regard as immovable, and then we reckon all motions with respect to these places, insofar as we conceive of bodies as being changed in position with respect to them. Thus, instead of absolute places and motions we use relative ones, which is not inappropriate in ordinary human affairs, although in philosophy abstraction from the senses is required" (Newton (1999, 411).

To complicate matters, in the following Proposition 2, Kant asserts that "the circular motion of a matter, as distinct from the opposite motion of the space, is an *actual* predicate of this matter; by contrast, the opposite motion of a relative space, assumed instead of the motion of the body, is no actual motion of the latter, but, if taken to be such, is mere semblance" (MAN, 4:557). In other words, while in the case of rectilinear motion (Proposition 1) Kant grants the possibility that either of the two correlates (be it the body A or the relative space B) can be moved with respect to the other, when it comes to *circular motion*, he denies such possibility and swiftly concludes that a disjunction is here at stake whereby *either* the body is moved *or* the relative space is moved, and these two possibilities are at the mutual exclusion of one another. The problem is the following. Rectilinear and circular motions in Newtonian mechanics are governed by a few simple rules:

> α. Absolute space (and absolute time which I will not discuss here) provide the privileged inertial frame, where Newton's law of inertia applies (all bodies are either at rest or move with uniform motion with respect to absolute space).
>
> β. In addition to absolute space, there might be many other inertial reference frames with respect to which bodies may move with uniform (i.e. non-accelerated) motion – e.g. a ship, whereby the rest or motion of, say, a sailor inside can be regarded as relative to the reference frame of the ship itself; or as relative to the reference frame of the sea where the ship is moving; or as relative to absolute space where the ship and the sea are themselves located.
>
> γ. Newton's laws apply to all inertial reference frames and the relation between inertial frames is governed by Galilean transformations. In other words, it is possible to ask what the relative velocity of, say, a sailor walking inside the ship is either with respect to the motion of the ship itself as an inertial reference frame, or with respect to absolute space where the ship and the sea are located.

What is prima facie odd about Kant's Propositions 1 and 2 is that Kant seems to be defending something akin to tenets β.– γ. (in Proposition 1) without holding α., i.e. without assuming absolute space as a

privileged reference frame for he clearly says that absolute space is "nothing." Even more interestingly in the Remark attached to the Proof of Proposition 2, Kant refers to Newton's Scholium to the Definitions as follows:

> *Newton's* Scholium to the Definitions… may be consulted on this subject, towards the end, where it becomes clear that the circular motion of two bodies around a common central point (and thus also the axial rotation of the earth) can still be known by experience, and thus without any empirically possible comparison *with an external space;* so that a motion…which is a change in external relations in space, can be empirically given, even though this space is not itself empirically given, and is no object of experience. This is a paradox that deserves to be solved. (MAN, 4:558)

Kant seems to be appealing to Newton's own arguments in the Scholium (where absolute space features prominently) even though Kant repeats once more that absolute space is not empirically given and is no object of experience (no tenet α.). Unsurprisingly, Kant seems to be aware that the view he has just put forward is paradoxical by Newtonian lights. Thus, a second pressing question arises:

(B) Why does Kant nod to Newton's Scholium in Proposition 2 where circular motion is regarded as an actual predicate of matter even if absolute space is said not to be empirically given?

The paradox becomes glaring once Newton's Scholium with its famous bucket experiment and two-globe thought experiment are recalled. Newton famously argued that circular motion in absolute space has empirical effects that we can all observe and be familiar with. These concern the observable effects of inertial forces acting on a body that is rotating and accelerating at a constant rate. Consider a bucket full of water and hanging from a long cord that gets twisted and released. The walls of the bucket might act as a reference frame for the motion of the material body (water), and one can easily observe that at the beginning (when the cord is released and the bucket begins to spin) the water and the bucket are at relative rest with respect to one another. But as soon as the bucket continues to spin and accelerates, the water starts receding from the center and rise up the sides of the bucket.

This distinctive observable concave shape of the water's surface is the product of inertial forces acting on it. Newton concluded that "this endeavour showed the true circular motion of the water to be continually increasing and finally becoming greatest when the water was relatively at rest in the vessel" (Newton 1999, 413). In other words, the true circular motion of the water (and of "each revolving body") is not relative to a change of position with respect to the surrounding bodies (be it the bucket for the water or the "heavens of the fixed stars" for planets). But it is relative to absolute space. Indeed, this is the empirical evidence for absolute space, according to Newton.

To buttress this conclusion, at the end of the Scholium, Newton presents a second example, this time a thought experiment concerning yet again inertial forces acting on a cord connecting two globes which are rotating with respect to one another. In this case too, the tension on the cord is the sign of inertial forces acting on the globes and making them recede from the axis of rotation. By extrapolation from familiar experiences with cords, Newton concludes that "both the quantity and the direction of this circular motion could be found in any immense vacuum, where nothing external and sensible existed with which the balls could be compared" (ibid., 414). In the nineteenth century these well-known passages of the Scholium became the focus of Ernst Mach's criticism, which opened the path to Einstein's special relativity, the eventual demise of Newton's absolute space as a privileged reference frame.

For our purposes here, let me just briefly canvass two possible replies on Kant's behalf to some of these paradoxical aspects of his view of absolute space in MAN. The answers to questions (A) and (B) can both be found in the final General remark to Phenomenology. In brief, here they are. In reply to question (B) as to why Kant seems to nod to Newton's Scholium in Proposition 2 even if absolute space is said not to be empirically given, the answer should be found, in my view, in the way Kant comes to rethink Newton's absolute space. In Kant's hands, this is no longer a privileged inertial reference frame; but instead an *idea of reason* fulfilling an important indexical and perspectival function in our ability to *locate* and *refer* to motion of material bodies. There is some continuity here with the relationalism of the pre-Critical period, and most importantly with what I'd like to call the 'perspectival' analysis of ideas of reason that Kant had

already given in the first Critique, Appendix to the Transcendental Dialectic, to which I return in more details in Section 4.

In reply to question (A) as to why Kant asserts not just that absolute space is no object of experience, but that absolute space "in general is nothing," I think the answer lies in Kant's life-long dynamical argument against the idea of an empty space (Newton's vacuum), continuing on the well-established line of argument that began with *Physical Monadology* as discussed in Section 2. Let me substantiate this point in the remaining of this Section.

In the General Remark at the end of the Phenomenology chapter, Kant clarifies the grounds on which he had formerly asserted that absolute space "in general is nothing." These grounds are primarily of *dynamical*, rather than *phoronomic* or *mechanical* nature. For Kant distinguishes "various concepts of *empty space*" (MAN, 4:563). In a phoronomic sense, empty space "which is also called absolute space, should not properly be called an empty space; for it is only the idea of a space, in which I abstract from all particular matter that makes it an object of experience." In a dynamical sense, by contrast, empty space is "that which is not filled, that is, in which no other moveable resists the penetration of a moveable, and thus no repulsive force acts; it can either be empty space *within* the world (vacuum mundanum), or, if the latter is represented as bounded, empty space *outside* the world (vacuum extramundanum)" (ibid.). In a *mechanical* sense, empty space is in turn said to be the "emptiness accumulated within the cosmos to provide the heavenly bodies with free motion" (MAN, 4:564). And it is clear from the rest of the discussion that Kant is primarily concerned with the *dynamical* sense of empty space when he asserts that absolute space is not an object of experience and "in general is nothing." The reasons for the claim are first and foremost of dynamical rather than phoronomic or mechanical nature.

Newton himself did not clearly distinguish among these different senses of empty space. Despite absolute space acting as a privileged reference frame, Newton characterized it in terms of an "immense vacuum" in the Scholium to the Definitions (1999, 414); and again in the General Scholium at the end of the *Principia,* after mentioning Boyle's experiments with the air pump, Newton concluded that "the case is the same for celestial spaces, which are above the atmosphere of the earth. All bodies must move very freely

in these spaces, and therefore planets and comets must revolve continually in orbits given in kind and in position, according to the laws set forth above" (Newton 1999, 939–40).

But Kant could not countenance the idea of a *dynamically* empty space for reasons he had already abundantly elucidated in his pre-Critical theory of matter, inspired in turn by Newton's *Opticks* and speculations about the ether (as we saw in Section 2). At the very end of the General Remark on Phenomenology, unsurprisingly, Kant returns precisely to his matter theory and the ether to argue both against the possibility of a vacuum mundanum and a vacuum extramundanum. Against the former, Kant maintains that although it is logically possible to assume empty space in the pores of physical bodies, there might be dynamical reasons why this is physically impossible. Namely, it might be that the cohesion of matter instead of being caused by an attractive force, is in fact the effect "of a *compression* by external matter (the aether) distributed everywhere in the universe, which is itself brought to this pressure only through a universal and original attraction, namely gravitation (a view that is supported by several reasons)" (MAN, 4:564). Kant does not list or indicate the several reasons for this dynamical view. He does not need to. For this is a view that – as Section 2 briefly illustrated – he had already abundantly explored and developed since the time of *Physical Monadology* with his *sui generis* explanation of the specific densities of different bodies.

As for the vacuum extramundanum, Kant again resorts to a dynamical refutation in terms of the attractive force acting on the ether "(which encloses all these bodies, and, driven by that force, conserves them in their density by compression)" (MAN, 4:564). Kant claims in a rather speculative way that if there were an empty space outside the ether (that is assumed to be present among heavenly bodies), as the distance among bodies increases, the attractive force would decrease and with it, the density of the all-encompassing ether would also decrease indefinitely "but nowhere leave space completely empty" (ibid.). The ether that in *Universal natural history* as a primordial fine substance had offered Kant a tool to explain planets and stars formation, provides now an argument for preventing heavenly bodies from receding from one another as the attractive force decreases at a distance.

But while Kant warns his readers that these refutations of empty space are "entirely hypothetical" and speculative, he seems to be more sanguine in his answer to the aforementioned question (B), namely how can circular motion be an actual predicate of matter if absolute space is not empirically given. In other words, how can Kant nod to Newton's bucket and two-globe experiments when he has just denied the very absolute space that these Newtonian thought-experiments were meant to provide empirical evidence for? As anticipated, the answer lies in the way Kant continues the journey started in the pre-Critical period and the way he re-assigned Newton's absolute space to an *idea of reason* fulfilling an important indexical and perspectival role, as I explain in the next Section.

4. What Becomes of Absolute Space? Ideas of Reason as *Foci Imaginarii*

Let us then return one more time to the striking claim that Kant makes right at the outset of the General Remark to Phenomenology, and with which I opened this Chapter. Namely, that

> Absolute space is therefore necessary, not as a concept of an actual object, but rather as an idea, which is to serve as a rule for considering all motion therein merely as relative; and, all motion and rest must be reduced to absolute space, if the appearance thereof is to be transformed into a determinate concept of experience (which unites all appearances).
> (MAN, 4:560).

How can Kant argue that absolute space is necessary, that motion and rest must be reduced to it for appearances to become objects of experiences, after he has just repeatedly claimed that absolute space qua empty space does not exist and is physically impossible (although logically non-contradictory)? Recall this is the paradox that Kant set for himself to solve.

And the solution, I suggest, has to be found in the way Kant reinterprets Newton's arguments for absolute space. In Section 2, I briefly mentioned how difficult it is to make sense of the 1768 *Directions in Space* arguments from indexicality and incongruous counterparts qua intended arguments *for* absolute space. Eighteen years later, the Critical Kant develops a much more persuasive argument from indexicality and perspectivity that in my view has the power to explain at once why absolute space becomes an idea of

reason (and a necessary one too), and, relatedly, why absolute space is said to be crucial in transforming appearances into objects of experience, when in fact very little is left of Newton's original notion. I proceed as follows.

First, I explicate what is at stake in Kant's claim that "Absolute space is therefore necessary, not as a concept of an actual object, but rather as an *idea*, which is to serve as a *rule* for considering all motion therein merely as relative" by looking at the regulative role of ideas of reason in the Appendix to the Transcendental Dialectic of the first *Critique*.[9] Second, equipped with a perspectivalist reading of ideas of reason, I return one more time to Kant's Phenomenology and try to shed light on the paradox of absolute space.

In the Appendix to the Transcendental Dialectic in KrV, Kant presents the faculty of reason in its hypothetical use as being directed "at the systematic unity of the understanding's cognitions, which is the **touchstone of truth** for its rules" (A 647/B 675). A little earlier in the Appendix, he had asserted that ideas of reason have

> an excellent and indispensably necessary regulative use, namely that of directing the understanding to a certain goal respecting which the lines of direction of all its rules converge at one point, which, although it is only an idea (*focus imaginarius*) – i.e. a point from which the concepts of the understanding do not really proceed, since it lies entirely outside the bounds of possible experience – nonetheless still serves to obtain for these concepts the greatest unity alongside the greatest extension. Now of course, it is from this that there arises the deception, as if these lines of direction were shot out from an object lying outside the field of possible empirical cognition (just as objects are seen behind the surface of a mirror); yet this illusion (which can be prevented from deceiving) is nevertheless indispensably necessary if besides the objects before our eyes we want to see those that lie far in the background, i.e., when in our case, the understanding wants to go beyond every

[9] In what follows, I draw on Massimi (2017d) and (2018c) for a perspectivalist analysis of the Appendix and the role of ideas of reason. For an excellent discussion of the transcendental illusion in the context of the regulative role of ideas of reason, see Lorenzo Spagnesi *Kant and the Systematicity of Nature. The regulative use of reason in the Critique of Pure Reason* (PhD thesis, University of Edinburgh, May 2021).

> given experience… and hence wants to take the measure of its greatest possible and uttermost extension. (KrV, A645/B673)

Why are ideas of reason said to be illusory? And how can illusory vanishing points play nonetheless an "indispensably necessary regulative use"? Kant's so-called doctrine of the transcendental illusion continues to remain one of the most puzzling, and intriguing aspects of Kant's theoretical philosophy in my view. Especially puzzling are some of the examples that Kant gives in the Appendix, where in addition to the three official transcendental ideas of God, soul, and world, he mentions the ideas of "pure earth, pure water, pure air" and of "fundamental power."

A first possible way of thinking about the indispensably necessary role of such *foci imaginarii* is that they play a role analogous to Plato's ideas as "archetypes of things themselves" (KrV, B370). Yet by contrast with Platonic ideas, Kant's ideas of reason are illusory in creating the deception of such archetypes (nowhere to be found either within the bounds of possible experience, or beyond, given the limits of our knowledge). By distinguishing between appearances and things in themselves, and by relegating the latter outside the boundaries of human knowledge, Kant, under this first reading would however find himself in the difficult position of having to explain why ideas of reason – qua illusory archetypes of things in themselves – are nonetheless "indispensably necessary."

What good are ideas of reason so understood for theoretical knowledge, and in particular for scientific knowledge? Scholars adopting this interpretive stance have emphasized the direct link between the archetypical reading of ideas as illusory objects with the regulative role of reason in seeking after systematic unity as necessary for a correct use of the understanding.[10] Kant's quest for systematicity has often been read as the quest for ideal unconditioned 'objects' that would inevitably take the understanding beyond its proper domain and remit. This interpretive stance enjoins us to think that the illusion of thinking about an ideal ground, substrate, or unconditioned behind the appearances is necessary in motivating the operations of the understanding, albeit in a merely regulative (non-constitutive) way.

[10] See Grier (1997) and (2001, ch. 8) as an example of this interpretive stance.

Attractive and well established as it might be, this interpretive stance faces a problem. The necessity that attaches to the regulative use of transcendental ideas remains to be explained. For it is not the kind of modal necessity originating from the understanding. Modal necessity features prominently in the Postulates of Empirical Thinking in General, where it captures the way in which the Postulates operate with respect to the Analogies to make experience of nature possible for us (KrV, A234/B287). Thus, we are left with the open and pressing task of explaining how and why exactly – under this first interpretive reading – ideas of reason would in fact be *necessary* in motivating the operations of the understanding. In what sense is seeking after an ideal ground – archetype or unconditioned that we might want to call it – (*non-modally) necessary* for a correct empirical use of the understanding?

What is clear is that ideas of reason are not necessary in the sense of contributing (in a constitutive way) to the activity of the understanding in delivering objects of possible experience. At best, they would seem desirable (but not really indispensable) in giving legitimacy to otherwise subjective rational maxims, which we might find useful in empirical investigation (e.g. think of nature as if it were systematic; think of chemical reactions as if there were pure earth; and so on and so forth).

On a variation of this first interpretive reading, ideas qua *foci imaginarii* are necessary because reason – in its hypothetical use – is said to provide us with the universals (e.g., "pure water," "fundamental power") under which particulars can be subsumed.[11] These universals are required because without them the understanding could not even deliver true universal generalizations in science. The faculty of understanding, with its *a priori* categories and principles, can at best establish that for each event there is *some* cause; but not that causes of type X are followed by effects of type Y.[12] For inductive generalizations of this nature to be possible, reason in its hypothetical / regulative use has to complement the understanding by providing ideas of reason. This alternative interpretive stance goes some way towards explaining the necessity that attaches to the use of regulative ideas of reason. However, it has its own difficulties. For

[11] Universals should be such that they are neither given *a priori* (and hence empirically unrevisable) nor empirically given (otherwise they would not be able to fulfill their taxonomic task of providing an ideal ground for subsuming particulars).
[12] For this reading of the ideas of reason see Allison (2004, 427–28); Buchdahl (1969a) and (1971).

example, it proves difficult to square this interpretation with the three official transcendental ideas (God, soul, and world) in the second part of the Appendix. How are the ideas of God, soul, and world related to our ability to draw universally valid inductive inferences?

Elsewhere (Massimi 2017d; 2018c), I have suggested a different interpretive reading of the transcendental illusion. Core to it is the following move. Do not think of the *regulative role* of ideas primarily in terms of their acting qua proxies for noumenal objects (the unconditioned). Think of their regulative function instead first and foremost in the etymological Latin sense of *regula*, i.e. as "rules" for a correct empirical use of the very same faculty of understanding. Ideas in their regulative role should not mistakenly be hypostatized into placeholders for an unconditioned, which although epistemically unknowable, act nonetheless as an ideal ground for the unity that reason seeks out. Kant chose a peculiar terminology that in view speaks against any temptation to reify the regulative role of ideas of reason into their being *proxies for* noumenal objects. For he enjoins us to posit "an idea only as a unique *standpoint from which alone* one can extend the unity that is so essential to reason and so salutary to the understanding; in a word, this transcendental thing is merely the *schema of that regulative principle* through which reason, as far as it can extends systematic unity over all experience" (KrV, A 682/B 710; my italic emphases). Kant uses the language of "standpoint," "*focus imaginarius*" (vanishing point) and "rules" to explicate the regulative role of ideas of reason without surreptitiously assuming that ideas accomplish such a role by *standing for* noumenal objects.

Think instead of ideas as 'imaginary standpoints', as I'd like to call them, whose role is to define the abstract space of reason within which the understanding's cognitions are located. In perspectival drawing in art, vanishing points are the necessary points where the lines converge so as to give an impression of depth to the represented scene. Mastering perspectival techniques in the art via instruments such as the perspectograph allowed painters such as Piero della Francesca and Albrech Dürer to transform the represented scene into a "window on reality" (Panofsky 1991, 60–61). Analogously, ideas as vanishing points transform an aggregate of cognitions by the understanding into a systematized and unified

experience. We can think of the abstract space of reason as a 'perspectival space of reason' generated by ideas qua *foci imaginarii* in analogy with perspectival drawing in art.

Out of metaphor, ideas of reason can be thought of as acting qua a "shared conversational scoreboard" (to echo David Lewis' [1979] apt expression): they allow individual judgments to reach *unanimity and universality*, which for Kant are the hallmark of *bona fide* knowledge against doxastic or bogus knowledge. That is why the indispensably necessary role of ideas of reason cannot be restricted to inductive inferences, in my view. For it extends to the very possibility of knowledge in general, i.e. the possibility of a correct empirical use of the faculty of understanding (recall Kant's wording in the Appendix where the hypothetical use of reason is defined as the "**touchstone of truth**" for the systematic unity of the understanding's cognitions, see KrV, A647/B675). Kant seems to be saying that the understanding can only guarantee the validity of the judgments it subjectively produced (hence a lingering threat of transcendental solipsism that some scholars have seen at work in Kant's Critical project).[13] Therefore, a correct empirical use of the understanding requires ideas of reasons. But in what sense does reason offer a 'touchstone of truth' for the understanding's cognitions?

I suggest that we read this complex passage of the transcendental illusion along the following lines: reason provides a touchstone of truth because it offers ideas as imaginary standpoints necessary to confer on the understanding's cognitions the *unanimity and universality* that they would otherwise lack. Our ability to veridically judge that things are a certain way demands the hypothetical use of reason to supplement with ideas as rules the workings of the faculty of sensibility and understanding. In support of this reading, consider what Kant says in the Canon of Pure Reason in KrV*,* where he seems to suggest that a condition for true judgments is the ability to communicate them so that inter-conversational agreement can be reached:

> Truth, however, rests upon agreement with the object, with regard to which, consequently, the judgments of every understanding must agree (*consentientia uni tertio, consentiunt inter se*). The

[13] See Moore (1997).

> touchstone of whether taking something to be true is conviction or mere persuasion is therefore, externally, the possibility of communicating it and finding it to be valid for the reason of every human being to take it to be true; for in that case there is at least a presumption that the ground of the agreement of all judgments [*der Grund der Einstimmung aller Urtheile*], regardless of the difference among the subjects, rest on the common ground, namely the object, with which they therefore all agree and through which the truth of the judgment is proved. (KrV, A821/B849)

Without reason and ideas as rules for inter-conversational agreement, I contend, there cannot be any guarantee that my judging that things are a certain way matches with other people's judgments that things are indeed that way. To secure inter-conversational agreement with the object, ideas qua imaginary standpoints are required: they offer a 'shared inter-conversational scoreboard,' where it is possible to reach agreement and establish the universal and unanimous validity of true judgments. True judgments are then not effected by the faculty of understanding alone; they are ultimately effected by the faculty of reason in its indispensably necessary regulative role. For it falls within reason's remit to test how each individual judgment would fare on the inter-conversational scoreboard (*consentientia uni tertio, consentiunt inter se*).

This might sound surprising and baffling. Has not Kant, after all, abundantly explained how we all share a priori forms of intuitions, categories and principles of the understanding so as to make experience possible? What do ideas of reason add to this story, given that they do not have any constitutive role? To clarify this point, let us return to Kant's examples of "pure earth, pure water, pure air" in the Appendix. Suppose I have encountered a number of phenomena concerning water: raining from the clouds, filling oceans, drew dropping from a blade of grass, and so on. On each and every occasion, I have encountered these phenomena by applying categories and principles of the understanding to the spatio-temporal manifold. For example, the principle of causality might be at play in me having the phenomenal experience of rain filling up a reservoir over time; and substance might be responsible for my ability to have the phenomenal experience of the ocean being the *same* ocean (despite regular cycles of evaporation and

raining). The faculty of sensibility and the faculty of understanding, in their constitutive function, are all that is needed for the ocean and the rain filling up the reservoir to become objects of experience for me.

Yet for them to be objects of experience not just for myself, but also for my friends Martha, Paula, and every other human being – namely, for them to have universality and unanimity – something else is needed: ideas of reason. For if I did not have the idea of "pure water" as an (entirely regulative) *tertium,* there would be no guarantee that my experience of the ocean as the *same* ocean would match Martha's experience and Paula's experience and any other human being's experience of the ocean as the *same* ocean. If we did not share a faculty of reason with ideas (not as proxy for metaphysical objects but as a shared inter-conversational scoreboard), each of us could claim to know the ocean as an object of experience without having in fact any way of comparing that my object of experience agrees indeed with Martha's and Paula's and everyone's else too.

Sharing a priori forms of intuition, categories and principles of the understanding – in and of itself – cannot guarantee that our claims of knowledge match those of our fellow human beings. For their role is to make possible *individual* objects of experience, not to judge whether individual objects of experience (afforded by different individuals) do indeed agree with one another and have the universality and unanimity required for *us* as humankind to make *true judgments* that things are indeed a certain way.

Without ideas of reason, our individual ability to come to know 'objects of experience' – via our individual faculties of sensibility and understanding alone – would be akin to Wittgenstein's famous scenario (1953/2009, 213) where everyone has a box with something in it which we call a 'beetle,' and everyone claims to know what a beetle is only by looking at *their own* beetle and without ever been able to look at anyone's else beetle. We cannot look into the inner workings of other people's faculties of sensibility and understanding to come to the conclusion that indeed we *do know* what a beetle is; or, that we *do know* that this is the same ocean, or that planetary motion is some kind of circular motion. For us humankind to reach such universal and unanimous claims of knowledge, ideas of reasons are required as imaginary standpoints, external to all of us so that "*consentientia uni tertio, consentiunt inter se*."

If my reading of the regulative role of ideas of reason as imaginary standpoints is on the right path, we can begin to catch a glimpse as to why in MAN Kant reintroduces absolute space as an idea. More to the point, this reading enables us to reply to question (B) as we left it in Section 3: i.e., why Kant seems to nod to Newton's Scholium in Proposition 2 even if absolute space is said not to be empirically given (for all the dynamical reasons Kant had against the vacuum, as I already explained in Section 3). For relative motion as an appearance to become experience, i.e. for my individual experience of motion in relative space to become knowledge that we can all agree upon and share, there has to be a 'concept of absolute space' as a 'mere idea' (MAN, 4:559).

Absolute space "as an idea, which is to serve as a rule for considering all motion therein as merely relative" (ibid.) is necessary, I suggest, like any other idea of reason is indispensably necessary. Namely, not because it is a proxy for a noumenal entity (i.e. Newton's absolute space) as some unconditioned ground required for the regulative role of reason. But instead because it acts itself like a *focus imaginarius* to create a perspectival space so to speak, within which individual judgements of motions of material bodies – and the empirical spaces where they take place – can all be located. Absolute space is itself only an imaginary standpoint, a necessary one nonetheless to secure the unanimity and universality of our individual judgments about motions of material bodies.

For when we leave what Friedman aptly calls "our parochial perspective here on earth" (2013, 545) to progress "to the center of gravity of the solar system, from there to the center of gravity of the Milky Way galaxy, from there to the center of gravity of a rotating system of such galaxies, and so on *ad infinitum*," we need a way of securing that each individual judgment about these different rotational motions of heavenly bodies (my judgment, Martha's, Paula's and everyone's else) agree with a third party (i.e. the Kantian absolute space as a mere idea) so that they can agree with one another (*consentientia uni tertio, consentiunt inter se*).

Thus, Friedman and I agree on the regulative function of absolute space as an idea. But while Friedman sees absolute space as performing the task of some privileged inertial reference frame (even if a purely ideal one for Kant), I see its necessary regulative function as linked to our ability to veridically judge

that things are a certain way. I do not see Kant's absolute space in MAN as a proxy for an ideal reference frame to which all the relative reference frames (e.g. our solar system, the Milky Way and so on) can ultimately be reduced to. For I do not see ideas of reasons explicating their regulative role by acting as placeholders for noumenal entities in general. Under the perspectivalist reading I have suggested, the idea of absolute space acts instead as a "rule" that guides my individual cognitions about say planetary motions, or Milky Ways' motion qua circular motions and *make it possible for them to agree with* Martha's cognitions and Paula's cognitions and everyone's cognitions about planetary motions, or Milky Ways' motions.

That is why, in my view, Kant can rightly nod to Newton's thought experiments while also denying that absolute space is empirically given to us. Absolute space is never empirically given to us for it is only an idea of reason for Kant. Yet the idea is at work (and necessarily so) behind our individual cognitions of circular motions and offers a shared scoreboard, against which we can confer on our individual judgments the universality and unanimity that they would otherwise lack. That is why in my view Kant can rightly contends that "motion and rest must be reduced to absolute space, if the appearance thereof is to be transformed into a determinate concept of experience (which unites all appearances)" (MAN, 4:560).

For matter as the moveable "insofar as it, as such a thing" to become an object of experience – despite motion being only the appearance of a change of relation in space – the idea of absolute space is necessary, again "not as a concept of an actual object" (MAN, 4:560) but as a "necessary concept of reason, and thus nothing more than a mere *idea*" (4:559). Absolute space allows us to think of each motion and empirical relative space where it occurs

> as contained in a space of greater extent, and take the latter to be at rest…and so on to infinity, without ever arriving by experience at an immoveable (immaterial) space, with respect to which either motion or rest might absolutely be attributed to any matter….Rather, one must think a space in which the latter [relative space] can itself be thought as moved, but which depends for its determination on no further empirical space, and thus is not conditioned in turn – that is an absolute space to which all relative motions can be referred…so that in it all motion of material things may count as merely

relative with respect to one another, as alternatively mutual, but none as absolute motion or rest. (MAN, 4:559)

To conclude, absolute space is a mere idea. Yet, it is necessary to secure that individual empirical representations of space (in which material bodies move by changing relations) do not remain mere appearances. Absolute space as a necessary idea can transform appearances into objects of experience by unifying (or uniting) all appearances with respect to a perspectival space of reason where ideas themselves are nothing over and above vanishing points. Although the determination of motion with respect to the categories of quality, quantity, relation and modality is a constitutive procedure delivered by the faculty of understanding, ultimately such constitutive procedure needs be supplemented by a regulative procedure that can secure the unanimity and universality of our synthetic a priori judgments on the rotational motions of heavenly bodies as we move from the earth, to the center of the solar system, to the Milky Way and so on. Such regulative procedure requires absolute space, stripped of its Newtonian metaphysical and mechanical attributes and transformed into an idea.

Thus, there is for Kant no absolute space as either a determination of God's presence or as a self-subsisting entity in nature. And yet its concept is needed for directing the understanding towards a vanishing point that although "lies entirely outside the bounds of possible experience – nonetheless still serves to obtain for these concepts the greatest unity alongside the greatest extension" (KrV, A645/B673).[14]

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