

<AT>On the “Evolution” of Locke’s Space and Time Metaphysics

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<T1HD>1. Introduction

<TXT>There is a near-consensus in the literature that John Locke’s metaphysics of space and time undergo a radical evolution: in the 1670s, Locke holds relationism; by the first, 1690 edition of Locke’s Essay Concerning Human Understanding, he has adopted Newtonian absolutism.<sup>i</sup> This paper argues for an alternative reading, on which Locke’s Essay is explicitly neutral or noncommittal with regard to the ontology of space and time; and yet there is reason to believe that the Essay implicitly preserves Locke’s earlier relationism. In addition to challenging the existing scholarship, this paper excavates a form of pre-Leibnizian relationism, which may be of interest to twenty-first-century relationists looking to uncover the roots of their position;<sup>ii</sup> illuminates Locke’s views on space and time, highlighting his opposition to Cartesianism on this head; and provides ammunition to non-Newtonian readings of Locke’s Essay.

The paper proceeds as follows. Section 2 provides some relevant background. Section 3 explores Locke’s pre-1690 texts on space and time, showing that Locke holds a nonmodal form of relationism on which space and time are real, mind-independent relations holding between existing bodies. Section 4 investigates Locke’s 1690 Essay, arguing that the text is explicitly neutral on the nature of space and time, that the case for reading Locke as an absolutist can be undermined, and that there is reason to believe Locke remained a relationist.

<T1HD>2. Locke, Newton, and Newtonian Absolutism

<TXT>It is important to be clear on the chronology of Locke and Newton's relationship.

Newton's Principia was first published in 1687, and we know that Locke read it because the following year Locke published an anonymous review of it; see Axtell (1965). (Locke did not read subsequent editions of the Principia as he died in 1704, before they were published.)

However--as detailed in Rogers (1978, 222)--neither Locke's review nor his notes discuss space or time. As Woolhouse (2007, 278) explains, it is generally assumed that Locke and Newton first met in 1689 and certainly did not become friends until that year; on their friendship, see also Rogers (1978, 230-31) and Aaron (1955). An open issue in the scholarship is whether--or how far--Locke became a "Newtonian," in the sense of accepting large portions of Newton's natural philosophy. For example, it has been argued that Locke accepted Newton's theory of gravity; on this and Locke's putative Newtonianism more generally, see Downing (1997) and Domski (2011). If Locke did adopt Newton's space and time absolutism, it would fuel stronger Newtonian readings of Locke.

"Newtonian absolutism" is an umbrella thesis for many smaller theses, of which I will discuss three. First, there is some intimate relationship between space, time, and God; this relationship is "intimate" in that it involves more than God's mere presence in space or time. For example, Newton's (2004, 21) early manuscript De Gravitatione states that space is an "emanative effect" of God. Further, the General Scholium appended to the second, 1713 edition of Newton's Principia (2004, 91) claims that, by existing always and everywhere, God "constitutes" duration and space. Newton first publishes on this intimate relationship in his 1704 Optics and the second, 1713 edition of his Principia. Although the precise nature of this relationship is disputed in the literature, some relationship is generally acknowledged. Many scholars (including, as we will see, Gorham and Slowik [2014]) read Newton as identifying

space and time with God's attributes of immensity and duration. On this reading, Newton shares the position of an earlier English absolutist, Henry More.<sup>iii</sup>

Second, space and time are "substantial," in the sense they are pseudosubstances: they are real, singular, and support properties. Support for reading Newton as a substantialist can be found in De Graviatione, where Newton (2004, 22-23) appears to ascribe a topology to space, writing, for example, that all spaces contain "all kinds of figures." It can also be found in the 1687 Principia:

<EXT>Absolute, true, and mathematical time, in and of itself and of its own nature, without reference to anything external, flows uniformly and by another name is called duration. Relative, apparent, and common time is any sensible and external measure (precise or imprecise) of duration by means of motion. . . .

Absolute space, of its own nature without reference to anything external, always remains homogeneous and immovable. Relative space is any moveable measure or dimension of this absolute space. (Newton 2004, 64)

<TXT>Here, Newton appears to be distinguishing between "absolute" time and space, substantial entities boasting their own natures, such that time flows while space is homogeneous and immovable, and "relative" space and time, which are merely measures of absolute space and time.

Third, there is an absolute account of location, also found in the 1687 Principia: "Absolute motion is the change of position of a body from one absolute place to another; relative motion is change of position from one relative place to another" (Newton, 2004, 65). Newton has introduced a distinction between absolute places, the unchangeable parts or locations of absolute space and time; and relative places, which are relative spaces or locations. To borrow a

Newtonian example, when the earthSTET moves, its air will retain its relative place with regard to the earthSTET, but the earthSTET and its air will have moved from one part of absolute space--one absolute location--to another.

### <T1HD>3. Locke's 1671-85 Texts on Space and Time

<TXT>This section explores Locke's pre-1690 texts on space and time: two early drafts of the Essay--"Draft B" composed in late 1671 and "Draft C" composed in 1685<sup>iv</sup>-- and journal entries from 1676 to 1678. It will be seen that Locke holds relationism in all these texts.

As Locke's texts are structured in different ways, I reference Draft B by page number, followed by section number; the Journals by page number only; Draft C by chapter and paragraph number only; and the Essay by page number, followed by chapter and paragraph number.

#### <T2HD>3.1. Locke's 1671 Draft B

<TXT>Locke's Draft B (1990, 223-25; §102) explains that time, "wherein all things that have or ever had existence," is the "assigning" of temporal distances or durations between any two instants, according to some common measure. For example, one common measure is a "year"--a single revolution of the sun--thus, the time between creation and the birth of Christ is putatively 3,950 years. Locke advances a parallel account of place: the assigning of spatial distances between any two points, using common measures such as yards. Locke (1990, 231-34; §106-9) argues it is impossible to measure durations with certainty because we cannot bring two periods of duration together to compare them, and he warns against identifying motion with duration; more on the latter below.

Locke (1990, 245-49; §123) explains that, in our thoughts, we can add distances of time or space together ad infinitum and arrive at the ideas of eternity and infinite spatial extension. He suggests this is possible because, unlike other ideas, our ideas of space and time include a numerable “aggregation of parts.” Locke (1990, 250-51; §127) states that infinity can only belong to things possessing parts in this sense, and “therefore when we apply the Idea of infinite to god we do it properly in respect of his duration & ubiquity” and, “more figuratively,” in respect to his other attributes. The implication that God is literally infinite, at least with regard to duration, is brought out more fully shortly afterward.

Locke states that men have “certain knowledge” **that something has existed from eternity**, “that all that infinite duration whereof we have the Idea hath been taken up by the reall existence of some thing. . . commensurate to that infinite duration whereof we have the Idea.” Locke is, of course, referring to God. Our knowledge that something has existed eternally does not derive from our idea of infinite duration, “which informs us not of the existence of any thing,” but rather from considering “causes & effects.”<sup>v</sup> Locke (1990, 253; §130) adds that, although we have the parallel idea of infinite space, we cannot come to know whether that infinite space “whereof we have the Idea” is filled up by anything.

### <T2HD>3.2. Locke’s 1676-78 journals

<TXT>In these journals, Locke develops his views on space and time and positions himself against Descartes’s account of space. Descartes argues that the principal attribute of material substance is extension in length, breadth, and depth; and there is no real distinction between a substance and its attributes. Additionally, the extension that constitutes a space is in reality identical to the extension that constitutes a material body. Consequently, Descartes (1985 I 227)

holds that space is not really distinct from body. Against this, Locke's entry of June 20, 1676, argues that people such as Descartes have been misled into attributing the properties of bodies to distances because we are used to measuring distances using bodies, such as rulers. In contrast, Locke claims that a distance, "which is not barely an imaginary thing," is "really a relation between two separate beings." Against the identification of distance with body, Locke (1936, 78) argues that the parts of distance--unlike body--are not "separable," their "continuity" are indivisible really and mentally, and they are "immovable." Locke (1936, 101) adds later that, if someone can imagine separating the parts of space and moving them away from one another, they have a "much more powerful phansy" than he does.

Locke elucidates his views on space further using time, between which there is a "great agreement":

<EXT>as distance in time is noe thing but the relation between two beings that have existed one before an other. . . duration might be measured by motion, yet in its self it is wholly separated from it and is a distinct thing. Soe also in the distance of place which is a relation of two beings. . . wholly distinct from body. (Locke 1936, 79)

<TXT>Distances in space and time are relations holding between beings. Space can be measured using bodies but it is not body, and time can be measured by motions but "in itself" is a "distinct thing" from motion.

Locke gives a virtue of this account: it will render intelligible the thesis that "distance may be something" though it is not body and that, although "it be something," it is not uncreated, "which have been the difficultys that have arisen about this matter." The difficulties that Locke refers to are the threat of positing a real, uncreated being in addition to God. (As Locke may have known, Pierre Gassendi and Walter Charleton arguably encounter this difficulty.) Locke (1936,

80) explains that, just as relations of bigger or lesser only come into existence with the creation of bodies, so too do distance relations.

Assuming Locke retains the views he set out five years previously in Draft B, this reading produces an oddity: space and time are finite, as they only come into existence with the creation of bodies, yet God is infinite with regard to space and time. Locke does not appear to perceive any incompatibility here (or later, as Draft C also asserts relationism and that God fills eternity and immensity). I suggest this is because Locke is drawing on medieval views concerning “imaginary space.” Aristotle (1984, Phys 3.4.203b25-27) writes that, in our imagination, certain things appear to be inexhaustible or unbounded, such as mathematical measures “and what is outside the heaven.” From the thirteenth century onward, thinkers discussed imagining space or time beyond the bounds of our finite created universe, frequently associating imaginary space or time with God’s immensity and eternity; see Grant (1981, 116-21). Support for this suggestion can be found in the way that Locke frequently uses the term “imaginary space” (more on this below). If Locke is drawing on this tradition then, strictly speaking, God is not in space or time--as space and time are distance relations holding between material bodies--but we can still speak of God’s existence in imaginary space or time.

Locke returns to space on September 16, 1677, and introduces new terminology: “Space in its self seems to be noe thing but a capacity or possibility for extended beings or bodyes to be or exist.” Although we are apt to imagine that space is “really something” and has a “real existence,” in truth it is “really noe thing.” A little later, Locke argues that, if we imagine eliminating all beings from any place, then “this imaginary space is just noe thing, and signifies noe more but a bare possibility that body may exist where now there is none.” Locke’s relationism remains, alongside this new terminology: “we are apt to consider that space as some

positive real being existing without them [bodies], where as it seems to me but a bare relation.”

Locke briefly considers a possibility he does not endorse, asking what would be entailed if, in the absence of all bodies, there were something rather than nothing. Locke (1936, 94-96) answers that this space void of body “must be something belonging to the idea of deity,” whose being we make spatially extended. This is the mature view of Henry More, and Reid (2012, 136-39) argues persuasively that Locke is drawing specifically on More here.

On January 20, 1678, Locke explains how he understands the relationship between distances and space void of bodies:

<EXT>when we speake of space (as ordinarily we doe) as the abstract distance between two bodies it seems to me to be a pure relation. . . . But when we speake of Space in generall abstract and separate from all consideration of any body at all or any other being it seems not then to be any real thing but the consideration of a bare possibility of body to exist. . . noe thing but the Idea of the possibility of the existence of body. . . and in this sense space may be said infinite. (Locke1936, 100-101)

<TXT>On January 24, 1678, Locke adds:

<EXT>Space in its confused and generall sense signifies noething but the existibility of body, when we have a more distinct and precise notion of it and make it the same with distance it is noe thing but the relation of two reall beings. . . for one cannot say nor conceive that there is any such thing as space or distance between something and noething or which is yet more absurd two noethings. (Locke1936, 105)

<TXT>I explicate the two senses of space that Locke gives here as follows.

In the precise sense, a space is a spatial distance, a real relation that holds between real beings such as bodies. It is “real” in that it exists independently of our thought. Above, there is

ample textual evidence to support this: distance is not imaginary but “really a relation” between beings, duration is “a distinct thing” from motion, and distance is “something” yet not uncreated. Distance relations depend on the existence of real beings, and this is why there is no distance between something and nothing. This latter thesis is emphasized in Locke’s discussion of whether the universe can be said to be distant from anything. Locke argues (1936, 102) that, if a material body were placed beyond the utmost extremity of the world, one might truly say “it were a foot distant from the world,” as a relation would “appear” between the body and the world. However, one cannot say the universe is distant from anything otherwise, as a relation of distance requires another body to be “the other terme” of this relation.

In contrast, in the abstract or confused sense, space is merely “the consideration” or “the Idea” of the possibility of the existence of body. In this sense, space is a mind-dependent ideal, or imaginary, being; and it is only in this sense that space may be said to be infinite. If one were to annihilate the universe, there would not be space in the precise sense--as there would be no relata to ground distance relations--but there would be space in this abstract sense.

We can distinguish two kinds of relationism. “Nonmodal relationism” grounds space and time on actual, existing bodies. “Modal relationism” grounds space and time on possible bodies that could exist but do not. Modal relationism is widely held to have its origins in Leibniz; Belot (2011, 173-85) provides a recent reading of Leibniz in this vein. As Locke holds that space and time are distance relations holding between existing relata, he is a nonmodal relationist.

### <T2HD>3.3. Locke’s 1685 Draft C

<TXT>Draft C is much closer to the Essay than its predecessors, and the titles and subjects of its three chapters on space and duration are carried directly into the Essay: Chapter XVI, “Of Space

& the Simple Modes of It,” concerns the simple idea of space; Chapter XVII, “Of Duration & the Simple Modes of It,” considers the simple idea of duration; and Chapter XVIII, “Duration & Expansion Considered together,” considers these ideas together.

The relevant points made by these chapters include the following. Chapter XVI explains that, although the idea of space is simple in that it is not compounded of further ideas, it admits of “simple modes,” ways that the idea can be. Modes of our ideas of space include spatial distances, such as one yard or “immensity,” infinite space.

Locke writes there are “some that would persuade us” that body and extension are the same--this is almost certainly a reference to Descartes--but Locke argues they are mistaken, for this confounds two distinct ideas: space or extension, with solidity or body. Locke claims that our idea of solidity is “inseparable” from our idea of body, as upon that “depends its filling of space.” He argues that our idea of space is distinct from our idea of body in three ways: our idea of space does not include solidity, such that--as Locke (1685, xvi.26) puts it later--on our idea of “empty or pure space” a body may be placed there; the parts of pure space are really and mentally “inseparable” from one another; and the parts of space are “immoveable.” Locke (1685, xvi.11) concludes, “Thus the cleare & distinct Idea of simple space destinguishes it plainly & sufficiently from body.”

As I read Locke, the discussion so far has focused exclusively on our idea of space and, to quote Locke’s Draft B, our ideas of space or duration do not inform us of the existence of anything. However, at this point, the discussion takes a new turn:

<EXT>If any one aske me what this space I speake of is I will tell him when he tells me what his Extension is. . . .

Those who contend that space and body are the same bring this Dilemma: either this space is something or nothing; if nothing be between two bodies they must necessarily touch; if it be allowed to be something they aske whether it be body or spirit. To which I answer by another question, who told them that there was or could be nothing but solid beings which could not think & thinkeing beings that were not Extended. . . .

If it be demanded (as usually it is) whether this space void of body be Substance or accident I shall readily answer I know not nor shall be ashamed to own my ignorance till they that aske shew me a cleare distinct Idea of Substance. (Locke 1685, xvi.18-20)

<TXT>I argue this passage is neutral on the ontology of space. Locke does not know what space understood as extension is, nor does he classify space as substance or accident. Locke does reject the Cartesian view that space and body are the same, along with Descartes's (1985, I 231) dilemma aiming to show otherwise, on the grounds that we need not accept its implicit Cartesian ontology of extended body and unextended spirit; Locke suggests it is possible to solve the dilemma by positing a being that does not fit this ontology. However, Locke does not positively tell us what that being might be: it could be substantial space, as posited by Newtonian absolutism; or a relation.

Toward the end of this chapter, Locke turns again to the ontology of space:

<EXT>But whether any one will take space only to be a relation resulting from the Existence of other beings at a distance or whether they will thinke the words of the most knowing King Salomon, The heaven & and the heaven of heavens cannot containe thee or those more Emphaticall ones of the inspired philosopher St. Paul, In him we live move & have our Being are to be understood in a literal sense, I leave every one to Consider. (Locke 1685, xvi.26)<sup>vi</sup>

<TXT>Again, this passage is neutral: Locke leaves “every one to consider” what appears to be a choice between relationism or theological absolutism.

Locke’s remarks on duration run parallel to those on space. Chapter XVII tells us that our simple idea of duration also admits of modes, including one hour, or “eternity,” infinite duration (1685, xvii.20). Once again, Locke (1685, xvii.26) warns against identifying motion with duration. Analogously to spatial location, Locke (1685, xviii.9) writes that a body’s temporal location is shown relative to the temporal durations of other bodies, “some Knowne & fixed periods of longer duration.”

Chapter XVIII returns to Locke’s earlier remarks on Solomon:

<EXT>Nor let any one say that beyond the bounds of body there is noething at all unlesse he will confine God within the limits of matter. Salomon whose understanding was fild and enlarged with wisdom seems to have other thoughts when he says Heaven & the Heaven of Heavens, cannot conteine thee: & he, I thinke, very much magnifies to himself the capacity of his owne understanding who perswades himself that he can Extend his thoughts farther than God exists. (Locke 1685, xviii.2)

<TXT>God exists in space beyond matter and in time before creation:

<EXT>God everyone easily allows fills Eternity & tis hard to finde a reason why any one should doubt that he likewise fills Immensity: his infinite being is certainly as boundlesse one way as another & me thinkes it ascribes a little too much to matter to say where there is noe body there is noething. (Locke 1685, xviii.3)

<TXT>Locke’s thinking has undergone a shift from Draft B, where he held that the infinite duration of which we have the idea is taken up by God’s duration, but we cannot know whether anything takes up the infinite immensity of which we have the idea. Here, Locke’s claim

that God's being is boundless in every way suggests he has become convinced that God's immensity should parallel his eternity.

Toward the end of this chapter, Locke returns to the nature of space and time:

<EXT>Men haveing in their mindes the Ideas of infinite space & infinite duration make use of time & place to denote the position as it were of things they know in these infinite Oceans of duration & space. therefore time & place are nothing but Ideas of determinate distances from certain known points fixed in sensible things. . . which otherwise being uniforme & boundlesse the order & position of things would be lost & there would be therein utter Confusion. place & time are real relations resulting from the Existence of real different beings & in their general acceptation Commonly stand for soe much of those infinite uniforme Oceans as is taken to be set out & Supposed to be destinguishd from the rest by real & destinguishable marks & fixed boundarys & soe seeme to be determinate portions of those infinite Extensions of space & duration we have in our imaginations. . . .

[Rightly considered] the Idea of Extension of any body is soe much of that imaginary space as the bulke of that body takes up. . . . As the Idea of the particular duration of any thing is an Idea of that portion of infinite duration which passes dureing the Existence of that thing.  
(Locke 1685, xviii.10-11; my emphasis)

<TXT>As in Locke's journals, place and time are "real relations," resulting from the existence of real beings. In contrast, the "Oceans" of infinite space and duration are ideas that people have in their "mindes" or "imaginationes."

Further, there are no absolute locations in space or time: things only have locations relative to the "certain known points" of sensible things. We begin from these certain known points, and, from these, "measure out portions" of our ideas of infinite space and duration. For

example, taking a known point such as Creation, we can measure out portions of the imaginary infinite duration that preceded it. But, if there were no sensible things to provide certain known points, “the order and position of things would be lost”: there would be no locations. Later, Locke explicitly states that “our Idea of place is nothing else but relative position of any body amongst others” and adds:

<EXT>when any one can finde out & frame in his minde clearely & distinctly where the place of the universe is he will then have discovered that place is not a relation of real distinct beings. . . but till then I thinke must be content with me to take it for a Relation as it is applied to particular bodys. (Locke 1685, xviii.12; my emphasis)

<TXT>As in Locke’s journals, the material universe does not have a place because Locke only has a relative account of place, and there is nothing outside the universe whereby we could fix its location. If someone could find out the place of the universe, she would have discovered that Locke’s nonmodal relationism is false.

#### <T1HD>4. Space and Time in Locke’s 1690 Essay

##### <T2HD>4.1. Reading Locke’s 1690 Essay as Explicitly Neutral

<TXT>The vast majority of scholars who have considered Locke’s metaphysics of space and time argue that, in his 1690 Essay, Locke abandons relationism for Newtonian absolutism. For example, see Gibson (1917, 251-52), Baker (1930, 49-51), Heath (1936, 106-7), Grant (1981, 239-40), North (1983, 140), Ayers (1991, 233), Priest (2007, 102), and Reid (2012, 135). One exception is Richard Aaron (1955, 157), who reads Locke as “anxious not to commit himself” to a theory of space or time.<sup>vii</sup> As Aaron’s reading is akin to my own, this section states my reading and compares it with his.

As explained above, the three chapters concerning our ideas of space and duration in the 1690 Essay bear strong similarities to their Draft C predecessors. All of the Draft C passages given above are repeated verbatim in the Essay (albeit with minor changes in punctuation) with two significant exceptions: the final two passages above asserting relationism. Up to this point, I argued that Draft C was neutral on the nature of space and time. A significant difference between Draft C and the Essay is that, where Draft C goes on from this point to assert relationism, the Essay excises those remarks. Given this, I hold that--unlike Draft C--the Essay remains neutral throughout on the nature of space and time.

In reading Locke's Essay as neutral in this regard, I am in agreement with Aaron's (1955, 156) statement that one of the most "striking features" of its chapters on space is the "absence of any definite statement" on the nature of space. Although Aaron and I concur that Locke advances no explicit theses on the ontology of space and time, we differ over the position we take Locke to hold implicitly. Aaron (1955, 158-59) seems to suggest that Locke leans toward Henry More's absolutist position that space and time are divine attributes; Aaron writes that, although Locke would not "openly" accept More's position, the language in the rest of the Essay "implies" absolutism. On time, Aaron (1955, 162) writes that Locke appears to "assume the Newtonian view" as the basis for his discussion. In contrast, this paper argues below that Locke implicitly holds relationism.

#### <T2HD>4.2. Undermining the Absolutist Reading of Locke's 1690 Essay

<TXT>Why do so many scholars hold that, by 1690, Locke has evolved into a Newtonian absolutist? Similar answers can be found in various scholars, most of which are collected--along with fresh arguments--in a recent, forceful paper by Geoffrey Gorham and Edward Slowik

(2014). Consequently, I take Gorham and Slowik's absolutist reading of Locke as a target. Like previous scholars, Gorham and Slowik support their reading using various passages from the Essay, arguing that Locke's views on space and time have shifted since Draft C. By way of structuring the following discussion, I place these passages into three groups and undermine in turn the support they provide for the absolutist reading.

The <B>first group<NM> of passages support the thesis that there is an intimate connection, one that goes beyond mere presence, between God, space, and time. These passages--given above in Draft C and repeated in the Essay (1690, 93-94; II.xv.2-3)--include Locke's biblical quotations and his view that God is present beyond the bounds of body and that God fills eternity and immensity. Gorham and Slowik (2014, 122-33) argue that Locke's references to scripture imply that he takes scripture to favor realism about space over his former relationism, adding "Paul's pantheism presumably makes space an attribute of God." On their reading, space and time are identified with God's immensity and eternity. Baker (1930, 49) provides a very similar reading; and, as we saw, Aaron may accept this too.

Several points can be made against this absolutist interpretation. First, although these passages leave no doubt that God is literally present in space and time, that is all these passages say. Unlike in More's mature work, there is no explicit statement identifying infinite immensity and duration with God's attributes; and, unlike in Newton's work, there are no statements holding that God is the emanative cause of, or constitutes, space and time. Second, the theses that God is literally present in space and time were present in Locke's earlier work: the thesis that God fills eternity was present in Draft B, and the above passages are present verbatim in Draft C. As Locke maintained relationism in Draft C, this implies (as discussed above) that he does not

perceive any incompatibility between relationism and these theses. Consequently, these theses cannot be used to support an absolutist reading.

Let's take a tangent into the question of Locke's sources for the view that space and time are intimately connected to God. Baker (1930, 49-51) points to Newton's Principia, but this thesis is faulty, as the requisite intimate connection was not present in the first edition. Other scholars point to More, including Gibson (1917, 252-53), Aaron (1955, 157-58), Grant (1981, 239-40) and North (1983, 133-40). Curiously, Gorham and Slowik (2014, 125) do not mention More in this regard and instead suggest that Locke could have had access to Newton's theological views through another source: De Gravitatione. This manuscript was unpublished in Newton's lifetime and its date of composition is unknown, but it is generally supposed to be before 1685. Gorham and Slowik (2014, 125) support their case by citing independent evidence that Locke had access to the contents of De Gravitatione. Although creative, I find this argument unconvincing. All of the passages discussed above are present Draft C, and it seems extremely unlikely that Locke could have had access to the contents of De Gravitatione before composing this draft, given that there is no evidence that Newton and Locke had met by 1685, let alone established a collegial relationship. Another issue is that, even if the controversial "independent evidence" that Locke became familiar with the contents of De Gravitatione is accepted, it implies that Locke acquired this familiarity after publishing the first edition of the Essay, as this familiarity arguably prompted Locke to make changes to the second edition.

The **<B>**second group**<NM>** of Essay passages support reading Locke as a substantivalist. For example, Gorham and Slowik (2014, 123) read Locke as attributing "inherent dimension and quantity to our idea of empty space." In support of this, they cite Locke's (1690, 95; II.xv.7) statement, "we sometimes speak of Place, Distance, or Bulk in the great Inane,

beyond the Confines of the World, when we consider so much of that Space, as is equal to, or capable to receive a Body of any assigned Dimensions, as a Cubick foot.”

Against this, I argue these remarks merely attribute dimension and quantity to our idea of empty space, not to space itself; further, Locke made such remarks in earlier works. In his journals, Locke writes that we can imagine creating a “solid body of any figure” beyond the bounds of the material universe. The Essay repeats Locke’s thesis, found as far back as Draft B, that our idea of infinite space is obtained by adding ideas of distances--which may be one-dimensional lengths or three-dimensional capacities; see Locke (1690, 75; II.xiii.3)--so it makes sense that we can “speak of” distances in infinite space and imagine placing a body there. Additionally, proponents of the absolutist reading might argue that Locke’s use of the term “inane” (that is, emptiness or void) is reifying space. Against this, recall that Locke’s relationist journal entries discussed space “void of all bodys” as nothingness.

The Essay also makes various remarks that appear to endorse substantivalism about time, such as claiming that duration goes on in “one constant equal uniform Course.” Gorham and Slowik argue these remarks attribute “an intrinsic rate” to duration itself. Previous scholars have made similar arguments, including Gibson (1917, 251-52), Baker (1930, 48-49), Grant (1981, 239), and Ayers (1991, 233-34). To undermine this reading, I put this passage in context.

As in Draft B, the Essay claims that we can never know with certainty that the measures we use to measure lengths of duration are equal. Having stated this, Locke continues:

<EXT>search has discovered inequality in the diurnal Revolutions of the Sun. . . . Those yet by their presum’d and apparent Equality serve as well to reckon time by, though not to measure the parts of Duration exactly, as if they could be proved to be exactly equal: we must therefore carefully distinguish betwixt Duration it self, and the measures we make use of to judge its

length. Duration in it self is to be considered, as going on in one constant equal uniform Course; but none of the measures of it we can make use of can be known to do so. (Locke 1690, 89; II.xiv.21; my emphasis)

<TXT>In this passage, Locke is returning to his old thesis that we must avoid conflating duration with our measures of it. Locke does not attribute an intrinsic rate to duration; rather, he merely states that duration is to be considered as going on equally, independently of our possibly unequal measures of it. As we saw above, these sentiments can be found in Locke's earlier works; for example, his journals emphasize that duration is a "distinct thing" from its measures. As such, the Essay's statements that we must distinguish between duration and its measures are compatible with substantivalism or relationism.

Gorham and Slowik (2014, 123-24) also argue that the Essay is now "derisive" about the "imaginary space" label Locke once embraced. For example, Locke writes that, if people's ideas carry them beyond the limits of the universe, they term what is there "imaginary Space," as if it were nothing. Gorham and Slowik point to various related shifts between Draft C and the Essay and argue that, in the latter, there are several instances in which Locke removes the term "imaginary" from his descriptions of space and duration, implying that he has come to think that they are real. To provide an alternative reading of Locke's derision, it is again necessary to place it in context.

The remarks follow Locke's statement--carried over from Draft C--that, although our ideas of duration and space are boundless, they cannot go beyond all being, as they cannot go beyond God. Locke continues:

<EXT>when Men pursue their Thoughts of Space, they are apt to stop at the confines of Body; as if Space were there at an end too, and reached no farther: Or if their Ideas upon consideration

carry them farther, yet they term what is beyond the limits of the Universe, imaginary Space; as if it were nothing, because there is no Body existing in it. Whereas Duration. . . they never term imaginary, because it is never supposed void of some other real existence. (Locke 1690, 94; II.xv.3-4)

<TXT>On Locke's view, people refrain from labeling duration before Creation "imaginary" because they accept that God is there; however, they label space beyond the material universe "imaginary" because they wrongly deny that God is there. There is no doubt that Locke is derisive of the label "imaginary space" insofar as it implies that God is not present beyond the limits of our universe. However, this is compatible with the view that the infinite space or immensity under discussion is imaginary.

In support of this, consider the passage above. Locke specifically emphasizes that humans' ideas may carry them beyond the confines of body. He (1690, 97; II.xv.4) confirms this a little further on: "whoever pursues his own Thoughts, will find them sometimes launch out beyond the extent of Body, into the Infinity of Space or Expansion; the Idea whereof is distinct and separate from Body, and all other things." (It is also notable that this statement asserts that our idea of infinite space is distinct from all others, including presumably our idea of God.)

Although Gorham and Slowik are correct that, in some instances, Locke has removed the term "imaginary," many instances remain. For example, he writes of our idea of infinite space:

<EXT>whereof having settled Ideas [of space] in our Minds, we can revive, repeat, and them to one another as we will, and consider the Space or Distance so imagined, either as filled with solid parts. . . or else as void of Solidity." (Locke 1690, 83; II.xiii.26; my emphasis)

<TXT>And of duration:

<EXT>By being able to repeat those Measures of Time, or Ideas of stated length of Duration in our Minds, as often as we will, we can come to imagine Duration, where nothing does really endure or exist. (Locke 1690, 92; II.xiv.32; my emphasis)

<TXT>This language of ideas and imagination remains in all the subsequent editions of the Essay.

There is a final point to be made about the passages discussed in this group. Although, unlike Gorham and Slowik, I believe that Locke is merely discussing our ideas of space and time here, it must be acknowledged that, at various points, Locke's language is careless about the differences between ideas and the things they signify, such that he appears to slip between them. For example, heSTET does not make it clear that his remarks on "boundless Oceans" concern our ideas of space and time. This might prompt proponents of the absolutist reading to argue that Locke's language is careless because he is slipping between discussions of ideas and the things they signify. Against this, I suggest that Locke's language is not as careful as one would wish because he believes he has already made it clear--in the titles and introductions of the relevant Essay chapters--that his focus is on ideas, and he did not feel the need to remind the reader of this in every remark.

The <B>final group<NM> of passages support the thesis that Locke distinguishes between absolute and relative space and time, in the manner of Newton. This appears to be what Gorham and Slowik (2014, 123) mean when they state that Locke "insists just as strongly as Newton" on the distinction between "those uniform infinite Oceans of Duration and Space" and "points fixed in sensible Beings we reckon, and from them we measure out Portions of those infinite Quantities." Gorham and Slowik (2014, 125) argue that, in Draft C, place and time "denote the conventional 'position as it were' of finite beings in infinite space and duration,"

whereas, in the Essay, “such positions seem to be objective.” They add that a paragraph in Draft C against the universe as a whole having a place is replaced in the Essay by a “more conciliatory treatment.” Previous scholars have also argued for this Newtonian distinction in Locke, including Baker (1930, 50) and Ayers (1991, 235-36).

If Locke did adopt a Newtonian absolute-relative distinction, then space and time would provide absolute locations, enabling Locke to say that the earth <sup>STET</sup> has moved its location relative to other bodies and its absolute location with regard to absolute space. Against this reading, I argue that Locke’s Essay only provides a relative account of location. Consider the passage mentioned above in full:

<EXT>Time in general is to Duration, as Place to Expansion. They are so much of those boundless Oceans of Eternity and Immensity, as it set out and distinguished from the rest, as it were by Landmarks; and so are made use of, to denote the Position of finite real Beings, in respect one to another, in those uniform infinite Oceans of Duration and Space. These rightly considered are nothing but Ideas of determinate Distances, from certain known points fixed in distinguishable sensible things. . . . From such points in sensible Beings we reckon, and from them we measure out Portions of those infinite quantities; which so considered, are that which we call Time and Place. For Duration and Space being in themselves uniform and boundless, the Order and Position of things, without such known settled Points, would be lost in them; and all things would lie jumbled in an incurable Confusion. (Locke 1690, 94-5; II.xv.5).

<TXT>This passage states that time and place are “Ideas of determinate Distances,” from certain known points fixed in sensible things. Starting from these known points, we can measure portions of the infinite oceans beyond them. If there were no known points, there could be no locations, and--as in Draft C--the order of things would be “lost.” In contrast, if Locke accepted

that space and time provided absolute locations, there would be locations even if there were no known points. As in Locke's earlier works, he is providing an exclusively relative account of location. It must also be remembered that these "Oceans" are not real beings; rather, as Locke (1690, 94; II.xv.4) reminded us directly before this passage, a man goes beyond the material universe in "his own Thoughts," to reach the "Idea" of infinite space and duration.

Further evidence that in the Lockean universe things lack absolute locations in space or time can be found in Locke's remarks on place. Locke (1690, 76; II.xiii.7) carries his account of place from Draft C to the Essay verbatim: "in our Idea of Place, we consider the relation of Distance betwixt any thing, and any two or more points." The Essay, like Draft C, provides only this relative account of location: "That our Idea of Place, is nothing else, but such a relative Position of any thing. . . I think, is plain" (Locke 1690, 77; II.xiii.10). Locke adds that this will be "easily admitted" once we consider the following:

<EXT>we can have no Idea of the place of the Universe, though we can of all the parts of it; because beyond that, we have not the Idea of any fixed, distinct, particular Beings, in reference to which, we can imagine it to have any relation of distance. . . and when one can find out, and frame in his Mind clearly and distinctly the Place of the Universe, he will be able to tell us, whether it moves or stands still in the undistinguishable Inane of infinite Space; tho' it be true, that the Word Place, has sometimes a more confused Sense, and stands for that Space, which any Body takes up, and so the Universe is in a Place. (Locke 1690, 78; II.xiii.10)

<TXT>This is the passage that Gorham and Slowik argue is "more conciliatory" than its Draft C predecessor. Although it is more conciliatory, in that it acknowledges an alternative view to Locke's exclusively relative account of place, it does not endorse that alternative account.

The alternative that Locke describes, on which the universe has a place because space has a “more confused” sense, is given so briefly that scholars differ over whose view the remarks are aimed at. For example, Aaron (1955, 160) identifies it as the Gassendi<EN>Newton position that place is an occupied part of space. In contrast, Ayers (1991, 235) suggests (but does not endorse) the possibility that this is Descartes’s identification of body with internal place. In a heroic attempt to render this passage compatible with his absolutist reading of Locke, Ayers (1991, 235-36) goes on to argue that, in describing this alternative idea of “place” as confused, Locke is not disparaging it, but rather admitting that it is unclear yet indispensable, akin to our “confused” yet indispensable account of substance. While this reading is admirably clever, it is hugely implausible, given that Locke prefaces the passage by writing that his relative idea of place is “plain” and will be “easily admitted.” Whoever Locke takes this alternative view to belong to, he is crystal clear that his own view is that we can have no idea of the place of the universe.<sup>viii</sup>

There is one last point to be made on this head: Locke’s thesis regarding the place of the universe has shifted somewhat. His Journals and Draft C argue that the universe cannot have a place. However, his Essay argues that we cannot have an idea of the place of the universe. This might appear to leave open the possibility that the universe has a place or absolute location, even though we cannot have an idea of it. Although this possibility would be compatible with the absolutist interpretation of Locke, there is no reason to believe that Locke is deliberately leaving this possibility open. Further, Locke writes that we cannot have an idea of the place of the universe “because” we do not have ideas of any beings outside it. This implies that the only way we could come to have an idea of the place of the universe would be if there were other bodies existing in distance relations to it, a view antithetical to absolutism.

### <T2HD>4.3. Reading Locke's 1690 Essay as Implicitly Relationist

<TXT>Thus far, building on Locke's statement that he leaves "every one to Consider" the choice between relationism or theological absolutism, this paper has argued that the Essay is explicitly neutral with regard to the ontology of space and time and that the case for the absolutist reading can be undermined. Where does this leave us on how we should read the Essay? I see three possible interpretations.

First, Locke is confused. Arguably, some elements in the Essay pull toward an absolutist reading (such as his approval of Solomon), and others pull toward relationism (such as his relativity about location); perhaps Locke simply did not recognize or resolve this tension. I make two points against this reading. First, Newton's theses concerning absolute motion and place are a central plank in the absolutism of his 1687 Principia, occurring just a few paragraphs after his statements on the nature of space and time. It seems implausible that an astute reader such as Locke would have failed to recognize this, and, had he been otherwise persuaded by Newton's absolutism, surely he would have altered his view on the place of the universe. Second, it seems unlikely that such a careful and considered text as the Essay--written over several decades--would contain such an obvious tension, given that we know Locke was grappling with the ontology of space and time from the 1670s. It would be better to take a more charitable view of Locke.

Second, we should take Locke's explicit neutrality at face value: Locke became uncertain of relationism but was not ready to embrace absolutism either. Perhaps his study of Newton's Principia persuaded Locke that the nature of space and time was a far thornier problem than he had hitherto believed. Previous texts dealing with space and time largely focused on theology or

metaphysics, whereas the Principia enters deeply into physics and mathematics, matters that Locke may have felt less comfortable with and consequently less able to assess. These difficulties may have left Locke undecided on his position. Unlike the first reading, this interpretation of Locke's Essay is charitable; nonetheless, I argue there is a better reading available.

This paper argues we should read Locke as explicitly neutral on the nature of space and time but implicitly defending relationism, given his views on the place of the universe. As we saw above, Locke's views on the relativity of location were part and parcel of his earlier relationism, and, in holding them, Locke rejects a key aspect of Newtonian absolutism: bodies do not possess absolute locations in space. This entails the further rejection of absolute motion: if bodies do not move relative to a backdrop of absolute space, then they only move relative to one another and cannot be said to move absolutely in the Newtonian sense. I suggest that, in rejecting absolute location and motion, Locke is tacitly rejecting absolutism, in favor of his earlier relationism. If this is the case, it would explain Locke's newfound, apparent neutrality on the ontology of space and time: in light of the Principia's absolutism, he must have been aware that his relationism would be controversial. This reading is more charitable than the first--the Essay is not confused; rather it is consciously eliding explicit assertions of Locke's ongoing commitment to relationism--and, unlike the second reading, it explains why Locke maintained his views on the universe's place. Either of these latter interpretations could be used to support non-Newtonian readings of Locke's work.

On a final note, it is worth emphasizing that the Essay passages discussed above remain verbatim throughout subsequent editions, with the exception of small changes (irrelevant to us) made to the passages asserting that the universe does not have a place.<sup>ix</sup> This implies that Locke

deliberately maintained his exclusively relative account of location throughout his career and, with it, his relationism.<sup>x</sup>

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<N1HD>Notes

<B1HD>References

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<NTXT><sup>i</sup> The date on the Essay's imprimatur, although the text was sent to the press in late 1689.

<sup>ii</sup> This is an approach pursued, for example, by Belot (2011).

<sup>iii</sup> On More's absolute space, see Reid (2012); on time, see Thomas (2015).

<sup>iv</sup> On their history, see Aaron (1955, 50-55).

<sup>v</sup> Shortly afterward, Locke (1990, 258; §140) offers a cosmological argument for God's existence.

<sup>vi</sup> The biblical references are to 1 Kings 8:27 and Acts 17:28.

<sup>vii</sup> Another is Rogers (1978, 221-22), who claims that Locke "roughly" remained a relationist but does not argue the point.

<sup>viii</sup> Given Locke's use of the Cartesian slogan "clear and distinct" and his longstanding rejection of the Cartesian identification of matter with space and internal place that dates to Draft A (45-46; §27), I favor Ayers's suggestion that Locke is referencing Descartes.

<sup>ix</sup> See the 1700 edition (II.xiii.10).

<sup>x</sup> I am grateful to the Netherlands Research Council (NWO) for funding this research. A number of people have offered helpful comments on earlier versions of this article, and I owe especial

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thanks to Martin Lenz, John Milton, Andrea Sangiacomo, Geoffrey Gorham, Edward Slowik,  
and an anonymous referee for this journal.