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Henry More and the Development of Absolute Time

This paper explores the nature, development and influence of the first English account of absolute time, put forward in the mid-seventeenth century by the 'Cambridge Platonist' Henry More. Against claims in the literature that More does not *have* an account of time, this paper sets out More's evolving account and shows that it reveals the lasting influence of Plotinus. Further, this paper argues that More developed his views on time in response to his adoption of Descartes' vortex cosmology and cosmogony, providing new evidence of More's wider project to absorb Cartesian natural philosophy into his Platonic metaphysics. Finally, this paper argues that More should be added to the list of sources that later English thinkers - including Newton and Samuel Clarke - drew on in constructing their absolute accounts of time.

Key words: Henry More, Absolute Time, Absolute Space, Cartesianism, Newton

1 Introduction

In the mid seventeenth century, the 'Cambridge Platonist' Henry More (1614-1687) developed the first English account of absolute time, on which time is connected with God's duration[1]. This paper details the Platonic nature of More's views on time, argues that their development is connected with More's Cartesianism, and discusses their influence on subsequent English thinkers.

The paper proceeds as follows. Section 2 explains how I understand 'absolutism', before exploring the evolution of More's absolutism about time. I argue that the Platonic account More provides in 1647 is deeply connected to the later account that he advances from 1655, evidencing the long shadow that Plotinus cast over his work. Along the way, I correct various misperceptions in the scholarship, including the thesis that More does not *have* views on time. Section 3 asks what led More to develop an absolute account of time in 1647, and argues that the answer lies in More's newfound Cartesian cosmology and cosmogony. This provides a new illustration of More's wider project to combine Cartesian natural philosophy with Platonic metaphysics, and puts a fresh twist on the development of early modern theories of absolute time more generally. With a view to opening a path for further scholarship, Section 4 sketches the ways that More's account of time may have influenced later English thinkers, including the great absolutist, Newton himself. Section 5 concludes. More's neglected views on time are both rich and potentially influential.

[1] For a general overview of More's life and works, see Hutton (2008).

2 More and the Nature of Absolute Time

2.1 Introducing absolutism about time

More is an 'absolutist' and a 'substantivalist' about time. Both notions are difficult to define and this paper simply stipulates their meanings, in ways I take to be compatible with the scholarship. I label 'absolutism' the thesis that time is *independent* of things - with the possible exception of God - including motions, material bodies and human minds[2]. Absolutism is usually taken to involve what I will label 'substantivalism', the thesis that time is *real*, an existing being[3]. For More, absolutism is inextricably twined with substantivalism.

Absolutism can be contrasted with Aristotelian theories of time. I will give a (very) brief history of the pertinent philosophy of time, as it will prove useful below.

For Aristotle, time is the 'number' of motion (*Phys* 219b1). The idea is that, in the same way we perceive the greater or lesser by number - such as a greater or lesser number of substances - we perceive greater and lesser motion by time. For Aristotle, time appears to depend on the soul, for numbers and times are counted, and only souls can count (*Phys* 223a22). Further, Aristotle associates time with the measure of the outermost 'celestial sphere' (*Phys* 223b18-24). In the Aristotelian universe, the earth is immobile, and it is surrounded by rotating spheres. The celestial bodies - the moon, sun and stars - are fixed to the spheres, and the motion of the spheres explains the motion of the heavenly bodies (*Cael* 289b32-3). Aristotle argues the universe is finite (*Cael* 271b26). The universe neither came into being nor admits of destruction (*Cael* 283b22-3); it is a 'steady state' universe. The movement of the outermost celestial sphere provides an excellent starting point for our understanding of time because it is uniform, standard and *measurable.* For example, one revolution of the sphere measures a day, and a day can be used to measure other motions, such as a sea voyage. Aristotelian cosmology was modified somewhat by Ptolemy in the second century, who introduced many more celestial spheres to account for the irregular movements of the sun, moon and planets; the movements of the stars were still held to be regular.

[2] Earman (1989, 11) provides a rare extended discussion of Newtonian absolutism and takes one sense of absoluteness to be that there is an absolute duration, 'independent of the path connecting the events'. Ariotti (1973, 31) describes absolute time as 'independent of external motion'. Hutton (1977, 363) refers to the 'measure of independence' accorded to absolute time. Edwards (2013, 1) writes that absolute time is 'wholly independent' of anything 'external', including motion and the human soul.

[3] Sklar (1977, 162) characterises 'substantivalism' as the view that space or spacetime has an 'independent reality... a kind of substance'. For Earman (1989, 11) 'substantivalism' is another sense of absolutism: space or time 'forms a substratum that underlies physical events'.

Following the introduction of Aristotle's texts into twelfth century Western philosophy, Aristotelian philosophy of time came to dominate. The vast majority of subsequent accounts of time exhibited one or two Aristotelian themes: time is dependent on individual human souls; or, time is the movement (or the measure of the movement) of the outermost celestial sphere. These themes can be found in a wide range of thinkers, including Averroes, Albertus Magnus, Aquinas, Peter Aureol, Copernicus, Toletus, Galileo, Hobbes and Descartes. Very gradually, from the sixteenth century onwards, non-Aristotelian accounts were developed that took time to be independent of human souls and celestial motions. Scholars have argued that such absolute or quasi-absolute accounts can be found in a tiny minority of thinkers, including Bernadino Telesio, Giordano Bruno, Francesco Patrizi and Francisco Suárez[4].

Around the 1640s, absolute accounts of time were developed by Pierre Gassendi and Jan Baptist van Helmont. From 1665-1666, Isaac Barrow set out what is sometimes said to be the 'first' English account of absolute time. As we will see, this is quite untrue. More developed his absolutism two decades earlier, contemporaneous with Gassendi and van Helmont.

2.2 More's evolving account of absolute time

There is very little literature on More's account of time, and some of the few scholars who have written on it claim that More does not *have* substantive views on time. For example, whilst J. T. Baker (1930, 14) credits More with introducing absolute space and time into English philosophy - and reads More as conceiving time as an attribute of God - Baker provides almost no discussion and claims that More 'had but little' to say of time. Others go further. A. E. Burtt (1924, 149-154) claims, 'More was not much interested in time', and credits Barrow as being the first to develop an absolute account of time. Majorie Nicolson (1959, 158) briefly states that More advocated an absolute account of time in his *Poems* but adds that it was less More than Barrow who formulated the theories of absolute time that were developed by thinkers such as Newton. Max Jammer (2006, 69) argues that Barrow's philosophy of time 'appears to have been strongly influenced' by More's philosophy of *space*, overlooking More's account of time. Steffen Ducheyne (2008, 217) writes, 'More...

[4] On the Aristotelian view that time depends on soul, see Edwards (2013, 1-115). On the changing philosophies of time leading up to, and during, the early modern period more generally, see Ariotti (1973), Hutton (1977), Duhem (1985, 296-330), and discussions sprinkled throughout Pasnau (2011).

said nothing of substance on absolute time' and denies that More equated time with eternal duration; I will say more on the latter below.

Even scholars who do not overlook More's account of time have surprisingly little to say about it. David Leech's recent study of More's rational theology discusses More's spatial views over several chapters, yet Leech (2013, 141) addresses More's views on time in just one solitary footnote. Jasper Reid's impressive (2012) study of More's metaphysics discusses various aspects of More's system as it relates to time but does not discuss the nature of time itself. Alan Gabbey (1982, 192-3) states that absolutism about space and time is an 'implied assumption' in More's letters to Descartes and to Conway, but Gabbey does not expand on this.

This section will rebuff the misperception that More lacks substantive views on time, and greatly expand on the existing scholarship that allows More holds views on time. More actually advances two accounts of time: an early account given in 1647, and a later account given from 1655 onwards. Below, I will show that these accounts are deeply connected.

We will begin with More's early account of time. More's 1642 *Psychodia Platonica* draws on neo-Platonism to characterise the universe as a sequence of eight emanations. More argues that the 'Platonicall Triad' that comprises the first three of these emanations - Ahad, Aeon and Psyche - can be unified with the Christian Trinity. Ahad, the One, is unified with the Christian God; Aeon, the Platonist mind, is unified with the Christian son of God, Christ; and Psyche, the Platonic Soul, is unified with the Christian Holy Spirit (*Poems* 10-12)[5]. As we descend from Ahad, the emanations become less real, until the eighth emanation - '*hyle'* or matter - barely exists. Matter is infinitely remote from God's goodness and perfection, leading to More's disparagement of it as 'perverse' and an 'old hag' (*Poems* 54). *Psychodia Platonica* does not offer an account of time, though there are passing references. For example, in the context of describing Psyche, More briefly writes, 'O life of Time, and all Alterity!' (*Poems* 13).

[5] I cite More's works by abbreviated titles and page numbers; where appropriate, I follow with chapter/section numbers. "Poems" refers to the 1878 *Complete Poems of Henry More*. "Conway Letters" refers to the 1992 *Conway Letters*. "Dialogues" refers to the 1743 *Divine Dialogues*. "Metaphysicum" refers to the *Enchiridium Metaphysicum,* in the 1679 *Opera Omnia*; "Metaphysics" refers to Jacob's 1995 translation. "Antidote" refers to the *Antidote Against Atheism*; "Descartes Letters" refers to More's Descartes correspondence; "Cabbalistica" refers to *Conjectura Cabbalistica*; these latter three texts are collected - with individual paginations - in More's 1662 *A Collection of Several Philosophical Writings*.

Psychodia Platonica was reprinted in More's 1647 *Philosophical Poems*, and More added lengthy notes to the new edition. One of these notes is an extensive commentary on More's earlier description of Psyche:

> For what is time but the perseverance of the motion of the soul of the world, while she by her restless power brings forth these things in succession, that Eternity hath at once altogether. For such is the nature of *Aeon* or *Eternity*, viz. A life exhibiting all things at once, and in one...
>
> The seed of a plant hath all the whole tree, branches, leaves, and fruit at once, in one point after a manner closed up, but potentially. Eternity hath all the world in an indivisible in-distant way at once, and that actually.
>
> *Psyche* or the Soul of the world, when she begins this world, begets a grosser kind of Alterity... as the seminall forme spreads out it self, and the body it inacts into distant branches from the quiet and silent seed, making that actuall in time and succession which could not be here below in bodies at once. See *Plotin. Ennead 3. lib. 7. cap. 10*. where the nature of time is more fully described (*Poems* 136).

To explain this passage, we must detour into the metaphysics of Plotinus.

Plotinus' *Enneads* rejects Aristotle's account of time in favour of developing (what he takes to be) Plato's account. The *Enneads* are somewhat obscure but I will attempt to render them clearly. At the heart of Plotinus' metaphysics is 'Soul', the divine world soul which creates the natural world. I capitalise 'Soul' to distinguish this notion from that of lowly, individual human souls. For Plotinus, eternity is the Soul at rest (III, 7, 7). Time is a 'descent' from eternity; there is no time in eternity but time can be created out of the concept of progressive derivation, which remained latent in the divine eternity (III, 7, 11). When Soul stirred from its rest to create the natural world, time stirred with it. Plotinus compares this process to the growth of a seed:

> A seed is at rest; the nature-principle within, uncoiling outwards, makes way towards what seems to it a large life; but by that partition it loses; it was a unity self-gathered, and now, in going forth from itself, it fritters its unity away... To bring this Cosmos into being, the Soul first laid aside its eternity and clothed itself with Time... Time, then, is contained in differentiation of the Life; the ceaseless forward movement of Life brings with it unending time (III, 7, 11).

For Plotinus, eternity is the life of the Soul 'in repose', containing - like a seed - all differentiation within itself. In contrast, time is the life of the Soul 'in movement', a moving image of eternity (III, 7, 11).

On Plotinus' view, the existence of time is closely tangled with the existence of the Soul:

> And this is how Time is omnipresent: that Soul is absent from no fragment of the Cosmos just as our Soul is absent from no particle of ourselves. As for those who pronounce Time a thing of no substantial existence, of no reality, they clearly belie God Himself whenever they say 'He was' or 'He will be': for the existence indicated by the 'was and will be' can have only such reality as belongs to that in which it is said to be situated (III, 7, 13).

The created world stems from the moving Soul, and time is the life of the Soul in motion. As Soul permeates the world, so does time. Against Aristotle, Plotinus is explicit that the motion of the heavens allows us to measure time but it is not time (III, 7, 12). In this context, he writes:

> [W]hen we come to Time itself there is no question of its being 'within' something else: it must be primary, a thing 'within itself'. It is that in which all the rest happens, in which all movement and rest exist smoothly and under order (III, 7, 12).

In this passage, Plotinus advances an absolute conception of time, as a thing that is independent, 'within itself'. Contra Aristotle, time is not dependent on motion, rather time is that in which motion *and* rest occurs[6].

We are now in a better position to understand More's early account of time; key to it is More's unification of the Platonic Triad with the Christian Trinity. Above, More describes the nature of '*Aeon* or *Eternity*' - the nature of Christ or God - as a 'life exhibiting all things at once'. Thus, there is no alterity (i.e. otherness or differentiation) or succession in Eternity, in Christ or God.

More goes on to write that '*Psyche* or the Soul of the world' begets a grosser (i.e. coarser) kind of alterity. Recall that, for More, 'Soul' is unified with the Holy Spirit. In Christian theology, the Holy Spirit is God's active presence in the world. For example, the opening lines of *Genesis* (1:1-2) state that at the beginning the earth was without form and

[6] For more on Plotinus, see Heath (1936, 43-4) and Clark (1944).

void, darkness was over the face of the deep, 'And the Spirit of God was hovering over the face of the waters'. Psalm 104:6 states that God established the earth and 'covered it with the deep as with a garment'. Echoing this, More describes how each of the stars that God creates is 'but a knot' tied in Psyche's garment (*Poems* 92). Psyche - understood as the Holy Spirit, God's active presence - brings forth things from Eternity that are 'at once together' into succession, and it is this that produces alterity.

More is arguing that when the Holy Spirit draws alterity out of Eternity, she draws time with it. More has simply adapted Plotinus' account of time, going so far as to borrow Plotinus' analogy of a seed. On this view, time is absolute: it exists independently of everything, including human souls and motion, with the exception of the divine Holy Spirit. Time also appears to be real, hence substantival.

More's later account of time makes its first appearance in the 1655 Appendix to More's *Antidote Against Atheism*. Here, More puts forward three possible accounts of space (*Antidote* 163-5; VIII: 1-6). First, the 'Immensity of the Divine essence' could be the subject of that diffusion and measurability; in other words, space could be God's immensity. Second, space is not a real thing, merely 'the large and immense capacity' for holding matter. Third, space could *be* an incorporeal substance, necessary and eternal: God. More does not choose between these accounts, and Reid (2012, 164) argues that this text marks a transitional point in the evolution of More's account of space; more on this below. Of the three possible accounts of space, time is only mentioned with regard to the first.

Having argued that infinite space could be an attribute of God - his infinite immensity - More makes a similar case for time:

> Now there is the same reason for *Time* (by *Time* I mean *Duration*) as for Space. For we cannot imagine but that there has been such a continued Duration as could have no beginning nor interruption. And any one will say it is non-sense that there should be such a necessary duration, when there is no reall Essence that must of it self thus be always, and for ever so endure. What or who is it then that this eternal, uninterrupted and never-fading duration must belong to?... I say that those unavoidable imaginations of the necessity of an Infinite Space, as they call it, and Eternal duration are, are no proofs of a Self-existent Matter, but rather obscure sub-indications of the necessary Existence of God (*Antidote* 164; VII: 2).

Duration is the time over which something exists, or endures[7]. Created beings have a finite duration; for example, a tree might exist for seventy years. In contrast, God has infinite duration, as God exists always. Earlier in this text, More discusses God's attributes, including 'Duration as Essence' (*Antidote* 14; IV: 1). This implies that we should literally understand the duration of a thing as its essence, its being. This reading is confirmed by a later text, where More states, 'As a being is... so also is its duration'[8] (*Metaphysics* I 35; V:9). In this passage, More is arguing that we are compelled to imagine a time, or a duration, that has no beginning or interruption. This time must be the duration of an essence or being, and the only eternal essence is God; consequently, time or eternal duration is an 'obscure sub-indication' of God. The fact that More *only* puts forward one account of time in this text - as opposed to the three accounts of space - strongly suggests that More takes this to be the correct account of time, even though he has not yet decided which is the correct account of space. Below, I argue that there is a strong continuity between More's account of the perseverance of the Psyche and God's duration; this also supports this suggestion, as this continuity would not be compatible with the view that time is an unreal capacity or identified with the substance of God.

In the context of discounting More as one of the sources that Newton may have drawn on in formulating his absolutism about time, Ducheyne claims that More does *not* identify time with eternal duration. In support of this claim, Ducheyne cites this same passage[9]:

> Plato and later Neo-Platonists, although some pointed to the connexion between time and eternity, did not go as far to identify both... Equating time and eternal duration is... clearly absent in Barrow's and More's account of time... More (1662, 164) explicitly stressed that an infinite duration is inconceivable (Ducheyne, 2008, 222).

Against Ducheyne, this passage precisely argues that an infinite duration *is* conceivable: More argues that we cannot imagine *but* that there has been such a continued duration as could have no beginning nor interruption. Perhaps the explanation for Ducheyne's misreading is More's relentless use of double negatives.

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[7] Descartes writes that the duration of a thing is 'a mode under which we conceive the thing in so far as it continues to exist' (CSM I 211; AT VIIIA 26); it is possible that More's notion of duration is drawing on Descartes'.

[8] *Ut est igitur Ens, sic & illius Duratio est* (*Metaphysicum* 157; V: 9).

[9] Identifying the object of Ducheyne's reference is tricky because each text in More's *Collection* is individually paginated, and Ducheyne does not give the text's name. However, of all the multiple page 164s in the *Collection*, this is the only one that mentions time.

More presents his later account of time in several further texts, including the 1668 *Divine Dialogues.* In response to the suggestion that an 'eternity of duration' is necessarily conceivable before the world is created, one character approvingly explains, 'and this marvellously *anticipating eternity* is the proper and necessary *eternal duration of God*... the *permanent expansion* or *amplitude* of the *radical essentiality of God'* (*Dialogues* 448-9; III: 40). Similarly, the Scholia added to Chapter VIII of the 1679 edition of the *Enchiridium Metaphysicum* states:

> [W]hen we meet with this sort of immobile and external extension [i.e. space], what can be more agreeable to reason than that we refer to God?...
> The same explanation is of any time which some suppose antemundane, which they should more correctly call antemundane duration, which they conceive even successive, but also necessary, and which cannot not be... [Space and time] are certain adulterated representations of the divine eternity and immensity... certain external (but necessary) concomitants of the divine existence, that it is necessary that one be, indeed, a certain obscure revelation of the divine presence, the other, indeed, of its duration[10] (*Metaphysics* I 68-9; VIII Scholia: 13).

Again, More is arguing that time is the eternal duration of God.

It might be thought that More's early account of time bears little relation to his later account. However, I argue they are deeply connected. I make this case by discussing two important points of similarity pertaining to duration.

First, I argue that the identification of divine duration and time, central to More's later account, is implicit in More's early account. Above, More's *Poems* states that time is the 'perseverance of the motion of the soul of the world'. The 'perseverance' of a thing is its continuance, or existence, over time; and the time over which something continues to exist is its duration. In stating that time is the perseverance of the motion of the soul of the world, I argue that More is implicitly stating that time is the duration of the motion of the Holy Spirit: time is the duration of God's active presence in the world. On More's later account,

[10] *cum in ejusmodi immobile aeternumque Extensum incidimus, quid rationi magis consentaneum esse potest quam ut referamus ad Deum?... Eademque ratio est de tempore quodam, quod quidam singunt, Antemundano, quam Durationem Antemundanam rectius appellaverint; Quam successivam etiam concipiunt, sed & necessariam, & quae non potest non esse... adulterinas quasdam esse Aeternitatis Immensitati sque Divine Repraesentationes... externa quaedam, (sed necessaria) Divinae Existentiae Concomitantia, ut necesse sit alteram quidem revera esse obscuriorem quandam Divinae Praesentiae exhibitionem, alteram vero Illius durationis* (*Metaphysicum* 172; VIII Scholia: 13)

discussion of the Holy Spirit largely falls away[11], and time simply becomes the duration of God, but the identification of divine duration in some sense with time has remained constant.

Second, I argue that More's understanding of divine duration is rooted in his *Poems*. Traditionally, God is held to be a unified or simple being, lacking parts. In the *Divine Dialogues* and the *Enchiridium Metaphysicum*, More aims to show that, whilst God has duration, that duration is not successive. More conceives successive duration as having a 'fluid' (*fluxa*) existence, consisting of 'successive and alternate' (*successiva & alterativa*) parts that are spread out across the past, present and future (*Metaphysics* I 89; X: 15).

For More, God cannot have successive duration because that would be incompatible with divine simplicity. More argues that, whilst the duration of created beings is successive, that of God is not. For example, in the *Divine Dialogues*, one character asks the following (in language which echoes More's Poems). 'For what can be more contradictious, than that all things should have been really and essentially with God from all eternity at once, and yet be born in time and succession?' (*Dialogues* 47; I: 15). In response, another character explains that, while both God and his creation endure, only the latter's duration is successive. God's duration is compared to the permanency of a steady rock channel through which water passes; this channel has duration but 'it is in no such successive defluxion, tho' the water be' (*Dialogues* 49-50; I:15). A few years later, More explains why the duration of some beings is successive, whilst God's is not. 'If a being is in number one and the same, the whole coexisting at the same time, its duration, from the point at which it first existed till it ceased to exist, is a certain present thing and one in number... permanent duration bears its origin from the numerical identity of the subject'[12] (*Metaphysics* I 35; V: 9). If a being exists permanently - the phrase 'in number one and the same' implying a lack of parts - its duration will not be successive. In contrast, a being with 'flowing parts' has successive duration.

This distinction, between God's non-successive duration and successive duration, parallels the distinction More drew in his early account of time between the Soul's life at rest and the Soul's life in motion. In 1647, More explained that Eternity - Christ or God - was a 'life exhibiting all things at once, and in one', and Eternity was contrasted with the created world's alterity and succession. This is exactly the distinction More draws in his later work: God exists permanently and all at once, whilst the created world exists with successive and

[11] Though not entirely. The mature More discusses ways that the 'permanent and identical', 'life and duration' of the Holy Spirit might have produced the world through emanation (*Metaphysics* I 84; X: 5).

[12] *Si sit unum idemque numero Ens totum coexsistens simul, duratio illius, ex quo primum exstiterit usque dum desiverit exsistere, est una quaedam eademque numero Praesentia... pateat Durationem permanentem suam originem trahere ex identitate numerica Subjecti attribuitur* (*Metaphysicum* 157; V: 9).

alternate parts. The deep continuity between More's early and later accounts of time provide evidence of the lasting influence of Plotinus on More's metaphysics.

3 Why Did More Develop an Absolute Account of Time?

There is a (surprisingly) small body of literature on why sixteenth and seventeenth century thinkers developed absolute accounts of time. As these thinkers did not record their reasons, scholars must reconstruct their reasons and show why they are plausible. Three such kinds of reasons have been suggested. I will discuss them in turn, showing that only the first can be plausibly applied to More. Following this discussion, I will give a fourth reason.

The first reason offered in the scholarship to explain the development of absolute time is the returning influence of Platonism, as Plato and Platonists such as Plotinus arguably held absolute accounts of time. Although several scholars credit this influence they give little detail[13]. As this paper has shown, in More's case the influence of neo-Platonism is readily apparent. However, it is significant that whilst in 1642 More had read Plotinus' account of time - indicated by More's brief description of Psyche as the life of time - More's own account did not appear until 1647. This suggests that another factor was at work in the intervening period.

The second kind of reason concerns developments in cosmology and physics, including the implications of Galileo's work and heliocentrism[14]. The latter particularly contributed to the undermining of the view that time is the motion (or the measure of the motion) of the outermost celestial sphere, as heliocentrism does not fit as neatly with the celestial sphere cosmology as geocentrism. It is possible to modify Aristotelian cosmology such that time becomes the regular motion (or the measure of the motion) of the stars rather than the outermost celestial sphere. However, as Piero Ariotti (1973, 41) argues, on this modification the regularity of the celestial motions becomes problematic, as it is no longer 'mechanically guaranteed' by the spheres. More held heliocentrism from 1642[15] but did not advance a view of time until later; again, this suggests that another factor was at work.

[13] See Burtt (1924), Baker (1935b, 279), Ariotti (1973, 50), and Hutton (1977, 345).
[14] On the implications of Galileo's thought, see Burtt (1925, 81-4) and Baker (1935b). On the undermining of Aristotelian cosmology, see Baker (1935b, 278), Heath (1936, 82), Ariotti (1973), Daniel (1981), and Čapek (1987).
[15] See More's *Poems* (77). Interestingly, Nicolson (1959, 130) suggests the Cambridge Platonists may have been 'peculiarly receptive' to heliocentrism because they saw it as a return to classical cosmologies. Nicholson does not substantiate her suggestion but evidence can be found in More's *Conjectura Cabbalistica* (82; II:1) which attributes heliocentrism to the Pythagoreans.

The third reason is offered by Geoffrey Gorham (2012, 24-6) who argues that the success of spatial absolutism, coupled with a tradition of space-time parallelism, encouraged seventeenth century philosophers to freely extend the attributes of absolute space to time with 'little independent rationale'. Gorham argues that this 'largely analogical and parasitic foundation' for absolute time is apparent in More, Barrow and Newton. Gorham's thesis fits neatly with the increasing amalgamation of mathematics with natural philosophy in the seventeenth century, which for example integrated Euclidean geometry with absolute space[16]. More was not overly concerned with mathematics in this regard. But what of Gorham's thesis that absolute theories of space led to parasitic theories of time? Against Gorham, I argue that whilst this thesis may hold true for Barrow and Newton, it does not hold true for More. To explain why, we must contrast More's views on time with his views on space.

Reid (2012, 96-7) has convincingly shown that More's views on space evolved dramatically, such that - over several decades - space found itself 'leaping up' from near the bottom of More's ontological hierarchy almost to the very top. Reid argues that, in More's earliest work, More associates space with matter, as indicated by the way that More similarly disparages matter and space. For example, More writes, 'For who will not say that Space or Vacuum is infinitely worse, then any reall thing, and yet its extension is infinite' (*Poems* 142). Reid finds further confirmation of this early view in More's 1649-1651 letters to Descartes and Conway, where More argues that the notion of 'empty space' - space devoid of matter - is not a contradiction. Through various thought experiments, More argues that a space empty of matter would have a measurable extension, parts, and duration. In a 1651 letter to Conway, More writes:

> There is the same reason of duration that there is of extension, but duration belongs to Non-entityes. as you will presently confesse. For suppose after the world had continued 1000 yeares, God annihilated it, and that now since the world was made againe, it were but a thousand, did not the absence of the world, or the Non-World as I so speake, continue above three thousand yeare (*Conway Letters* 487).

If God were to annihilate the world, and later remake it, the intervening 'Non-World' - or, empty space - would still have duration[17]. The implication is that this empty space is a 'non-entity': it has extension and duration but is unreal. As Reid (2012, 96) explains, 'The infinite

[16] See Reid (235-6) for discussion of geometrical space in Barrow and Newton.
[17] See also More's *Descartes Letters* (73-4).

antemundane void, in this early period, was unreal to the extent that there was no *actual* thing there, but only the *possibility* that something should be put there'. Incidentally, this passage substantiates Gabbey's claim that More advances an absolute account of time in his letters to Descartes and Conway; here, More holds that there would be time even in the absence of the world.

In contrast to his early account of space, in 1647 More holds time to be a real thing sitting much higher up the ontological totem pole, identified with the continuance of the motion of the Holy Spirit. Further, whereas the 1655 Appendix to the *Antidote Against Atheism* appears to be a transitional point in More's views on space, the fact that More only advances one view on time - time as God's eternal duration - suggests that this view is not in transition. Later in his career, in the *Divine Dialogues* and the *Enchiridion Metaphysicum*, More argues that both time and space are attributes of God[18]. Against Gorham, I argue there is no space to time parasitism in More. If, by 1655, More already held his mature account of time but not his mature account of space, then - far from his views on time being parasitic on his account of space - More's account of time *preceded* his account of space. Even if readers are not persuaded that More held his mature account of time by 1655, the account of time set out in More's *Divine Dialogues* is given independently of his account of space, implying that More developed his mature views on space and time symmetrically.

I argue another reason altogether underlies the development of absolute time in More: his reaction to Descartes' cosmology and cosmogony. I will outline the pertinent parts of Descartes' work, explain why it could prompt one to adopt an absolute account of time, and finally argue that this is a factor in More.

Descartes' 1644 *Principles of Philosophy* argues that the material world is a matter-filled plenum. Matter moves in 'vortices', rings of material bodies in motion, akin to whirlpools or whirlwinds. Vortex theory underlies Descartes' cosmology; for example, the orbit of the planets around the sun is explained by the way they are carried along in vortices (CSM I 266; AT VIIIA 202). Vortices also lie at the heart of Descartes' cosmogony, his account of how the universe came to be the way it is. Descartes - wary of clashing with the Church over *Genesis* - describes this cosmogony as a hypothesis but explains that even if it is false it will have achieved something if it agrees with our observations. Descartes' cosmogony is important because it is the first early modern *mechanist* account, aiming to

[18] For example, More argues that space shares at least twenty of God's titles, including one, simple, immobile, eternal, complete, independent, existing from itself (*Metaphysics* I 57; VIII: 7). Space is God's immensity (*Metaphysics* I 60; VIII: 13). Further literature on More's mature account of space includes Burtt (1924, 135-42), Baker (1930, 6-13; 1935b, 281-84), Hall (1990a), and Castro (2011).

explain the current state of the universe purely via matter[19]. Following creation, on Descartes' cosmogony variously sized material particles moved in such a way as to form the celestial bodies:

> First, they moved individually and separately about their own centres, so as to form a fluid body such as we take the heavens to be; and secondly, they moved together in groups around certain other equidistant points corresponding to the present centres of fixed stars, and also around other rather more numerous points equalling the number of the planets and the comets... to make up as many different vortices as there are now heavenly bodies (CSM I 257; AT VIIIA 101).

Vortices explain how celestial bodies such as stars and planets came into being. Vortex theory underlies many additional parts of Descartes' physics, including gravity, tidal theory, light propagation, and magnetism[20].

Whilst cosmological developments such as heliocentrism undermined Aristotelian cosmology but could be rendered compatible with it, Descartes' cosmology is absolutely incompatible with Aristotelianism cosmology. In place of a regular, finite universe bounded by stars affixed to celestial spheres, the universe becomes a indefinitely large ocean seething with vortices. Cartesian cosmology is certainly not compatible with the view that time is the measure of the movement of the celestial sphere, as on the Cartesian picture the universe is indefinitely extended and there are no spheres. Nor is it compatible with the view that time is the measurement of the regular movement of the heavenly bodies, for those bodies are carried by vortices not spheres, and vortices hardly provide a 'mechanical guarantee' of regular motion. Further, unlike Aristotle's steady-state universe, the movements of the heavenly bodies have not always been regular. Given Descartes' cosmogony there *were* no heavenly bodies immediately following creation; the heavenly bodies as we know them came into being through the effects of vortices on clumps of matter. Descartes' cosmology and cosmogony are incompatible with all variations of the view that time depends on the motion (or the measure of the motion) of the celestial bodies; this could provide thinkers who accept these aspects of Descartes' work reason to develop absolute accounts of time.

I argue that this line of thought is present in More. The influence that Descartes exerted over More's early work is well documented[21]. More read Descartes' *Principles*

[19] For more on early modern cosmogonies, see Rogers (1982) and Numbers (2002).
[20] See Schuster (2013).

before writing his 1646 *Democritus Platonissans*, a preface to which explains that More has been 'roused up by a new Philosophick furie' (*Poems* 90). This fury can be largely (if not entirely) attributed to Descartes. To illustrate, from 1646 onwards, More holds that the material world is a plenum. *Democritus Platonissans* writes approvingly of Descartes' system, 'if any space be left out unstuffd with Atoms, it will hazard the dissipation of the whole frame of Nature into disjointed dust' (*Poems* 90). The only way that motion can occur in a plenum is that, when one body moves, another body also moves to make way for it, and so on. Vortices provide a natural account of motion in a plenum, and this likely explains why More went on to embrace Cartesian vortices with enthusiasm. In 1647, More uses vortices to explain a wide range of phenomena. For example, he advocates Descartes' vortex theory of tides, and his 'ingenuous' account of light involving 'gentle' ethereal vortices (*Poems* 150). He also espouses Descartes' cosmology. '[T]he Sun, the Centre of this great Vortex, about which all the liquid matter of our Heaven is carried about, as grosse water in a whirlepooll; and with it the Planets like corks or strawes' (*Poem*s 153).

More's 1646 and 1647 poems clearly show that he takes Cartesian vortices to best explain a large range of physical phenomena. Although More does not explicitly comment on vortex theory with regards to cosmogony here he would certainly have read Descartes' account of it alongside his cosmology, and there is no reason to believe that More did not accept it at this point, given his explicit acceptance of Descartes' cosmogony in his later work. More's 1662 defence of his *Conjectura Cabbalistica* provides an excellent illustration[22]. The *Conjectura Cabbalistica* sets out three interpretations of *Genesis*: a literal interpretation, a kind of paraphrase; a philosophical interpretation, which reads metaphysical meanings into the text; and a moral interpretation, providing moral guidance. In the context of discussing the creation of matter, More's defence of the philosophical interpretation describes the various kinds of material particles that make up the world, and explains that they correspond to those described by Descartes. For example, 'the Earth consists of the third Element in the Cartesian Philosophy... for the truth of that Philosophy will force it self in whether I will or no' (*Cabbalistica* 79; II:1). A little later, More writes:

[21] For Descartes' early influence on More, and More's subsequent critique of Cartesianism, see Lamprecht (1935), Patrides (1969, 29-31), Gabbey (1982), and Reid (2012, 23-6).
[22] More also endorses Descartes' cosmogony and cosmology in the *Epistola* appended to his *Descartes Letters* (128).

> This fourth day's Creation is the contrivance of *Matter* into *Suns* and *Planets*, or into *Suns*, *Moons*, and *Earths*. For the *Aethereal Vortices* were then set agoing, and the *Corporeal* world had got into an useful order and shape (*Cabbalistica* 81-2; II:1).

The truth of Descartes' philosophy has forced itself into More's cosmogony: after creation, the corporeal world gradually 'got into' its familiar useful order through vortices.

The thesis that More developed his account of time in response to Descartes' cosmology and cosmogony is extremely plausible given the timing: More developed his absolute account of time in the Notes to his 1647 *Poems*, the same Notes in which he adopts Cartesian vortices to explain cosmology and other phenomena. Given the incompatibility between Descartes' vortices and the view that time depends on the motion of the celestial bodies, I argue that this pushed More to draw deeper on Plotinus and develop an absolute account of time.

Plausible though the timing may be, the thesis that More developed his absolute account of time in response to Descartes' cosmology and cosmogony faces an obvious objection. On time, Descartes' *Principles* writes:

> Now some attributes or modes are in the very things of which they are said to be attributes or modes, while others are only in our thought. For example, when time is distinguished from duration taken in the general sense and called the measure of movement, it is simply a mode of thought (CSM I 212; AT VIIIA 27).

For Descartes, duration - the continual existence of a thing (CSM I 211-2; AT VIIIA 26) - is a mode that is 'in' enduring things. We can distinguish time from duration, where time appears to be a way of measuring distinct durations, but when we do so time is only 'in' our thought. Although how best to understand Descartes' account of time is controversial, it certainly *seems* that - although he distinguishes time from motion - Descartes is working in the Aristotelian tradition that takes time to be dependent on the human mind or soul[23]. If More were so impressed by Descartes' physics that he adopted it, why did More not also adopt Descartes' account of time?

The answer lies in More's wider intellectual patterns of behaviour. Marjorie Nicolson (1959, 114) once described More as a 'seventeenth-century weather vane', who responded now to one, and then to another, winds of doctrine affecting the climate of opinion. Whilst

[23] For more on time in Descartes, see Edwards (2013, 119-62).

striking, this simile is problematic, because it implies that More lacked intrinsic direction of his own. If we are going to use metaphoric language, it would be better to think of More as a philosophic magpie. It is true that More picked up ideas here and ideas there but - just as magpies are legendarily consistent in picking up shiny things over dull ones - More is consistent with regard to the *kinds* of ideas he picks up. Namely, More consistently picks ideas from Descartes' 'shiny' natural philosophy and ignores Descartes' 'dull' metaphysics. This behaviour has been recognised (in less metaphorical terms) by other scholars[24]. For example, Richard Popkin (1990, 98) writes that More accepted the new science offered by Descartes and others but violently rejected the proposed metaphysics to buttress it. More's Platonic heritage was lacking in natural philosophy but it was abundant in metaphysics.

A relevant illustration of More's magpie behaviour can be found in his views on vortices. In several works, More advocates Cartesian vortices as the correct mechanism by which motion occurs but rejects the Cartesian metaphysics underlying that mechanism. For example:

> [L]et the Universal Matter be a heterogeneal Chaos of confusion, variously moved and as it happens, I say, there is no likelihood that this mad Motion would ever amount to so wise a Contrivance as is discernible even in the general Delineations of Nature... a round Sun, Moon, and Earth. For it is shrewdly to be suspected, if there were no Superintendent over the Motions of those ethereal whirle-pools, which the French Philosophy supposes, that the form of the sun and the rest of the Stars would be oblong (*Antidote* 39; II: 1).

In this passage, More is not denying the existence of ethereal whirlpools. Rather, he is arguing against the metaphysics that he takes Descartes to be advancing alongside his theory of vortices: Descartes' metaphysical view that matter can move without God acting as Superintendent[25]. More's rejection of this Cartesian metaphysical view does not prevent him from espousing vortex theory throughout his career[26]. In reply to the objection framed above, I say that More did not accept Descartes' account of time because he already had a sufficiently powerful metaphysics of time to draw on: that of Plotinus. Nonetheless, I argue it was More's adoption of Descartes' cosmology and cosmogony that prompted him to develop

[24] See also Reid (2012, 18-9).
[25] More voices similar objections in his *Descartes Letters* (80) and the *Cabbalistica* (78; II:1).
[26] For example, in 1671, More endorses parts of Descartes' vortex theory on ocean tides (*Metaphysics* II 108; XIV: 6). On More's use (and non-use) of Cartesian physics, and his philosophical interpretation of *Genesis*, see Webster (1969), Gabbey (1982), Rogers (1985), Hall (1990b), and Reid (2012, 287-91).

this account of time. More's account of time provides a microcosm of his larger intellectual patterns of behaviour.

4 The Influence of More's Account of Time

As explained above, several reasons have been proffered to explain the emergence of absolute time in the late sixteenth and seventeenth centuries, and More was not the first philosopher to advance absolutism about time. Nonetheless, More was the first *English* philosopher to do so, and there is evidence that More's views influenced some of the English philosophers who followed him. This section argues that, whilst More was not the sole influence on these thinkers, his work nonetheless played a part. There is only space here to sketch these lines of influence but this should be sufficient to indicate possible directions for future scholarship.

More's views seem to be working in one other Cambridge Platonist, Ralph Cudworth. Although Cudworth does not identify time with God's eternal duration, he accepts the view - found in More - that the essence of a being determines the kind of duration it has:

> [T]he Duration of every thing must of necessity be agreeable to its Nature; and therefore, As that whose *Imperfect Nature* is ever *Flowing* like a River, and consists in *Continual Motion* and *Changes* one after another, must needs have accordingly a *Successive* and *Flowing Duration*, sliding perpetually from *Present* into *Past*... So must that, whose *Perfect Nature*, is *Essentially Immutable*, and always the *Same*, and *Necessarily Existent*, have a *Permanent Duration* (Cudworth, 1678, 645).

The sentiment and the language of this passage are strongly reminiscent of More's *Divine Dialogues*, where the successive duration of finite things into the past is also compared to the river.

Earlier, I mentioned Jammer's thesis that More's account of space 'strongly influenced' Barrow's account of time. Jammer (2006, 69) refers to the view presented in More's 1653 *Antidote Against Atheism* that space is the omnipresence of God. Jammer has slipped slightly here, as More doesn't actually discuss this view until 1655, in the Appendix attached to the later edition of the *Antidote*. More importantly, as we have seen, this Appendix discusses the view that space is God's immensity *and* the view that space is God's eternal duration. If Jammer is correct that Barrow's absolutism about time was influenced by

More's *Antidote*, then it is as likely that Barrow is drawing on More's discussion of absolute time as on his discussion of absolute space.

There is also a case to be made that More influenced the absolutists Newton and Clarke. Newton's absolutism is so important that a small scholarly cottage industry has grown up determining the sources Newton may have drawn on in constructing it. These sources have been variously argued to be Gassendi, van Helmont and Barrow[27]; I will say a little about their accounts.

Gassendi's posthumous 1658 *Opera Omnia* explains that space and time are infinite, immutable beings, the fundamental elements of all classification; regardless of whether things exist, time always flows (*fluit tempus*) at an equal tenor (III 347). Van Helmont's "De Tempore" appears in his posthumous 1648 *Ortus Medicinae.* Van Helmont (1648, 508) argues there would be time in the absence of bodies and motions, and ultimately claims that time is the emanating splendour of eternity (*tempus tanquam aeternitatis emanantem splendorem)*; in other words, of God. This analogy is particularly suggestive of Platonism, and Pagel (1948, 390) argues that van Helmont is drawing directly on Plotinus' account of time. There is no evidence that, in turn, More drew on van Helmont[28]. In his *Lectiones Geometricae*, delivered at Cambridge from 1665-1666, Barrow (1860, 161) argues that time indicates a capacity or possibility of continuance of existence (*capacitatem tantum seu possibilitatem denotat permanentis existentiae)*. Time appears to be a kind of capacity to hold enduring things.

Although More is not usually included in the list of sources that Newton may have drawn on, I will show that the grounds for this exclusion are lacking. More's account of space has been the subject of serious scholarship, and it is widely credited as an important influence on Newton[29]. Despite this, the possible influence of More's views on time has been ignored, presumably because those views were taken to be insubstantial. As we have seen that More's

[27] On the influence of Gassendi on Newton, see Baker (1935, 285), Rochot (1956), and Westfall (1962-3). On the influence of Barrow, see Rochot (1956), Burtt (1924, 144-9), and Hall (1992, 273-9). On the influence of van Helmont, see Ducheyne (2008).

[28] *Ortus Medicinae* was published a year after More's *Poems*. Although "De Tempore" would have been written some time before van Helmont's death in 1644, it seems unlikely that More would have read the unpublished manuscript, especially as it would have been in Dutch (the frontispiece to *Ortus Medicinae* explains that it was translated from Dutch to Latin prior to publication).

[29] On the influence of More's account of space on subsequent English thinkers - including Barrow, Raphson, Clarke and Newton - see Baker (1930, 1-4; 1935a, 267-9; 1935b, 284-6), Burtt (1924, 256), Čapek (1961, 10-11), Koyré (1957), Nicolson (1959, 129-30), Patrides (1969, 31-9), Boylan (1980), Copenhaver (1980, 529-31), Hall (1990a, 202-223; 1990b, 45-52), Popkin (1990, 110-11), Castro (2011), Reid (2012, 215-36) and Leech (2013, 176-93). Baker (1935a; 1937) also argues that More influenced Kant.

account of time *is* substantial, we should certainly not exclude its role as a source on that basis.

However, there may be another reason to exclude More's influence. Even if it is accepted that More held substantial views on time, it might be worried that - unlike some of the alternative sources Newton may have drawn on - More's account of time is somewhat buried in his texts, and Newton may not have expended the effort required to excavate it. To allay this worry, it is worth emphasising that More's account of time is no more buried than, say, that of Barrow. Barrow's account of time is found in *one* lecture of his *Lectiones Geometricae*, and it is untitled. Whilst More's early account of time does require *some* excavation[30] his later account does not. More's later account can be found in two chapters in his *Divine Dialogues*, helpfully titled "The Attribute of Eternity" and "That there is an ever-anticipative eternity and inextermixable amplitude that are proper to the Deity only". In the *Enchiridion Metaphysicum*, More's ontology of time is included in the chapter primarily concerned with his ontology of space - titled "That that immobile extension from mobile matter which is to be demonstrated is not something imaginary, but at least real, if not divine" - and, given how intermixed More's discussions of space and time are here, it seems unlikely that a close reader of More's account of space could fail to notice his account of time.

There is also a positive reason to include More's account of time as one of the sources that Newton may have drawn on. Famously, Newton's 1687 *Principia* (2004, 64) characterises time as follows: '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'. Newton goes on to draw a distinctive connection between duration or time, and God's duration. Newton's *Principia* (2004, 91) writes of God, 'He is not duration and space, but he endures and is present... and by existing always and everywhere he constitutes duration and space'. Newton's unpublished manuscript *De Gravitatione* (2004, 25) also appears to connect space and divine immensity: 'space is an emanative effect of the first existing being'. This same connection can be found the 1715-1716 correspondence between Leibniz and the 'Newtonian' Clarke. For example, Clarke (2000, 30-1) writes, 'Space is not a substance but a property... space and duration are not *hors de Dieu* [outside of God], but are caused by and are immediate and necessary consequences of his existence... without them his eternity and ubiquity (or omnipresence) would be taken away'. The implication is that space and time are properties of God: his ubiquity and eternity.

[30] As it is submerged in the notes to More's *Poems*. That said, this account is found under a section titled 'O life of time and all Alterity!' (*Poems* 136).

This thesis found in the Leibniz-Clarke correspondence, that time is God's eternal duration, is precisely that of More. Whether Clarke's side of the correspondence accurately represents Newton's views is controversial; Newton is generally agreed to have had *some* role in crafting Clarke's side of the correspondence but to what extent is disputed[31]. However, it is uncontroversial that Clarke's side of the correspondence accurately represents Clarke's views; this is confirmed in Clarke's 1704 *A Demonstration of the Being and Attributes of God*. Clarke (1998, 31) writes here that 'infinite duration is abstract eternity', and eternity is the 'essence of the supreme cause'; eternity is a mode of an essence or substance incomprehensible to us. In other words, eternity is a mode - a property - of God.

Clarke conceives time to be God's eternal duration. Whether Newton holds precisely this view is unclear but he certainly seems to be drawing *some* connection between time and God's duration. This connection is not found (or at least, is not made explicit) in Gassendi or Barrow. The connection is - as Ducheyne (2008, 222) explains in his argument for adding van Helmont to the list of sources that Newton may have drawn upon - made by van Helmont. However, contra Ducheyne, it is *also* found in More. Given the Cambridge connections between More, Newton, and Clarke, it is at least as likely that Newton and Clarke are drawing on More as on van Helmont[32].

There is no reason to exclude More from the list of sources that Newton and Clarke may have drawn on in developing their absolutisms about time, and the distinctive connection found in these thinkers between time and God's eternal duration provides a reason to include it. More's work forms part of the larger, complex development story of Newtonian absolute time.

5 Conclusion

More's absolutism about time has been neglected by scholars and, in some cases, even erased. This paper has shown that such treatments are unjust. I have argued that More's adoption of Cartesian vortex theory leads him to develop a Plotinus-esque account of time, and that key elements of this account of time - including More's identification of time with divine duration, and his understanding of the nature of divine duration - survive in his later work. More's later absolutism about time is not buried in his texts, and at points it is

[31] For an overview of the dispute, see Ariew's Introduction to Clarke (2000).
[32] It is worth emphasising that Newton owned over half a dozen of More's books, including his *Poems;* see Harrison's (1978, 196) edition of Newton's library catalogue. McGuire (1978, 470-1) argues that Newton was 'familiar' with More's *Divine Dialogues,* and that their works exhibit 'striking similarities in language and concept'.

intermixed with his absolutism about space, which would have enabled subsequent thinkers such as Newton to draw on More's account of time as much as his account of space. More's views on time are textually developed and philosophically important, and they deserve to be recognised as such[33].

[33] Thanks to xxxx for funding this research.

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