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CRESCAS ON TIME, SPACE, AND INFINITY

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I. Introduction

That place, time, and matter are intertwined is a given: our metaphysical conception of what constitutes a "thing" is intimately tied to our conception of time. "Things" exist in time. But does time really exist, or is it an ideal construct? If time does exist, is it continuous or discrete? And how does the continuity or discreteness of time affect the metaphysical integrity of "things" that subsist or perdure through time? Numerous philosophers have questioned the objective reality of time, ranging from Aristotle, Plotinus and Augustine in the ancient world, to the medieval Islamic Kalâm theologians, culminating with the writings of McTaggart and Husserl in the early twentieth century. This paper focuses on Hasdai Crescas's views on time, as juxtaposed against his Greek and medieval predecessors, on the one hand, and contemporary works of McTaggart and Husserl on the other. The paper thus aims to amplify Roslyn Weiss's comments in the introduction to her new translation of Crescas *Light of the Lord*, that "Crescas must be credited with introducing a series of new perspectives that altered the character of physical theory

once and for all."[1] Nowhere is this transformation more apparent than in Crescas's ontologies of time, space and infinity; as Harvey has pointed out, "Crescas' tightly and philosophically significant theory of time…is manifestly part of his carefully reasoned physical theory."[2]

In the late antique and early medieval period, three schools of thought prevailed: Aristotelian, occasionalist/atomist, and Neoplatonic. On the Aristotelian view, "things" are said to exist "in time," to continue to exist through temporal flux, and to have an identity that survives change; time is defined as the objective number or measure of things in motion. In contrast to Aristotle and his followers, the atomist view, popularized by the medieval Islamic philosopher Al-Ghazâlî, contests the very notion of what constitutes "thingness." Both things/events and time itself are represented as discrete entities, comprised of atomic units (or minimal parts). Time is discrete, not continuous. A third view emphasizes the idealist or subjective nature of time. Plotinus in the *Enneads* (III.7) distinguishes between the *essence* of time, expressed as the extension or duration of the life of the Universal Soul, and *definite* time as measured by the motion of the spheres. Reflecting Plotinus, Augustine too emphasizes the notion of time as duration, suggesting in his *Confessions* (ch. 11) that time is not objectively real, but rather an idealist construct of the mind construed as a duration (*distentio*).

All three views persevered. Although that of Aristotle remained dominant in medieval and early modern thought, both the Neoplatonic and atomist views of time continued as a minor chord throughout later centuries, reappearing for example in the works of Malebranche and Hume and culminating with the twentieth century works of McTaggart and Husserl. Consider for example McTaggart's influential article "The

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[1] Crescas, *Light of the Lord*, trans and ed. Roslyn Weiss (Oxford: Oxford University Press, 2018), 9. Unless otherwise noted, all references to Crescas *Light of the Lord* will be to this edition.

[2] Warren Zev Harvey, "Albo's Discussion of Time," *JQR* 71 (1980): 210-238, 234.

Unreality of Time," to which we return below.[3] Channeling arguments found in Augustine, McTaggart analyzes time into two series of events: A-series and B-series. The A-series represents the succession of events passing from future to present to past, while the B-series houses the unchanging relations of earlier, simultaneous, and later. McTaggart argues that inasmuch as there resides an inherent contradiction in the very terms 'past' 'present' and 'future'—a contradiction already recognized by Aristotle —neither series can account for the reality of time, concluding that time is unreal. In a vein similar to McTaggart, Husserl's phenomenological analysis of objects problematized his ability to account for discrete objects. For Husserl, objects appear as phenomenologically one-sided, and it is our expectation that rounds out these objects. As we shall see below, a similar claim applies to time itself.

My goal in this study is to place Crescas's theory of time in conversation with those elucidated by McTaggart and Husserl respectively. Focusing primarily upon the comparison between Husserl and Crescas, with a brief foray into the views of Al-Ghazâlî and McTaggart, I suggest that Husserl's indexical view of time, rooted in phenomenological subjectivity, offers us a contemporary analogue to that of Crescas, stripped of its theological dressing. But this should come as no surprise. Crescas, McTaggart, and Husserl reject Aristotle's theory of time, and as a result, all three are confronted with the difficulty of accounting for the extendedness of 'things' in an 'external reality.' Not unlike Heraclitus, for whom things both "are and are not" and for whom the river is never the same at two temporal instants, these three thinkers

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[3] For the details of McTaggart's argument, see J.M.E. McTaggart, *The Nature of Existence,* vol. 2 (Cambridge: Cambridge University Press, 1927), book 5, chapter 33; reprinted in The *Philosophy of Time: A Collection of Essays*, ed. Richard Gale (Atlantic Highlands, N.J.: Humanities Press, 1978). See also Tony Roark, *Aristotle on Time: A Study of the Physics* (Cambridge; New York: Cambridge University Press, 2011); Sandra B. Rosenthal, *Time, Continuity and Indeterminacy* (Albany, NY: SUNY Press, 2000). For an astute analysis of the relevance of McTaggart to kalam theories, see Jon McGinnis, "The Topology of Time: An Analysis of Medieval Islamic Accounts of Discrete and Continuous Time," *The Modern Schoolman* 71 (2003): 5-25.

must be able to give an account of our perception of ordinary objects against the backdrop of an un-Aristotelian view of time.

Before turning to these theories, however, let me first emphasize the intellectual context, rooted in a scientific image of reality, inherited and rejected by both Husserl and Crescas. For Husserl, the struggle is reflected in his articulation of a new phenomenological method, with its rallying cry "to things themselves." This emphasis upon "things" is itself embedded in a metaphysical view of time. In his analysis of internal time consciousness, Husserl distinguishes between physical/mathematical (objective) definitions of time and what he terms the lived experience of duration. This distinction reinforces the loss of objective time—the techniques and instruments (clocks, chronometers) that natural science employs in determining time. Phenomenology thus differs from natural science in that the time of the natural scientist is bracketed (put aside): "just as the actual thing, the actual world, is not a phenomenological datum, neither is world time, the real time, the time of nature in the sense of natural science." [4] What Husserl focuses on is "appearing time, appearing duration, as appearing," [5] which turns out to be the immanent time of the flow of consciousness.

Similarly, Crescas regards the scientific account of reality, embedded in the Aristotelian theory of necessity, essentialism, and causation, as a threat to his theological world-view. He states his agenda clearly in a number of contexts, underscoring his aim to combat heretical statements adduced by the philosophers. Against Aristotle and his followers, most notably his near predecessors Maimonides and Gersonides, Crescas's agenda requires dismantling the most noxious aspects of Aristotle's natural science. This dismantling includes a reconceptualization of the relation between essence and existence, and most famously perhaps, a tacit rejection of Aristotle's natural causation, which is itself the

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[4] Edmund Husserl, *The Phenomenology of Internal Time Consciousness,* ed. James Churchill (Bloomington: Bloomington Indiana University Press, 1964), 5. Subsequent references will be to *PITC*.

[5] Husserl, *PITC*, 5.

foundation for Aristotle's essentialist ontology. This rejection echoes that of Al-Ghazâlî, who (as we shall see below) abhorred essentialism as well. Pines goes so far as to suggest that Crescas's non-Peripatetic views "take place within a definite Islamic philosophical tradition." [6] Why is essentialism so noxious? Consider Leor Halevy's claim that "whereas natural philosophy relies on the notion of natural necessity operating between events linked logically, occasionalism relies on the notion of direct, divine agency operating on events linked contingently."[7]

How then do our protagonists attack these scientific models of time? In section II, I will contrast Aristotle's "standard account" of time with those of Augustine and the occasionalists. Section III focuses upon Crescas's theory of time. We will then turn to the conversation among the three interlocutors—Crescas, McTaggart, and Husserl—all of whom, for different reasons, reject the standard Aristotelian model in favor of an idealist theory of time that combines elements of Augustine with the ontology of Islamic atomists. I am not suggesting that Crescas is a "proto-phenomenologist," nor will I argue that Crescas or Husserl (unlike Nicholas of Autrecourt, Descartes, Malebranche, Hume and Berkeley) were occasionalist atomists. [8] What I am proposing, however, is that placing Crescas in conversation with both McTaggart and Husserl will enable us to appreciate the timeliness of his work.

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[6] Shlomo Pines, *Studies in Islamic Atomism*, trans Michael Schwarz and ed. Tzvi Langermann (Jerusalem: The Magnes Press, 1997), 98.

[7] Leor Halevy, "The Theologian's Doubts: Natural Philosophy and the Skeptical Games of Ghazali," *Journal of the History of Ideas* (2002): 19-39, 21.

[8] See Edmund Husserl, *Cartesian Meditations*, trans. D. Cairns (Dordrecht: Kluwer, 1988) 3.28, 61. Scholars have often pointed to al-Ghazâlî's importance as a precursor to numerous philosophical schools: his occasionalism reappears in Malebranche; his critique of causal efficacy is reflected Hume's withering critique of causality; his emphasis upon questioning his predecessors and insisting upon a presuppositionless methodology adumbrates the Cartesian enterprise; and his ontology is even said to share similarities with theories of relativity. So too, I shall suggest that in reading Husserl, one cannot help but be struck by the similarities to Kalâm atomistic views of time, as reflected in the works of al-Ghazâlî and other occasionalists. While the intellectual trajectory connecting al-Ghazâlî to Husserl is fairly straightforward (via Suarez, Malebranche, Hume, Brentano), the implications of this trajectory have not been examined.

II. Three Models: Aristotelian, Augustinian, and Occasionalist

The scientific picture inherited by Crescas was of course that of Aristotle, but an Aristotle mediated primarily through the lens of his followers, most notably Maimonides and Gersonides. Aristotle presents his positive view of time primarily in books three and four of the *Physics*, against the backdrop of an eternal universe in which time is potentially, if not actually infinite.[9] For Aristotle, the prime example of time and motion is the relation between time and the circular motion of the heavens. Time is therefore construed in terms of a circle, measured by the circular motion of the heavens. The eternity of the cosmos is integrally related to Aristotle's conception of time. In answer to the question whether time was generated, Aristotle develops Plato's notion of the instant or "now" (*to nûn*) as a basic feature of time. The instant is defined as the middle point between the beginning and end of time. Since it is a boundary or limit, it has no size and hence cannot be considered to exist: it is a durationless instant.

One might be tempted to argue (as will Augustine and Crescas) that since instants do not in and of themselves exist, perhaps time itself does not exist. Aristotle rejects this move, however. Because the extremity, or limit, of time resides in the instant, Aristotle claims that time must exist on both sides of it: "Since the now is both a beginning and an end, there must always be time on both sides of it." [10] Aristotle develops this characterization further in *Physics* IV.10-14. Having asked of time whether "it belongs to the class of things that exist or that of things that do not exist,"[11] he rejects various considerations that might lead one to think that time does not exist. Time, he claims, is connected with movement:

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[9] Aristotle's discussion of the eternity of the universe is contained in several places, most notably *De Caelo 1, Physics* 8.1, and *Metaphysics* 12.6. For a recent discussion of these and other relevant passages, see Richard Sorabji, *Time, Creation and the Continuum* (Ithaca, NY: Cornell University Press, 1983), 276ff.

[10] Aristotle, *Physics* VIII.1 251bff.

[11] Aristotle, *Physics* IV.10 217b32.

> [W]hen the state of our own minds does not change at all, or we have not noticed its changing, we do not realize that time has elapsed, any more than those who are fabled to sleep among the heroes in Sardinia do when they are awakened; for they connect the earlier 'now' with the later and make them one, cutting out the interval because of their failure to notice it. So just as, if the 'now' were not different but one and the same, there would not have been time, so too when its difference escapes our notice the interval does not seem to be time.[12]

Further, Aristotle raises an important query concerning the relationship between time and the rational perceiver:

> Whether if soul did not exist time would exist or not, is a question that may fairly be asked; for if there cannot be some one to count there cannot be anything that can be counted, so that evidently there cannot be number; for number is either what has been, or what can be counted. But if nothing but soul, or in soul reason, is qualified to count, there would not be time unless there were soul, but only that of which it is an attribute.[13]

This passage raises the important question of whether time exists if there is "no soul" to perceive it. Aristotle himself does not provide a definitive answer to this query, but his suggestion is fairly straightforward: inasmuch as time is a kind of number and its function lies in counting and ordering 'nows', there can be no time if there is "no soul" to do the counting. As Falcon notes, "it follows from the nature of time, as defined by Aristotle, that there could be no time in the absence of beings able to count it."[14] Later commentators latched upon Aristotle's query and it became the basis for subsequent idealist descriptions of time.[15]

But can we even speak of 'changeless time'? From the epistemological point that "we perceive movement and time together," Aristotle draws an

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[12] Aristotle, *Physics* IV.11 218b22-30; see also *Physics* IV, 11, 219a 4-6.

[13] Aristotle, *Physics* IV.14 223a 21-28.

[14] See Andrea Falcon, "Aristotle on Time and Change" in *A Companion to the Philosophy of Time,* ed. H. Dyke and A. Bardon (Hoboken: Blackwell, 2016), 54.

[15] For further discussion of the vast commentary literature on this issue, see Sorabji, *Time, Creation and the Continuum,* 93-97; Wolfson, *Crescas' Critique*, 661-2.

ontological conclusion, namely that "time is either movement or something that belongs to movement." It is not just that we cannot perceive changeless time, but that time itself does not exist when there is no change. This leads to a definition of time in terms of the movement of the 'now': "When we do perceive a 'before' and an 'after,' then we say that there is time. For time is just this—number of motion in respect of 'before' and 'after'…time is only movement in so far as it admits of enumeration…Time then is a kind of number."[16]

Finally, Aristotle then stipulates two important qualifications to his characterization of time in terms of movement. First, he points out that "not only do we measure the movement by the time, but also the time by the movement, because they define each other."[17] Further, he notes, but does not dwell upon the suggestion, that time is the measure not only of motion but of rest as well: "For all rest is in time. For it does not follow that what is in time is moved, though what is in motion is necessarily moved. For time is not motion, but 'number of motion:' and what is at rest also can be in the number of motion."[18] Falcon notes that including rest is not problematic for Aristotle, since something at rest has the *capacity* to change.[19] We shall return to the importance of this passage below when we examine Crescas's emphasis upon time as the measure of rest.

For Aristotle, then, time is real and continuous, and it falls into the category of accident that exists in motion. What this means is that we have a perception of time only when we perceive motion or change. Kalâm occasionalists, for whom events have no ontological status apart from God's power, rejected this picture. The major figure in this school was Al-Ghazâlî, whose work was known to Jews through several translations and whose presentation of Kalâm atomism in his *Maqâsid al-falâsifah* (*Aims of the Philosophers*) may have been quite influential. In contradistinction to

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[16] Aristotle, *Physics* IV.11 219b1-2.

[17] Aristotle, *Physics* IV.12 220b15; *Physics* IV.12 220b15.

[18] Aristotle, *Physics* IV.12 221b8.

[19] Falcon, "Aristotle," 58.

Aristotle, whose ontology implies continuity and requires an abiding substrate to account for change, the underlying Kalâm ontology can be described in terms of occurrences, or events, in space and time with space/time coordinates. This occasionalist ontology has no room for effects and causes inasmuch as time itself is "an arbitrary convention of correlating coincident or simultaneous events."[20] On this occasionalist picture, the world appears as a set of synchronic time-slices, and movement from one to another state of the world is orchestrated by God, who recreates the world anew at each instant. More specifically, the main features of Islamic atomism can be summarized as follows: creation divides up into atoms of matter, qualities, space, and time. Every event can be analyzed into discrete moments, completely independent of one another and brought together by the will of God. Qualities exist only for a single instant, and substances persist by a process of continuous recreation at each instant (*khalq fi kull wâqt*).[21] On an occasionalist model there is no necessary connection between cause and effect other than what God has ordained; Aristotelian notions of time, change, and motion have been abandoned in favor of a robust theory of divine omnipotence.[22]

Our third theory, represented by Plotinus and his Neoplatonic successor Augustine, is the ideality or subjectivity of time. For Plotinus, time is a function of the movement of the life of the soul: it represents the product of the spreading out (*diastasis*) of the life of the soul. Time is dependent upon soul, and so, upon the return of the soul to the One, time itself will disappear. But the origin of time, and the soul, are unclear in Plotinus. Originally, time "was not yet time, but it too was at rest in

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[20] See A. I. Sabra, "Kalam Atomism as an Alternative Philosophy to Hellenizing Falsafa," in *Arabic Theology, Arabic Philosophy, from the Many to the One: Essays in Celebration of Richard M. Frank*, ed. James E. Montgomery (Leuvan, Paris, and Dudley, MA: Peeters Publishers, 2006), 207.

[21] See Pines, *Studies,* 2. See also Alnoor Dhanani, *The Physical Theory of Kalam* (Leiden: Brill, 1994).

[22] For discussion of the importance of the doctrine of divine omnipotence to Kalâm ontology, see T.M. Rudavsky ed., *Divine Omniscience and Omnipotence in Medieval Philosophy: Islamic, Jewish and Christian Perspectives* (Berlin: Springer Verlag, 1984).

Eternity."[23] Due, however, to the "officious nature" of world-soul, the world-soul moved away [and down] from eternity, and time moved with it. In this move away from eternity the world-soul "produced time as the image of eternity" when it produces the sensible world in imitation of the intelligible world.[24] What is interesting about this myth of generation is that in the beginning, time was both in eternity and yet distinguishable from it. Plotinus does not explain what accounts for the initial discontent of the soul, nor does he explain why time moves along with the soul away from eternity. Time itself is not a measure independent of the soul. Just as eternity exists in the intelligible domain, so too time exists in soul and with soul. Inasmuch as this spreading out or duration (*diastasis*) of soul is unmeasured and indeterminate, it is ultimately incomprehensible.[25]

One implication of the fact that time is not tied to the external world is that time acquires a subjective existence in the mind of its cognizers. Augustine has captured this notion succinctly in his famous dictum that "I have come to think that time is simply a distension (*distentio*) but of what is it a distension? I do not know. But it would be surprising if it is not that of the mind (*animus*) itself."[26] In a famous passage, Augustine revisits the very arguments used by Aristotle, but turns them against the Aristotelian theory of time. Augustine argues that present nows recede into the past and no longer exist; similarly, future anticipatory nows do not presently exist. Past and future nows exist only as instances of present/past memories and present/future anticipations; and of course the present now is ever fleeting. We are thus left with the unreality of time: "[W]e cannot truly say that time exists except in the sense that it tends

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[23] Plotinus, *Enneads*, III.7.11, 262.

[24] Ibid.

[25] Plotinus, *Enneads* III.7.12, 236. Wolfson and Harvey both have discussed the importance of the term *diastasis*; for details, see Warren Zev Harvey, "The Term '*Hitdabbekut*' in Crescas' Definition of Time," *JQR* (1981): 44-47; and H. A. Wolfson, *Crescas' Critique*.

[26] Augustine, *Confessions*, trans Henry Chadwick (Oxford: Oxford University Press, 1991), XI.33.

towards non-existence."[27] Time exists as a mental construction of human consciousness: "That present consciousness is what I am measuring, not the stream of past events which have caused it."[28] "It is in you, my mind, that I measure periods of time," he tells us.[29] Augustine reflects here Plotinus' notion of time as a '*diastasis*' or spreading out of the life of the soul. And as we shall see below, this notion of duration, distension, or extension (*diastasis; distentio)* plays an important role for both Crescas and Husserl.

Nowhere is the ideal nature of time portrayed as starkly as by McTaggart. Consider first McTaggart's distinction between two fundamentally different ways of conceiving of time: the B-series and the A-series.[30] The elements of the B-series are ordered by the relations *earlier than* and *later than*, and these relations hold sempiternally: as summarized by Roark, if it is ever true that event e_1 is earlier than event e_2, then it is always true that e_1 is earlier than e_2.[31] Time is thus a static feature of the cosmos, a feature that might fairly be called 'temporal extension' or 'duration'—the idea that time is 'stretched out.' But McTaggart then points out that the B-series of time does not provide the necessary conditions for genuine change. McTaggart thus introduces the A-series, which includes an additional feature in that the elements of the A-series are ordered by the relations *past, present* and *future*. Exactly one of the elements of the A-series enjoys the privileged status of "being absolutely present, and every element enjoys this status at some time or other. On this model, time is essentially dynamic, and reflects the nature of 'time's flow' or passage.

Why is the B-series inadequate to explain the nature of time? McTaggart will claim that time involves change, and change cannot be

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[27] Augustine, *Confessions,* XI.17.

[28] Augustine, *Confessions,* XI.36.

[29] Augustine, *Confessions,* XI.26.

[30] McTaggart's distinction between A and B series is laid out in McTaggart, *Nature of Existence.*

[31] Roark, *Aristotle*, 12.

explained without recourse to A-series terms. On the B-series, what we have are permanent relations between events; nothing ever changes in this description, and so it cannot be used to explain change and, hence, time. But according to McTaggart, there resides an inherent contradiction in the very terms 'past' 'present' and 'future.' This contradiction, already intimated by Aristotle and embellished by Augustine, will be reiterated by Crescas. McTaggart concludes that both the A-series and B-series must be rejected: "Nothing is really present, past, or future. Nothing is really earlier or later than anything else or temporally simultaneous with it. Nothing really changes. And nothing is really in time. Whenever we perceive anything in time—which is the only way in which, in our present experience, we do perceive things —we are perceiving it more or less as it really is not."[32] McTaggart concludes that time itself is unreal.

III. The Un-Aristotelian Turn: Crescas on Time

We have now put into play several competing theories of time. Time is either real, or it is the ideal product of human cognizing. Time is either continuous and infinitely divisible, or it is discrete and comprised of individual, indivisible temporal atoms. Alongside of the increasingly non (anti)-Aristotelian (and *ipso facto* anti-Maimonidean) stance, we must also note the fourteenth century attitudinal shift toward atomism.[33] Al-Ghazâlî's *Incoherence of Philosophy* (*Tahāfut al-falāsīfa)* was translated before 1411 by Zerahyah ha-Levi Saladin. Ghazâlî's continued popularity can be explained in part by the fact that he provided ammunition in defending the theological positions of Jewish anti-Aristotelians. The fourteenth century became witness to what Zonta has called a sort of "Jewish Ghazalism" based upon al-Ghazâlî's works, in that many aspects of his

[32] McTaggart, *The Nature of Existence*.

[33] For a discussion of the anti-Maimonidean turn in the fourteenth century, see T.M. Rudavsky, *Maimonides* (Hoboken: Wiley Blackwell Press, 2010).

thought were employed for defending similar aspects of Jewish religious tradition.[34]

The metaphysical implications of temporal atomicity with respect to "thingness" are quite stark. Temporal atomicity simply means that time is made up of discrete instants that do not coalesce and cannot be indefinitely sub-divided. In this world of discrete events, there are no Aristotelian substances, no natures, no forms or essences. Aristotle's notion of a continuous temporal stream has thus been replaced by discrete discontinuous instants. Furthermore, on an occasionalist model in which God is the cause of actions and events we observe in nature, there is no necessary connection between cause and effect other than what God has ordained. Aristotle and the atomists thus represent two diametrically opposed ways of approaching the issue of continuity versus discreteness of time.[35]

How does Crescas navigate this contrasting set of world-views? We noted above that Crescas's agenda requires dismantling the most noxious aspects of Aristotle's natural science, most notably his essentialism. Crescas shared with fourteenth century Christian Scholastics (e.g. Thomas Bradwardine; Jean Buridan) a backlash against Aristotelianism. This backlash is found in Crescas as well, further reinforcing Weiss's comments

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[34] See Mauro Zonta, "Influence of Arabic and Islamic Philosophy on Judaic Thought," in the *Stanford Online Encyclopedia of Philosophy* (2007). Whether Crescas actually employed al-Ghazâlî's work as one of the undeclared sources of *Light of the Lord* remains a source of contention. While Wolfson has rejected this hypothesis, others have recently argued for a direct influence of *Maqāsid* and *Tahāfut*. It is not inconceivable that Crescas was drawn to al-Ghazâlî's work because of its straightforward anti-Aristotelianism, an antagonism that Crescas shared for similar theological reasons. As Pines notes, the historian who seeks to place Crescas within the tradition of Arabic-Jewish philosophy cannot afford to ignore the many analogies between Crescas's physics and the theories that, in the Islamic orbit, were designated as Platonic. See H. A. Wolfson, *Crescas' Critique of Aristotle* (Cambridge, MA: Harvard University Press, 1929); Pines, *Studies*.

[35] See David J. Furley, "Treatment of Aristotle's Continuous Theory," in *Infinity and Continuity in Ancient and Medieval Thought*, ed. Norman Kretzmann (Ithaca, NY: Cornell University Press, 1982), 17-36. The contemporary relevance of these texts is discussed in Michael White, *The Continuous and the Discrete: Ancient Physical Theories from a Contemporary Perspective* (Oxford: Clarendon Press, 1992).

that Crescas introduced a series of new perspectives that aided in altering the character of physical theory. Crescas too sought to demolish the Aristotelian natural philosophy, and in so doing, Crescas subjected Aristotle's physics and metaphysics to a trenchant critique. For Crescas, Aristotle's essentialism and its concomitant ontological commitments are flagrantly expressed in Maimonides's *Guide for the Perplexed*, as well as in Gersonides' *Wars of the Lord*. Crescas emerges as a major critic of these views.[36] His views on time, creation, and the vacuum (or void) reflect his new direction.

Crescas's characterization of time occurs in *Light* Part I, in the context of elaborating Maimonides's summary of Aristotle's twenty-five metaphysical propositions. Crescas's template for Aristotle is clearly drawn from Maimonides's *Guide*. [37] In the *Guide for the Perplexed*, Maimonides had laid out twenty-three propositions summarizing Aristotle's metaphysics. The fifteenth proposition, which was introduced and discussed already by Maimonides, pertains to time and is summarized by Crescas as follows:

> Investigation of the fifteenth proposition, which states that, since time is an accident consequent upon motion and attached to it, neither of the two can exist without the other; motion cannot exist but in time, and time cannot be conceived apart from motion, and anything in which there is no motion is not subsumed under time.[38]

After quoting Maimonides's summary of Aristotle, Crescas then supplements it with Aristotle's own definition: "Aristotle defined time as the numbering of that which is earlier and that which is later in motion."[39]

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[36] For details of Crescas' predecessors, see T.M. Rudavsky, *Jewish Philosophy in the Middle Ages: Science, Rationalism and Religion* (Oxford: Oxford University Press, 2018).

[37] This discussion occurs in Crescas, *Light*, I.2.11 and I.2.15. Recent discussions of Crescas's theory of time and its relation to Aristotle can be found in the following works: Harvey, "Albo"; Harvey, "The Term 'Hitdabbekut'"; Harvey, *Physics and Metaphysics in Hasdai Crescas*(Amsterdam: J.C. Gieben, 1998); and H. A. Wolfson, *Crescas' Critique*.

[38] Crescas, *Light*, I.1.15, 58.

[39] Crescas, *Light*, I.1.15, 59.

Crescas rejects this Aristotelian/Maimonidean theory, however, and claims that time is not tied exclusively to motion. In Part II of *Light,* Crescas turns to a critical evaluation of this Aristotelian conception of time, replacing Aristotle's definition with his own:

> The correct definition of time, as it seems, is the measure of the continuousness of motion or *rest* between two instants. Indeed it is clear that the genus most appropriate to time is measure…it is measure in both motion and rest, since our conception of the measure of their continuousness is time. Therefore, it appears that the existence of time is in the soul.[40]

In this dense passage, Crescas makes several important points, both of which represent a rejection of Aristotle's theory. The first is that time can measure rest as well as motion. As noted earlier, Aristotle did allow for the possibility that time could measure rest, but he did not amplify this suggestion. Crescas states unequivocally that "time is measured with respect to rest without there being actual motion."[41] Even if we refer to the measure of something moving in rest, Crescas claims that "there is no need for there to be actual motion in that time."[42] More explicitly, "time is found without motion, and is measured in rest, or in a mere conception of motion even when it is not actual."[43] Although he does not specify or provide us with examples of rest, presumably what Crescas has in mind here is the absolute absence of all motion. Secondly, Crescas explicitly rejects Aristotle's definition of time as the measure of motion in accordance with *number*, replacing the specificity of number with the open-endedness of *measure*. Inasmuch as time belongs to continuous quantity and number belongs to discrete quantity, if we describe time as number, we describe it by a genus, which is not essential to it.

On the basis of these considerations, Crescas concludes that the existence of time resides in the soul. It is only because humans have a

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[40] Crescas, *Light*, I.2.11, 89.

[41] Ibid.

[42] Ibid.

[43] Crescas, *Light*, I.2.11, 90.

mental conception of this measure that time even exists. Harvey notes that, unlike his student Albo who was "the first medieval philosopher to affirm explicitly that time in itself is a phenomenon of the imagination," Crescas agreed with Maimonides that time is cognized by the intellect, but he added, as we saw, that it can be cognized without actual motion. The continuity of time depends only upon a thinking mind. It is indefinite, becoming definite only by being measured by motion.[44] This last point is reinforced by the use of the term *hitdabbekut,* which connotes continuity or duration.[45] Were we not to conceive of it, there would be no time. Crescas emphasizes that "it is necessary that time depend on our conceiving of a measure of continuousness, whether in motion or in rest."[46] With the continuity (*hitdabbekut)* of time dependent upon mind, we cannot help but be reminded of both Plotinus and Augustine. As noted above, Aristotle gestured toward an idealist view but did not incorporate it into his theory.

Turning to several implications of Crescas's notion of time, the first arises in his discussion of divine omniscience. One of Crescas's stated goals in *Light of the Lord* is to reject those arguments of the philosophers, and that of Gersonides in particular, that threaten divine omniscience. Crescas first responds to the claim that if God knows all events, then God is being perfected by this knowledge, but God cannot be affected by matters in the world. To the question whether temporal change from future to past affects God's essence,[47] Crescas responds that because God knows before the occurrence of an event that it will happen, God's essence does not change when the event actually occurs. But how can we call a thing possible if God knows before its occurrence how it will happen? In order not to minimize in any way the scope of God's knowledge, Crescas

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[44] For further discussion of Joseph Albo, see Harvey, *Albo*, 210; 218.

[45] Crescas, *Light*, I.2.15, 89. For a discussion of the term *hitdabbequt* and whether it means see duration or continuity, see Harvey, "The Term 'Hitdabbekut,'" 47. In this paper I follow Harvey's suggestion to translate the term *hitdabbequt* as continuity, although as Harvey points out, the term does take on the sense of 'duration' by the end of Crescas's discussion.

[46] Crescas, *Light*, I.2.11, 90.

[47] Crescas, *Light,* II.I.2,125ff.

attempts to distinguish two senses of contingency, arguing that a thing or event may be necessary in one way and possible in another.[48] According to Crescas, events known by God, although "possible in themselves," nevertheless are necessary with respect to their causal history. In other words, if God knows *p*, then the truth-value of *p* is determinate and is necessary in terms of its causes.[49] Giving the analogy of a person's knowledge, which does not change the nature of the possibility of the thing known, Crescas argues that similarly the knowledge of God does not change the nature of the possibility in question.[50]

Crescas thus reintroduces a theory according to which the future is as fixed as the past. On this view, ontological differences between past and future have vanished. The temporal and ontological conflation of past and future is evidenced even more strikingly in Crescas's description of God's knowledge as timeless. By "timeless" Crescas means that God's knowledge is outside the domain of time altogether. Equating divine foreknowledge with the knowledge of present events, Crescas states that "since God's knowledge is not subject to time (*bilti nofelet bi-zeman*), his knowledge of the future is like our knowledge of things that exist: it does not entail constraint and necessity in the nature of things."[51] By conflating present and future events, Crescas has eliminated the metaphysical openness of the future and reduced it to the necessity of the present. Any remaining possibility is "in the mind of the actor," as it were, and not in the event itself. And so the very doctrine of timelessness has removed any vestige of change in God's nature.

Another important implication of Crescas's rejection of Aristotelian theory has to do with his postulating the existence of the vacuum or void, which plays an important role in any atomist ontology. While the Kalam occasionalists posited void/vacuum between the temporal atomic units

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[48] Crescas, *Light,* II.1.4, 138.

[49] See Seymour Feldman, "The Theory of Eternal Creation in Hasdai Crecas and Some of His Predecessors," *Viator* 11 (1980): 289-320.

[50] Crescas, *Light,* II.1.4, 141.

[51] Crescas, *Light,* II.5.3, 196.

that are constantly recreated by God, most medieval philosophers followed Aristotle in not embracing the existence of vacuum. Crescas reintroduces the importance of the vacuum into his ontology. According to Crescas, place is prior to bodies: the "true place of a thing" for Crescas is not a mere relationship of bodies but is the "the interval between the limits of the encompasser."[52] Space is construed by Crescas as an infinite continuum ready to receive matter. Because this place or extension of bodies is identified with space, there is no contradiction in postulating the existence of space not filled with body, i.e., the vacuum or void.[53] Crescas, in fact, assumes that place is identical with the void: "the true place is unoccupied space…it is fit that a place be equal to that which occupies it…both the whole and its parts."[54] In rejecting Aristotle's abhorrence of the void, Crescas hearkens back to occasionalist models that posit the existence of atoms and void.

These depictions of time play out in Crescas's discussion of creation in *Light* IIIA.1. Without entering into the intricacies of this technical discussion, several important points can be made. Crescas takes as his point of departure the doctrine of creation *ex nihilo* and tries to show that eternal creation is a plausible doctrine even in the context of creation *ex nihilo*. Crescas rejects Gersonides' arguments against creation *ex nihilo,* and he posits "absolute creation out of non-existence."[55] Reflecting the Kalâm emphasis upon both divine omnipotence and divine will, Crescas claims that God's infinite powers are not temporally limited. Inasmuch as God acts under no physical or temporal constraints, God is able to create a world that is infinite in duration, or eternal. The world is both created by an act of will—"God created and brought the universe into being at a certain instant"—and eterna—"what is entailed is constant creation but

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[52] Crescas, *Light*, I.II.2, 75.

[53] For a detailed analysis of Crescas's conception of space, see Crescas, *Light*, I.1.1, 30-46. See also Herbert Davidson, *Proofs for Eternity, Creation and the Existence of God in Medieval Islamic and Jewish Philosophy* (Oxford: Oxford University Press, 1987), 253ff.

[54] Crescas, *Light*, I.II.2, 76.

[55] Crescas, *Light,* IIIA.1, 276.

not out of a thing."[56] This last point reflects the Kalâm occasionalist emphasis upon God both willing the existence of the world and constantly recreating the events in the world at every instant.

As did both Augustine and al-Ghazâlî, Crescas must address what Sorabji has called the "why not sooner argument," namely, why did God choose to create at one instant rather than at another? Crescas asks, "Why did He bring it [the universe] forth at a certain instant when…all instants are equivalent."[57] Acknowledging the difficulty of the question, Crescas provides several responses. He first suggests that, inasmuch as all instants are equivalent for God, God's will must be "eternally anterior to all instants," and God could not have chosen one instant over another. But perhaps realizing that his initial response was inadequate, Crescas then returns to the "why not sooner" argument, and offers a second response, namely that God may have created and destroyed any number of worlds: there is constant creation in that worlds come to be and pass away at a certain instant, either "with the coming-to-be and passing-away of individual worlds, or with each world exceeding the preceding one in its level of perfection."[58] Echoing Gen Rabbah 3:7, he suggests that "it is possible that the world in which we exist…will pass away and another world will follow it."[59]

Numerous commentators have tried to make sense of Crescas's apparently contradictory theory of creation.[60] On the one hand, Crescas posits an initial instant which marks the creation of time, but on the other hand, he does not totally reject the doctrine of eternity, claiming that "creation" of the world need not refer to a temporal beginning. Feldman, for example, offers a reading that interprets eternal creation as "the continuous and limitless creation by God of an infinite series of worlds, each of finite duration. Thus interpreted, eternal creation implies eternal

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[56] Crescas, *Light*, III.A.1.5, 276.

[57] Ibid. For many examples of this argument, see Sorabji, *Creation, Time and the Continuum.*

[58] Crescas, *Light*, III.A.1.5, 276-7.

[59] Crescas, *Light*, III A. I.5, 277.

[60] For further discussion of this theory of creation, see Feldman, *Theory*, 289-320.

creativity: it is not the product that is eternal but the activity of creation."[61] On this reading, eternity does not pertain to temporality but to the never-endingness of time. An alternative reading has it that God creates an infinite series of worlds, each of which exists for an indivisible unit of time; this indivisible unit is then replaced indefinitely. [62] This latter interpretation contains echoes of Al-Ghazâlî's contention that God constantly creates and recreates indivisible nows.

IV. Husserl and Crescas: A Preliminary Conversation

Thus far I have argued that Crescas's rejection of an Aristotelian theory of time has had profound implications for his overall theory of time and creation. His insistence upon a vacuum reinforces the fragmented nature of both spatial objects and time itself; it also accounts for the space between discrete events. This fragmentation is further reinforced in the works of Husserl whose theory of internal time-consciousness bears a striking resemblance to Neoplatonic and atomist theories. The points of contact between Crescas, McTaggart and Husserl reside in their respective depictions of the "now". We have already alluded to various influences upon Crescas's discussion of time, as seen in the works Aristotle, Maimonides, Augustine and al-Ghazâli. A similar picture of time emerges in the work of Husserl.

We saw above that for McTaggart, past, present and future become mutually exclusive attributes of atomic, fully fixed units, leading him to declare that time is unreal.[63] The discreteness of temporal units obsessed

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[61] Feldman, *Theory*, 317.

[62] I owe this second interpretation to an anonymous reader of the manuscript.

[63] Contemporary debate has centered around whether tensed sentences can be translated into tenseless sentences, and which, if either, describe time as it "really" is. A-theorists will want to argue that our experience of time includes the experience of the mind-independent A-properties of past, present, and future, with the focus on the immediacy of the 'now' and the sense that it moves through time. Only by the movement of the instantaneous 'now' can passage through time be explained. So the question is whether we in fact experience a "mind-independent property of presentness that provides the sense of the now point." For further discussion of the various contemporary camps, see Rosenthal, *Time,* 38.

Husserl as well, as he grappled with the underlying flow of phenomenological perception. The problem of the genesis and origin of time remained central to Husserl throughout his life. Andrews notes that the *Ideas* and Husserl's Encyclopedia article, along with his 1905 lectures on internal time-consciousness, "betray a vast ocean of complex insights with which Husserl was continuing to wrestle long after he was first introduced to the problem of the origin of time by Brentano."[64] Echoing Augustine's famous cry in the *Confessions*, Husserl notes that "naturally, we all know what time is; it is the most familiar thing of all. But as soon as we attempt to give an account of time-consciousness, to put objective time and subjective time-consciousness into the proper relationship…we get entangled in the most peculiar difficulties, contradictions, and confusions."[65]

In phenomenological time, there are no individual objects; all that exists is the metaphorical 'flux' of successive points of actuality from which springs every 'now.'[66] The now has a certain privileged status and functions as a point of orientation: "the now supplies the point of reference for temporal experience. It is in relation to the now that things and events appear as past or future."[67] But do actual nows become past nows? Strictly speaking, the very notion of a "past now" is odd, since "past" and "now" exclude one another. The now does not exist by itself; it is always accompanied by "past" and "future" which join the now to form the temporal fringe or horizon in which every temporal object is given. The now is thus a relative concept." Further, how do we understand the apprehension of temporal objects that are extended over a duration, and are changing? Can we unite these successively elapsing representing data

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[64] Michael F. Andrews, "Edmund Husserl: The Genesis and Origin of Time," in *Timing and Temporality in Islamic Philosophy and Phenomenology of Life*, ed. A.T. Tymieniecka (Dordrecht: Springer Verlag, 2007), 113-127, 114.

[65] Husserl, *PITC,* 21.

[66] Andrews, *Edmund Husserl*, 119.

[67] See introductory comments by the editor in Husserl, *PITC,* xxvi.

in one "now-moment"?[68] As noted above, Husserl distinguished in his 1905 lectures between objective and phenomenological time: objective time includes all temporal distinctions, including all material and mental things with their physical and mental properties, and that can be qualified by chronological measurement. The phenomenological content of lived experiences of time necessitates the exclusion of every lived experience; thus phenomenological time is a "living stream of experience [*Erlebnis*]."[69] Husserl writes that "just as a real thing or the real world is not a phenomenological datum, so also world-time, real time, the time of nature in the sense of natural science…is not such a datum."[70] He then criticizes Aristotle, saying that "the form of time is itself neither the content of time nor is it a complex of new content added to the time-content in some fashion or other."[71] In other words, Husserl is not interested in time insofar as it reflects the *result* of the measuring, but rather as an *activity* of the measuring.

Husserl agrees with Aristotle that all things are "in" time, but what he means by this is not an objective temporal stream, but rather an immanent flow of consciousness. We can say of a thing that it is "in" time, by which we mean that it is constituted in a multiplicity of apprehensions that run off as a succession.[72] How then do we position an object of consciousness? Husserl argues that we must keep separate in time-consciousness the flux, appearance, and temporal objects. The problem is not only how to account for changes through time, but what we actually mean by postulating temporal objects.

Husserl's phenomenological analysis of physical bodies clearly carries with it an atomistic component. Compare Husserl's analysis to Crescas's discussion of divisibility. In support of his theory of the infinity of

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[68] Husserl, *PITC*, 24.

[69] Andrews, *Edmund Husserl*, 115.

[70] Husserl, *PITC*, 23.

[71] Husserl, *PITC*, 40.

[72] Husserl, *PITC*, 42.

vacuum, Crescas distinguishes two types of divisibility: that which comprises composition and that which does not. A syllable, for example, is divisible into letters and composed of letters, whereas a mathematical line is divisible into linear parts but not composed of these parts. In the latter case the linear parts are bounded by points, and so if the line were composed of parts, it would be composed of points. But we know (from Euclid) that a line is not composed of points. and so Crescas is able to conclude that when a thing is continuous and homogenous, it is divisible into parts but not composed of parts. Because Crescas posits the existence of a vacuum, he is able to accept incorporeal extension or magnitude.[73]

Crescas's analysis of the infinite divisibility of the vacuum adumbrates Husserl's famous example of listening to a melody. How can we actually "hear" a melody, when each of its parts recedes in time?[74] Husserl introduces what he calls "width of presence."[75] When we hear three tones CDE, we hear CD as temporally successive, not simultaneously with E. D and C are tones that have been perceived as past.[76] Time's unceasing flow seems to cut the ground from under philosophical reflection on time. Since the now is gone, not even the now is available to reflection; absolute skepticism seems inevitable. In order to avoid skepticism, Husserl introduces what he terms retention and anticipatory expectation. I can be conscious of what is just past; the very slipping away of time is available to me as something on which I can reflect. This consciousness of the immediate past Husserl calls "retention." As the tone recedes into the ever-distant past, I still hold on to it, I have it

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[73] Much more needs to be said about Crescas's conception of the infinite and the notion of infinite extension and division. See Wolfson, *Crescas' Critique*, 32-69 for an introductory overview of these issues.

[74] Husserl's teacher Brentano had given an account of how we hear a melody and understand its intentional content to traverse temporal spread. As was the case with Kant, our grasp of a temporally extended object requires both reproduction and the temporal positioning of the reproduced content.

[75] Dan Zahavi, *Husserl's Phenomenology* (Stanford: Stanford University Press, 2002), 82.

[76] Husserl, *PITC*, 25.

"in a 'retention.'"[77] As long as this retention lasts, the tone retains its own temporality; its duration is the same. I experience this tone not as "now," but as "immediately past." When the final point of the melody is reached, I am conscious of this final point as the "now-point and of the whole duration as elapsed."[78] The importance of memory cannot be over-emphasized. Husserl argues that "memory is in a continuous flux because conscious life is in constant flux and is not merely fitted member by member into the chain…everything new reacts on the old."[79] In this way our phenomenological perception of experiences, rooted in an atomist ontology in which temporal nows are ontologically discrete, is combined with an idealist theory of time.

V. Conclusion

The interrelationship between time, cosmology and creation in medieval Jewish philosophy is exceedingly complex, particularly in light of existing theological constraints. Although the early biblical and rabbinic works did not contain an ontology of time or place, the theological assumptions and constraints underlying these works reverberated throughout the medieval Jewish literature. The Kalam atomists, Crescas, McTaggart, and Husserl all deviate from the standard Aristotelian depiction of time in terms of motion. Employing elements which are implicitly embedded in Aristotle, Crescas emphasizes the discontinuity of time and motion. From this discontinuity Crescas develops two implications: the first has to do with the subjectivity of time, while the second emphasizes the dissociation of time from creation. The subjective nature of time is further developed by Crescas's student Albo, who emphasizes the role played by imagination in perceiving time.[80] The role of imagination is then emphasized and embellished by McTaggart and

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[77] Husserl, *PITC*, 25.

[78] Husserl, *PITC*, 26.

[79] Husserl, *PITC*, 78.

[80] For a discussion of Albo's theory, see Harvey "Albo."

Husserl: McTaggart separates the two streams A and B, altogether, while Husserl emphasizes the roles played by retention and anticipation in his phenomenological analysis of time perception.

By placing Crescas in conversation, as it were, with McTaggart and Husserl, we can see that the very same problems plague all three thinkers as they try to refine what a thing is. I started this study by suggesting that our metaphysical conception of what constitutes a "thing" is intimately tied to our conception of time. "Things" are said to exist "in time," to perdure or continue to exist through temporal flux, to have an identity that survives change. But how does the continuity or discreteness of time affect the metaphysical integrity of "things"? Consider a world in which everything is in constant flux. Time is real, time flows in a duration, and objects are part of this flow. Most philosophers assume that objects do persist through time, and they attempt to come up with criteria both necessary and sufficient to render an object O at t_1 the "same" as object O at t_2. As put by Haslanger, the question at issue is not whether objects persist through change. Persistence assumes that they do; rather the challenge is, what is it for ordinary objects to persist through change at all?[81] It should come as no surprise, then, that in their rejection of Aristotelian essentialism, our thinkers inevitably struggle to retain a notion of "thingness". Al-Ghazâlî resorted to the force of habit placed in us by God; Crescas to duration or continuousness; Husserl to the phenomenological strength of memory and anticipation. Whether they succeed is the subject of yet another conversation.

[81] Sally Haslanger, "Persistence Through Time," in *The Oxford Handbook of Metaphysics*, ed. Michael J. Loux and Dean W. Zimmerman (Oxford: Oxford University Press, 2006), 314-353, p. 319.