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Why Can't Angels See Our Future? Aquinas's View of the Relation between Continuous and Discrete Time

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Abstract: Aquinas's account of angelic cognition presents an intriguing puzzle. Aquinas denies, for both theological and philosophical reasons, that angelic natural knowledge extends to future contingents. Yet Aquinas also insists, strictly for philosophical reasons, that angelic life is measured by a "discrete time" radically distinct from our physical universe's continuous time. How can two times share the same "now," such that what is future for us would also be future for the angels? Aquinas does little to address this problem, but I propose two possible solutions. Both solutions argue that angelic instants, like the instants of aeviternity and eternity, can be simultaneous with physical time periods, but only if the corresponding act aims at physical things. This means the angel cannot "skip" physical time, and so determinately aligns angelic instants with physical times. The solutions diverge over whether the extensionless angelic instant is simultaneous with the physical time period all at once, like God's eternity, or successively, thanks to a temporally extended simultaneity-relation. The first solution prevents angelic natural foreknowledge of what follows an angelic intervention, since intervention requires a new angelic instant. The second solution prevents angelic natural foreknowledge *tout court* by tying "all-at-once" simultaneity to causal knowledge, which is God's unique privilege.

Keywords: Aquinas; angels; foreknowledge; future contingents; prophecy; time; discrete time; continuous time; aeviternity; eternity



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1. Introduction: Aquinas's Two Apparently Conflicting Claims about Angelic Time

Aquinas's account of angelic cognition presents an intriguing puzzle, and also, perhaps, an example of a tension between Aquinas's philosophical and theological commitments. On the one hand, Aquinas denies that angels can know future contingent events by natural knowledge; it is God's unique privilege to see all times in one glance. This claim that knowledge of our future is proper to God rests in part, though not entirely, on Revelation. On the other hand, Aquinas also denies that angels exist or act in the time that measures the physical universe—this time for strictly philosophical reasons.

The resultant puzzle is this: if angels (including demons) live and act in a different time than we do, why is *our* present visible to them while *our* future remains opaque to their natural knowledge? Is it not the same thing to deny that angels share our "time" and to deny that they share our "now"? And if their "now" is not our physical "now," why would any particular physical "now" be uniquely tied to a particular angelic "now"? Rather, it would seem that, if angels are indeed measured by a time different from ours, then all physical times should be equally related—and equally unrelated—to any given angelic "now." Conversely, if angels really do see our physical present but not our physical future, it would seem to follow that at least the angel's act of knowledge is measured by our physical time after all.

This puzzle has received surprisingly little attention in recent scholarship, even though both of the claims that constitute it are well known. To address this lacuna, I will proceed in the following order. First, I will discuss passages where Aquinas insists that angelic knowledge of physical contingent events is limited to the present (physical) moment.

Here I will discuss both his philosophical and theological reasons for this claim. Second, I will discuss passages where Aquinas insists that angelic time is different from ours and outline his philosophical reasons for that view. Third, I will discuss passages where Aquinas considers this problem and gives a cryptic and somewhat unsatisfactory response. Finally, I will attempt to fill out that response by providing two possible and, I believe, original accounts of how an angelic instant, while remaining intrinsically unextended, might nonetheless be mapped, on Aquinas's terms, onto a determinate, non-arbitrary stretch of physical time. These accounts will allow Aquinas to preserve the radical difference between angelic time and ours while still providing an objective basis for differentiating our present and our future from the angelic perspective.

2. Aquinas's Claim That Angels Do Not Know Future Contingent Events by Natural Knowledge

For Aquinas's position on the angels' natural knowledge of future contingents,¹ let us look to the thematic treatments at *Summa theologiae* [ST] I.57.3 and *De malo* 16.7. Aquinas grants that angels, based on their complete natural knowledge of present natural causes, can *infer* future events with certainty if they follow necessarily from those present causes,² and also that they can form well-educated inferential *conjectures* (far better than ours) about future events if those events follow probabilistically from those present causes. He denies, however, that angels or demons have *direct* natural knowledge of any future events at all—that is, natural knowledge of future events *in themselves*, as opposed to in their causes.

His philosophical argument for this claim in the two treatments we are considering is roughly as follows.³ Only God's eternity is simple, without distinction between past, present, and future; hence, only God's eternity is equally present to (indeed, "surrounds") all times, such that God knows them *as present*.⁴ However, only what is known as present can be known *in itself*. This is because a thing must exist in itself in order to be true in itself, and it must be true in itself in order to be known in itself; future things, *as future*, do not yet exist in themselves; so neither are they yet true in themselves,⁵ nor can they yet be known in themselves. The upshot is that any knower who is subject to time, and who, therefore, is related to future things *as future* rather than *as present*, cannot know future things in themselves—that is, cannot see the future. (Obviously, angels do not "see" in the sense of having the sensory power of sight; I will, however, use the term "see" throughout as shorthand for knowing contingent things as actually existing or "in themselves," which Aquinas thinks angels do by intellectual judgment.)

The thing to note is that Aquinas takes it as given here that angels are indeed subject to time, and apparently not just to time but to the *same* time as we are (such that what is "present" for us is also "present" for an angel); and as we will see, this is far from an obvious assumption given Aquinas's metaphysics. Before exploring this difficulty, however, let us first consider Aquinas's theological arguments that angels do not see the future.

One theological argument, which is contained in both ST I.57.3 (in the *sed contra*) and *De malo* 16.7 (at the end of the *corpus*), is an appeal to Is 41:23: "Tell us what is to come hereafter, that we may know that you are gods."⁶ In other words, the ability to predict the future—to prophesy—belongs solely to God. Now, to be sure, God may share his eternal vision to some extent with creatures; indeed, Aquinas holds that God does so in a special way with the highest blessed angels, who then in turn share it with lower ones, who in turn share it with the human beings we call prophets.⁷ However, the fact that vision of the future is at root a unique divine prerogative is why Aquinas thinks prophecy is one of the reasons for the credibility of the Christian faith⁸ (though demons, and to a lesser extent human wise men, may simulate it⁹).

A related theological argument, which appears in ST II-II.95.1 (on divination), is that the reason why divination is a sin of superstition is precisely the fact that seeing the future is, again, a uniquely divine prerogative. After giving the same philosophical argument that knowledge of future contingent things is possible only in God's eternal present, Aquinas again quotes Is 41:23 to argue that any creature who independently attempts to see into the

future “manifestly usurps to himself what is proper to God,” and that this “usurpation” is the reason why divination is a sin.¹⁰

These philosophical and theological arguments recur throughout Aquinas’s various treatments of the topic.¹¹ We might also add a third theological argument, which is that there are certain particular events—chiefly Christ’s second coming—which Scripture tells us are known *only* to God, not to any creature. If the whole of physical history were by nature “spread out” before the angels as it is before God, this Scriptural claim would be false.¹²

We have, then, four arguments: one philosophical and three theological. (1) The philosophical argument is that only eternity can be equally present to all times. (2) The first theological argument hinges on the reliability of prophecy as a motive of credibility. (3) The second theological argument is based on the evil of divination as a “usurpation” of divine privilege. (4) The third theological argument is that there are certain specific historical events which, according to Scripture, only God knows.

3. Aquinas’s Claim That Angels Neither Exist Nor Act in Physical Time

The difficulty for Aquinas’s rejection of angelic foreknowledge arises from another philosophical claim Aquinas makes about angelic nature: namely, that angels neither exist nor act in physical time. Rather, in Aquinas’s view, angels *exist* in “aeviternity” (the *aevum*) and *act* in a “discrete time” which is “annexed” to angelic aeviternity, neither of which is our continuous physical time. He thus posits no fewer than four measures of duration (where “duration” roughly means “a thing’s existence or action considered with respect to its mutability or immutability”¹³): our physical time at one extreme, God’s eternity at the other, and both angelic aeviternity and angelic discrete time in between them. Our central question concerns the relation between angelic discrete time and our own continuous physical time: if angels do not share our physical time, how can any of our times count as uniquely “present” to them, such that there would be a meaningful distinction between their knowledge of *our* present and of *our* future?

3.1. Aeviternity: The Measure of Angelic Existence

Before answering this question, a brief discussion of Aquinas’s view of aeviternity is needed. This will help clarify some key aspects of Aquinas’s theory of discrete time, especially the simple, all-at-once character of immutable things’ duration and the way simple duration can relate to divisible duration.

Aquinas’s theory of angelic aeviternity might be summed up as follows.¹⁴ He thinks that, since angels lack matter, and matter is the principle of substantial change, it follows that angels are not subject to substantial change; but time is the measure of change in changeable things; so it follows that angels are not in time with respect to their substantial being. Rather, their essence receives existence “all at once,” *totum simul*, not over time.¹⁵ Hence, the angels’ substantial being, instead of being measured by time, is measured by aeviternity, in which there is no “before” and “after.”¹⁶ (Notably, this argument applies, *mutatis mutandis*, not only to angels but also to other incorruptible creatures: Aquinas, therefore, considers human souls and the heavenly bodies to be “aeviternal” as well.¹⁷) Thus, aeviternity’s “now,” instead of moving through successive parts of time, stands still,¹⁸ and its measure is the unit rather than the number line.¹⁹ Since the central note of eternity is precisely this same stationary, *totum simul* possession of existence, one can easily see why Aquinas sometimes calls aeviternity a “participation in eternity.”²⁰

Aeviternity is only a “participation” in eternity, however, and not an actual instance of eternity; hence, Aquinas also sometimes calls it an “intermediate between time and eternity.”²¹ There are perhaps three chief differences that, in Aquinas’s view, separate aeviternity from God’s eternity.

The first, most fundamental difference is that, while eternity measures that which is its own simultaneously whole existence, aeviternity measures that which has *received* its simultaneously whole existence from another.²² This is just another way of saying that

eternal things alone exist necessarily through themselves (in the terminology of Aquinas's Third Way), while aeviternal things, despite their incorruptibility, *could* have not-existed; it is thus a difference in "duration" in the sense of "stability" or "permanence."²³

Closely tied to the first difference is the second: that aeviternity, unlike eternity, is *compatible* with having both a beginning and an end. Now, Aquinas does not explicitly identify this compatibility as a distinguishing characteristic of aeviternity.²⁴ However, God's eternity does clearly lack this compatibility, and angelic aeviternity does clearly have it in Aquinas's view, given his religious belief in the angels' temporal beginning²⁵ and his philosophical view that God could annihilate any creature if he wished.²⁶

One might well wonder, though: what could it mean for something aeviternal and changeless to "begin" or "end," given that its existence is measured only by the same single stationary instant no matter what? Aquinas's answer is essentially that it means something *relative* rather than absolute: namely, whether or not the aeviternal being exists *simultaneously* with other beings (either real or possible).

Now, it might seem rather odd that aeviternity should be "simultaneous" with physical time at all. After all, Aquinas insists that aeviternity's stationary "now" is different from time's flowing "now";²⁷ and one might think that sharing the same "now" is a necessary condition for (if not an outright definition of) being "simultaneous." Nonetheless, Aquinas thinks it is not. As he states in *Scriptum super libros Sententiarum* [*In Sent.*] I.19.2.2 ad 1, things in two different "nows" can still be simultaneous (*simul*) if one of the "nows" is an "exceeding measure" (*mensura excedens*) of what is taking place in the other "now." Thus, though a physical event is "in" the temporal "now" alone as in its "proper and adequate" measure, it is also "in" the angel's aeviternal "now" and God's eternal "now" as in an "exceeding" measure. Conversely, God's existence and the angels' existence are "in" the temporal "now" merely as "concomitant" with it, not as measured by it at all.²⁸

Aquinas does not spell out the meaning of these three different types of simultaneity, but one can make some educated guesses. (1) A and B are presumably simultaneous in the merely "concomitant" sense so long as one of them could act immediately on the other or, if it is a spiritual being, know the other in itself (rather than merely in the other's causes or effects). (2) Conversely, A would be simultaneous with B as contained "in an exceeding measure" (e.g., a physical thing existing simultaneously with an angel) if, in addition to meeting the "concomitance" criteria, B's higher "now" is not tied one-to-one to A's lower "now," but rather includes (or at least could include) a whole range of lower "nows."²⁹ (The reason the "exceeding now" can include a whole range of lower "exceeded nows" is, in turn, arguably because of the metaphysics of participation: the duration measured by the former is possessed in full, while that measured by the latter is possessed only in part.³⁰) (3) Lastly, A would be simultaneous with B in the "proper and adequate measure" sense if, in addition to mere "concomitance," A and B share the same "now." Thus, sharing the same "now," rather than being necessary for simultaneity in general, is only necessary for being simultaneous ("concomitant") with something whose duration belongs to the same order (e.g., two physical events or two angelic existences).³¹

This account of aeviternity's "concomitant" simultaneity with time allows Aquinas to explain what it might mean for an aeviternal thing to "begin" or "end." Regarding the possibility of annihilation, even though the angel's aeviternal existence has no *intrinsic* past or future and thus cannot be interrupted or shortened *in itself*, God can still prevent that existence from being *simultaneous* with our own future time.³² By the same token, to say that an aeviternal being "began" to exist is simply to say that its existence is not simultaneous with some part of our past—either a real part (as in the case of human souls created in the midst of physical history) or at least an imaginary, backward-projected part (as in the case of the angels created at the beginning of the universe, before whom there is still imaginary duration but no actual duration).³³

Finally, the third difference between aeviternity and eternity, and certainly the most important one for our purposes, is this: that aeviternal beings, even though their *existence* is simultaneously whole, can—indeed, must—engage in a succession of *acts*. This is due

to Aquinas's view that [1] angels' natural knowledge requires having multiple intelligible species in order to grasp the whole of reality,³⁴ and that [2] they cannot activate more than one of their innate intelligible species at a time, since no power can be actually informed by competing forms simultaneously, nor can any act aim at disparate objects. Hence, if an angel wishes to consider more than one aspect of reality (and to will or intervene accordingly), he will have to transition from one cognitive act to another.³⁵ However, any successive sequence must be measured by a kind of time. Hence, aeviternity, unlike God's eternity, is "conjoined" to time.³⁶ In other words, even though angels' *existence* is measured by aeviternity's single, stationary instant, the sequence of their *actions* is measured by time.

This angelic time, however, is quite different from our own physical time. Let us turn then to examine angelic time's peculiarities and how it might nonetheless be related to our own time, bringing to bear the expanded notion of "simultaneity" that we gained from our examination of aeviternity.

3.2. Discrete Time: The Measure of Angelic Operation

To understand what Aquinas means by "discrete" time,³⁷ let us begin by considering the reason why he ascribes it to angels: namely, his claim that angelic motion is non-continuous (i.e., "discrete"). As a representative text, let us take *In Sent.* I.37.4.1, on the possibility and nature of angelic motion.³⁸ After discussing a metaphorical sense of angelic motion (their reception and transmission of divine illumination), Aquinas turns to literal angelic motion in time and place. He begins with the point discussed at the end of the previous section, which is that angels can only make use of one intelligible species at a time and that, therefore, their knowledge involves succession. He calls this succession "motion through time." However, it is "motion" only in a broad sense (*largo modo*), for, unlike Aristotelian physical motion from *potency* to act, this motion is from *act* to act and (most importantly for our purposes) is not continuous. This is because the continuity of motion derives from the continuity of that in which the motion takes place (*ejus super quod est motus*),³⁹ but there is no continuity between two concepts or between two affective acts, as there is between two places. Hence, the change from one spiritual act to another is merely successive, not continuous.

What about "motion with respect to place"? For Aristotle ordinary local motion is a paradigmatic instance of continuous motion; yet in the angel's case it too must be non-continuous, at least according to this passage from the early *Sentences* commentary (though, as we will see, Aquinas qualifies this claim in his later treatments at *ST* I.53.1–2 and *Quodlibet* [*Quodl.*] I.3.2). This is because an angel is only "in" a place insofar as it *acts* on that place,⁴⁰ and so only "moves" from one place to another insofar as it *acts* on first one and then the other; but there is no continuity between the angel's causal acts on places, any more than between its intentional acts of knowing or loving. Hence, this "motion" is also successive—discrete—rather than continuous.⁴¹ Thus, the only "before" and "after" for an angel lies in the discrete sequence of his actions.

However, in Aquinas's view, this "discrete motion" implies "discrete time." As Aquinas argues two articles later in *In Sent.* I.37.4.3 (on whether angelic motion happens in an instant), time, *as such*, is simply the "number of before and after," and the number *as such* is discrete rather than continuous quantity. Time, like quantity in general,⁴² only acquires continuity from the continuity of its *subject*: in time's case, the motion it measures.⁴³ That motion itself, again, is only continuous because of the continuous extension (*magnitudo*) through which it moves. However, since angels are "in" that extension only as acting on it, not as contained by it, their motion through that extension need not take on its continuity; rather, as we saw, their motion consists in successive, non-continuous operations on different places (at least in Aquinas's early view). Hence, the time measuring this non-continuous motion is not continuous either; that is, it is *not* true that there is always an intervening stretch of time between any two instants of this time. Rather, this time is atomic ("discrete"), composed of successive instants ("nows"), each of which corresponds

to an angelic operation—even (again, at least in Aquinas’s early view) when the objects of those operations are continuous places:

Hence, since the motion of the angel is not continuous, . . . so too the corresponding time is not continuous but rather is composed of “nows” following each other, taking “time” as the number of the successive operations themselves, in the same way that the succession itself of operations is called “motion.” And however many operations there are out of which the motion with respect to different places is composed, there will be that many “nows” out of which the time is composed.⁴⁴

Notably, this claim that angelic time is composed of “discrete” moments, each corresponding to an angelic act, presumes not only that there is no time *between* angelic acts but also that there is no time *within* angelic acts (i.e., that the duration of angelic acts is not intrinsically extended into “earlier” and “later” parts). In fact, although Aquinas does not make this claim explicitly in *In Sent.* I.37.4.3, he does so elsewhere, including in a particularly striking way in *Quaestiones disputatae De veritate* [*De ver.*] 8.14 ad 12 in a discussion of angelic cognitive acts:

Those operations which possess their complete species immediately [*statim*] are not measured by time except *per accidens*, for example, understanding, sensing, and the like, which is why the Philosopher says in *Nic. Eth.* X[5.1174b8] that “taking delight” is not in time. Such operations can be in time *per accidens*, however, insofar as they are conjoined to motion by existing in a nature subject to time, namely the generable and corruptible corporeal nature which the sense powers use as an organ, and from which our intellect also receives. Hence, it is clear that the understanding [*intelligere*] itself of the angel does not fall under time either *per se* or *per accidens*; wherefore there is no before and after [*prius et posterius*] in one operation by which he understands one intelligible.⁴⁵

Because of their interior immutability, angelic acts are interiorly timeless and, thus, properly measured by a single instant.

Notably, Aquinas does not hesitate to affirm this interior immutability even of angelic cognitive acts of observing our changeable world, as, for example, in *De ver.* 8.9 ad 3:

Since knowledge takes place [*sit*] through the knower’s becoming similar [*assimilari*] to the known thing, one gains new knowledge of something in the same way that one becomes newly similar to something. This happens in two ways: first, by one’s own movement; second, by something else’s movement toward a form one already possesses. Likewise, someone newly begins to know something in one way by newly receiving the form of the thing known, as happens in us; in another way, by the fact that the known thing newly attains the form that is in the knower. And it is in the latter way that the angels newly know present things that previously had been future. For example, if something was not yet a man, the angelic intellect will not yet have become similar to it by the form of man that the angel possesses; but when it begins to be a man, the angelic intellect begins to be similar to it according to that same form, *without any change on its side*.⁴⁶

This is a striking claim: angels, according to Aquinas, can watch changing physical history unfold without any change whatsoever in their own intellects. The central principle undergirding this claim is that a pure intellect’s knowledge of contingent things in their existence and presence requires nothing more than the formal likeness between an activated intelligible species in the knower’s mind and the contingent thing itself. The change by which a contingent object newly begins to be present to such an intellect may thus be entirely on the side of the object.

This is radically unlike our own human awareness of change, which in this life involves both a continuous change in our sense organs and, in our intellect, the formulation of a series of distinct propositions corresponding to the distinct stages of the unfolding event.⁴⁷ Angels, of course, have no sense organs to undergo continuous change. However, Aquinas

further denies that they formulate any propositions at all (let alone a series of them). We may find this claim in *ST* I.58.4:

If the intellect, in its apprehension of the subject's quiddity, were immediately aware [*haberet notitiam*] of everything which can be attributed to or removed from the subject, it would never understand by composing and dividing, but only by understanding the thing's essence [*quod quid est*]. Therefore, it is clear that it is for the same reason that our intellect understands by discursive reasoning and by composing and dividing: namely, because it cannot instantly inspect whatever is virtually [*virtute*] contained in something newly apprehended in its first apprehension thereof. This is due to the weakness of the intellectual light in us, as has been said [I.58.3]. Hence, since there is a perfect intellectual light in the angel . . . it follows that the angel, just as it does not understand by reasoning [*ratiocinando*], so neither does it understand by composing or dividing. Nonetheless, the angel understands the composition and division of propositions [*enuntiationum*], just as it understands the reasoning of syllogisms: for it understands composite things simply, and *changeable things changelessly* [*mobilia immobiliter*], and material things immaterially.⁴⁸

In other words, Aquinas thinks that the angels have a perfect, luminous understanding of the object's essence *in all of its possible instantiations*, and that this perfect understanding gives them an *immediate* grasp not only of the essence itself but also of everything *actually* belonging to it. While Aquinas does not defend this crucial move from knowing possibilities to knowing actuality in this article, the underlying principle is presumably the one we saw above in *De ver.* 8.9 ad 3: that knowledge consists in the knower's spiritual *likeness* to the actual object. Since the angel's rich concreated intelligible species, unlike our impoverished abstraction-based ones, already includes a proper likeness of all the object's essential *possibilities*, it will *a fortiori* include a proper likeness of the essence's particular *actual* determinations. Hence, the act of simply apprehending the object's essence is sufficient for them; they do not need to "flesh it out" by forming a proposition to *add* further detail to an initial empty abstraction, just as they do not need to "flesh out" their understanding of first principles by inferentially deducing their conclusions (*ST* I.58.3). (This does not mean that they do not judge; indeed Aquinas attributes judgment to them in the immediately ensuing I.58.5. It simply means that their judgment is a simple rather than a complex act.) Moreover, lest there be any doubt that this claim applies to angelic knowledge not only of essential properties but even of contingent existence, Aquinas explicitly asserts in *De malo* 16.6 ad s.c. 1 that "the angel knows *existence and nonexistence* by simple apprehension of the subject, just as we do by composing and dividing."⁴⁹

However, if angelic knowledge of contingent events involves only a single act of simply grasping the object's essence—free from both continuous sensory change (constantly receiving new forms) and from having to form a series of updated acts of intellectual complex judgments—then that act will involve no intrinsic change in the angel, and so will be intrinsically timeless.⁵⁰ This intrinsic timelessness of angelic acts is necessarily presupposed by our central claim that the time measuring their succession is discrete. For if change could take place within an angelic act, then its duration would be divisible, rather than a single indivisible instant; and then there would never be a "last instant" of any angelic act, but rather a temporal continuum, just as in the physical realm.

At the same time, this "intrinsic timelessness" claim heightens the synchronization problem with which we are primarily concerned. For how can an act that is temporally unextended be simultaneous with a temporal stretch of time? Yet would not such simultaneity be required in any angelic causal or cognitive interaction with the physical world? Indeed, Rory Fox suggests that this difficulty was one of the chief reasons that the Thomistic theory of discrete time subsequently fell out of favor: for angelic interaction with the physical world clearly requires some sort of angelic-physical synchronization, and it certainly at least appears that such synchronization would require angelic acts to be temporally extended in a way that matches our continuous time one-to-one (Fox 2006, pp. 277–78).

Aquinas, for his part, might seem unconcerned with the synchronization problem; indeed, he doubles down on the unqualified incommensurability of the angels' discrete, atomic time with our own continuous time. Returning to *In Sent.* I.37.4.3, Aquinas makes the following stark statement in the reply to the third objection:

There can be *no proportion* between the time in which a body is in motion and the time in which an angel is in motion. For the time in which the angel is in motion is not divisible by a continuous division but rather by a discrete division into a *finite number of instants*; whereas in the time in which the body is in motion, there are *potentially infinite instants*; and so *there is no proportion, just as there is no proportion between the infinite and the finite.*⁵¹

In other words, there is no intrinsic connection between angelic time and our physical time. Angelic instants cannot correspond one-to-one to physical instants, since physical instants are potentially infinite, but angelic instants are only finite. Nor can they correspond one-to-one to any particular length of physical time, since there is no proportion between the finite and the infinite.

What could it mean for there to be different, incommensurable times? It is strange to our modern ears, since we are accustomed to thinking of time as a single dimension in which all motions take place together. For Aquinas, though, time is not an independent quasi-substance but rather an accident of a movable thing, namely the "number" of its motion, which inheres in that motion.⁵² So "by default," as it were, every individual physical thing's motion would be measured by its own time, just as every individual physical thing is measured by its own quantity (e.g., the eight-foot height of one wall is not numerically the same as the eight-foot height of another wall). However, if this were the whole story, then no physical events would be simultaneous, since two physical times cannot be simultaneous with each other (unless one contains the other, the way a minute contains a second). Rather, to say that two physical motions are simultaneous means precisely that they share a single time.⁵³ So, to save physical simultaneity, Aquinas must say that all physical motions are measured not only by the intrinsic number of their own motion but also by the intrinsic number of an *extrinsic* motion. This extrinsic measuring motion must meet two criteria: (a) it must belong to the *same genus* as the motion being measured, and (b) the motion being measured must be *ordered* to this extrinsic motion in some way. In Aquinas's view, one particular motion meets these two criteria: that of the first heavenly sphere (the *primum mobile*), whose motion (a) belongs to the same genus as all physical continuous motions, and (b) is simpler than, faster than, and the cause of all the other physical motions, such that those other motions are, therefore, ordered to it in terms of both perfection and dependence.⁵⁴ This, for Aquinas, is the reason why all physical things share the same time.⁵⁵ (And while Aquinas obviously developed this account in the framework of Aristotle's now-outdated cosmology, the account could perhaps be transferred successfully to the framework of contemporary physics by, for example, replacing the first sphere's motion with that of light.⁵⁶)

However, if there is no overarching motion that could meet both of these two criteria with respect to both angelic motion and our physical motion, then those motions cannot share a unifying measure but rather must be measured by different times. And Aquinas argues that no possible motion could, in fact, meet *either* criterion for unifying physical and angelic motion: for (a) angelic motion, being discrete, belongs to a different *genus* from all continuous physical motion, including that of the first heavenly sphere, and (b) no angelic motion is *ordered* to any physical motion, including the first sphere's, since it does not depend on any physical motion,⁵⁷ nor does it participate in any physical motion's simplicity or velocity (and presumably vice versa). Hence, we must simply say that physical and angelic motion belong to different times.⁵⁸

Now, it might seem that Aquinas qualifies this strong incommensurability thesis somewhat in his later work. At *ST* I.53.1 (the *Summa theologiae*'s parallel to *In Sent.* I.37.4.1, on whether angels are capable of locomotion), Aquinas seems to reject his earlier view that angelic locomotion is *never* continuous and affirms instead that it can be either discrete or

continuous. The reason is that, even though he still affirms here that the angel's locomotion consists simply in his successively touching different places with his power, he now gives the angel a choice: either [a] withdraw his power from one whole place and apply it to another whole place all at once, in which case the motion will be *non-continuous*, or else [b] withdraw his power from the first place gradually (*successive*), in which case the motion will indeed be continuous.⁵⁹

Hence, at ST I.53.3, on whether angelic locomotion can be instantaneous, Aquinas similarly seems to reject his earlier view (as expressed in the parallel *In Sent.* I.37.4.3 and *Quodl.* IX.4.4 and XI.4) that angelic time is *never* continuous. Instead, he affirms that angelic time as well *can* be continuous as well as discrete, depending simply on whether the angelic locomotion it measures is continuous or discrete:

It follows that the motion of the angel is in time. *In continuous time, if his motion is continuous*; but in non-continuous time, if his motion is non-continuous (for the motion of the angel can exist in either way, as was said above [ST I.53.1–2]), since the continuity of time is derived from the continuity of motion, as is said in *Phys.* IV.⁶⁰

Correspondingly, in the reply to the first objection, Aquinas no longer denies unqualifiedly that angelic time has any proportion to our physical time (as he had at *In Sent.* I.37.4.3 ad 3); rather, he only says that the *non-continuous* time corresponding to the angel's non-continuous motion lacks such proportion, while the angel's continuous time is commensurable to our time.⁶¹

Now Aquinas still denies in this text that even the angel's continuous time is the *same* as our continuous time because, even though it meets the "same genus" criterion, it does not meet the other criterion of being "ordered" to (i.e., dependent in some way upon) the motion of the first heaven.⁶² Nonetheless, it might appear that admitting continuous time—even a different continuous time from ours—into the angel is at least a step toward solving our problem of how an angel could share a "now," and thus also an unknown "future," with us.

I do not think, however, that this is the right strategy. In the first place, this solution would raise as many issues as it would solve. Does the angel only share a "now" with us when he is moving himself, or something physical, in a continuous way? What happens when the angel switches to non-continuous motion?

Secondly, however, the difference between Aquinas's early and late views is not actually as substantive as it appears. For, on the one hand, Aquinas still grants in the *Summa* that the time which measures the succession of the angel's own *intrinsic* operations (at least knowing and loving) is solely discrete. He makes this clear just ten questions later in ST I.63.6 ad 4, a text on whether any time elapsed between the angels' creation and their fall:

The statement that between any two instants there is an intermediate time is true insofar as time is continuous, as is proven in *Physics* VI.[1.231b9]. However, in the angels, who are not subject to the heavenly motion, which is what is primarily measured by continuous time, time is taken to refer to the succession itself of operations of understanding or of loving [*affectus*].⁶³

In other words, precisely because angelic time is *not* continuous, there need be no intervening time between one instant and another; so Aquinas can conclude that the devil sinned immediately in his second instant rather than after some interval (*mora*), as would have necessarily been the case in continuous time. Or, as Aquinas states even more explicitly in ST I-II.113.7 ad 5:

But it is otherwise in things which are above time. If there is some succession there of affections or of intellectual conceptions, for example in the angels, such succession is not measured by continuous time but rather by discrete time, just as the things themselves which are measured are non-continuous. Hence, with such things, one must assign a last instant at which the first thing existed and

a first instant at which the following thing exists; nor does there need to be an intermediate time, for the continuity of time that requires this does not obtain there.⁶⁴

Aquinas also affirms the discreteness of the succession of angelic operations and the time measuring that succession at *Quodl.* II.3, which is generally dated to 1269 or 1270 (after the *Prima Pars*, which was completed no later than 1268).⁶⁵ So, even in his mature works, Aquinas still insists that the time measuring the angel's *intrinsic* operations is always discrete, without exception.

On the other hand, even in his early *Sentences* commentary at *In Sent.* I.37.4.2 (right after denying that angelic locomotion is ever continuous), Aquinas already had granted that *extrinsic* angelic motion in place could pass through all the continuous intermediate places: "Insofar as the angel performs an action either in all the intermediate places, or in some, or in none, he can accordingly travel through all the intermediate places, or some, or none."⁶⁶ Moreover, in the reply to the fifth objection, he defends the angel's ability to travel through the whole continuous distance on the grounds that the angel's own location may be a divisible, continuous place rather than a point.⁶⁷ Yet, in the later parallel *Quodl.* I.3.2, Aquinas takes this ability to traverse a whole continuum to be precisely what it means to have continuous motion:

The angel is not in a place as commensurate with it [*per commensurationem*], but by the application of his power to the place, which may equally be to a divisible or an indivisible place. Hence, it can move continuously, as something occupying a divisible place, continuously intercepting space; however, insofar as it is in an indivisible place, its motion cannot be continuous, nor can it travel through all the intermediate places.⁶⁸

In other words, in this later work, Aquinas simply equates traversing a whole continuum (of which he had always claimed angels were capable) with continuous motion (of which he had originally said that angels were *not* capable). This is precisely what he is doing in *ST* I.53.1 when he attributes continuous motion to the angels: his whole reason for doing so is simply that angels can apply their power to a divisible, continuous place and, therefore, can shift that application in the continuous way proper to divisible things⁶⁹—that is, through the intermediate places, which as he states in the ensuing I.53.2 (another parallel to *In Sent.* I.37.4.2 and *Quodl.* I.3.2 on traversing intermediate places) is simply a corollary of continuous motion.

The upshot, then, seems to be that Aquinas's mature position is essentially the same as his early one; it differs only verbally in that he now applies the term "continuous" to all motion that passes through all the intermediate places. The reason for this difference seems to be that, in the *Sentences* commentary and early *Quodlibets*, Aquinas was considering locomotion *on the side of the angel*, where it consists in the succession of the angel's own causal acts and is thus always non-continuous;⁷⁰ whereas in the *Summa* and the later *Quodlibets* he is instead considering locomotion *on the side of the physical places*, where it instead consists in the succession of different places being causally affected by the angel and thus at least may be continuous.⁷¹ (The latter perspective is more coherent, for even in the early *Sentences* commentary, at I.37.4.2, Aquinas had observed that what puts the angel in a place is not his operation *as it flows out of him*—that is, in non-continuous sequence—but rather the operation *as it touches the affected place*, where it can produce a continuously changing effect;⁷² so it seems only reasonable to conclude with the mature Aquinas that, insofar as the angel can be said to have locomotion at all, that locomotion must be considered from the "place" side, not from the "angel" side.) However, such locomotion, consisting in successively being affected by the angel's power, is clearly *in* the effect, not *in* the angel.⁷³ The only motion *in* the angel is the discrete succession of its operations; and it is only by one operation (not an infinity of operations!) that an angel moves himself from one place to another, even if this motion is continuous. So, even in Aquinas's mature view, nothing *in* the angel is measured by continuous time.⁷⁴

If this is right, though, then we are back to our original problem. Even if the time measuring the angel's continuous *locomotion* is proportionate to our physical time, how can the angel's *own* "now"—the "now" in which the angel performs the *operation* of moving himself continuously from point *a* to point *b* over continuous (albeit non-physical) time—be identical to our physical time's "now"? By what rule or proportion are stretches of our physical time (each comprising a potential infinity of instants) mapped onto the angel's finite series of discrete instants?

4. Can the Tension Be Resolved?

4.1. What Aquinas Does Say

Let us now return to Aquinas's discussion of angelic foreknowledge to see how he attempts to resolve this problem. The text where he deals with this problem in the most detail is *De malo* 16.7, in the responses to the third to sixth objections, so I will focus my attention here.

In the third objection, Aquinas raises what seems to be my main concern:

If the demons are incorporeal substances, it is necessary that they be above time with respect to their substance and operation, according to what is said in the *Liber de causis* that the substance and operation of an intelligence is above time [*supra tempus*]. Now, present, past, and future are differences of time. Therefore, with respect to the knowledge of the demons, it makes no difference whether something is present, past, or future. However, the demons can know present and past things. Therefore, they can also know future things.⁷⁵

His response to this objection is not very helpful for our purposes, however: he simply says that the demons, even though they are not in *our* continuous time, are still in a kind of time inasmuch as they do not know all things at once and, hence, must have a succession (*vicissitudo*) of operations of knowing and willing, which Aquinas identifies with their time.⁷⁶ No explanation is given, however, of how the "nows" of such different times could be synchronized.

In the reply to the fourth objection—essentially, that an intellect should not need the known thing to have actual present existence in order to know it, since, if it did need this, then God would need it too, and so God too would be incapable of foreknowledge—Aquinas also simply states that God's eternal present is very different from the situation of the angels, who have a past, present, and future; but, again, he makes no attempt to explain how their present could be synchronized with ours.⁷⁷ And in response to the fifth objection that purely intellectual knowledge "abstracts from the here and now" (*abstrahat ab hic et nunc*), Aquinas only says that the angelic intellect (unlike ours) can use its timeless universal species to grasp singulars in their present existence—again without explaining how the angelic present would correspond to ours.⁷⁸ The reply to the sixth objection explains further how the angel's changeless, timeless species could allow him to know changing events: namely, inasmuch as changing things *become* similar to its species (parallel to the *De ver.* 8.9 ad 3 passage we examined earlier⁷⁹). Hence, Aquinas concludes that "as soon as [*statim quando*] they are in act, they are known by the angel."⁸⁰ Still, the synchronization of physical and angelic "nows" is assumed rather than explained.

The closest that Aquinas seems to come to addressing this question of how angelic instants are correlated with physical time comes once again from *In Sent.* I.37.4.3 (on whether angels can move from one place to another within one instant), this time from the reply to the seventh objection. The objection seeks to show that the angel's motion must take place over continuous rather than discrete time, and argues roughly as follows. Let us assume that an angel starts a non-continuous local motion at angelic instant at_1 and completes it at at_2 . Let us also assume that a physical object also starts its own local motion simultaneously with at_1 at physical instant pt_1 , and completes the motion simultaneously with at_2 at pt_2 . Then (a) the physical object will be halfway to its destination at an intermediate $pt_{1.5}$; therefore (b) the angel too must be *between* its origin and destination at the corresponding $at_{1.5}$, since otherwise (c) the angel would have to be either at its origin

or its destination for two consecutive angelic instants, which is incompatible with the notion of discrete time.⁸¹ The upshot of the objection is that the only way to synchronize angelic instants with physical ones is by positing intermediate instants between any two angelic instants, which would render angelic time continuous rather than discrete. (This objection is quite similar to an objection which John Pecham regards as decisive against the theory of angelic discrete time: that if every angelic instant is simultaneous with some physical instant, and if there is an intermediate time between any two physical instants, then there must also be an intermediate time between any two angelic instants.⁸²)

Aquinas does not contest the objector's claim (c) that it is impossible for an angel to be in the same place for two consecutive discrete instants. Nor does he suggest that the angel moves instantaneously—that is, that he stays in his original place through the whole period of physical time up until the physical instant when he is in his destination. The reason he does not make this suggestion is because Aquinas argues in both the main body of the article and in arg. 8–9 (which he accepts without qualification) that such instantaneous motion is only possible when the instantaneous motion is grounded in some *other* continuous motion. Thus, for example, the instantaneous motion of substantial generation or corruption is grounded in the continuous motion of altering the body's disposition, and the instantaneous motion of illumination or darkening is grounded in the continuous motion of removing or inserting an obstacle to the light.⁸³ However, according to Aquinas, the angel's departure from the original place is not grounded in any such continuous motion. Rather, the action by which the angel is in the original place is a "rest," not a motion. Rests are self-identical at every instant as long as they exist, and so they have a "last instant," not just a last stretch of time. Hence, the angel's old "rest" in the original place must end at a specific physical instant prior to the first physical instant of the new "rest" in the destination. Aquinas is thus committed to angelic non-continuous locomotion beginning and ending at two separate physical instants.⁸⁴ So instead, in answer to the objection, he strikingly claims that no angelic instant at all corresponds to the physical body's intermediate $t_{1.5}$! His response is worth quoting in full:

If we posit that the movements of the angel and the physical body begin simultaneously, when the angel is at the other endpoint at a different instant of his time, the physical body will also be at the other endpoint at a different instant of its own time. Now, there is an intermediate time between the two instants of this physical body's time, inasmuch as its motion is continuous; and so we can designate an intermediate instant in that intermediate time. However, between the two instants of the angel there is no intermediate time. Hence, neither can we designate an intermediate instant there (though we could designate an intermediate instant if the angel were in three places successively, for in that case the angel's time would be composed of three "nows," of which one would be intermediate); and *those two instants can include all the instants of the [physical] time, just as the single stationary "now" of aeviternity⁸⁵ includes every time*. So, there is no difficulty with the angel's motion occupying only two instants while the physical body's motion occupies infinite instants—even though the motion of the angel lasts just as long as that of the physical body, and even though neither motion is indivisible. Furthermore, *when this physical body is at an intermediate instant, the angel will be in no place, since it is not necessary for him always to be in a place, as was said above (I.37.3.1); and so no "now" corresponding to that time [secundum coordinationem illius temporis] will pertain [respondeat] to the angel, but only aeviternity.*⁸⁶

In this scenario, the angel's two-instant locomotion is still, in Aquinas's view, *simultaneous* with the whole physical motion—but only in the sense that the angel's two instants *surround* that physical motion.⁸⁷ In "between" those two angelic instants, while the physical body's motion is underway at $pt_{1.5}$, there just is no corresponding angelic instant $at_{1.5}$; the only angelic duration-measure that is simultaneous with any of the physical body's intermediate instants like $pt_{1.5}$ is the aeviternity of the angel's being. In other words, as far as the angel's conscious life goes, he can simply "skip" whole stretches of physical time⁸⁸—a possibility

that Pecham and his supporters do not allow for.⁸⁹ This “gappy” account goes at least some way toward lining up the incommensurable instants of angelic and physical time, since, by removing the requirement for every angelic instant to correspond to a physical one, it makes it possible for a finite number of angelic instants to correspond to our infinitely divisible physical time despite the lack of “proportion” between them.

4.2. What Aquinas Could Say

This “gappy” account does not, however, help us establish *which* physical instant corresponds to the angelic one. In the first place, this account simply raises the further question: What determines how *much* physical time the angel “skips”? After all, once the angel has “departed” his original location and is thus “out” of physical time, it would seem to be simply *indeterminate* when he reappears in physical time. This is because it seems that there is no particular amount of physical time that would have to pass between the angel’s actions on the two places, given that from the angel’s own point of view those two acts are simply immediately consecutive. One might, of course, suggest that it is up to the angel how much physical time is “skipped.” However, an action’s immediate effect must be simultaneous with the agent’s action;⁹⁰ so how could the angel choose to recommence acting on the physical world at a given physical time if his own “now” was not *already* simultaneous with that particular physical time?

The problem is, if anything, even worse if the angel’s acts are *not* immediately consecutive, but rather the angel chooses to perform some other, non-physically-oriented act in between his two acts on physical places (e.g., conversing with another angel). For how much physical time would that intermediate angelic act “take”? What would determine the physical “reentry” time? Again, it is hard to see how an angel could “aim” its action at a physical time with which its own time was not yet simultaneous, so it would seem to be random. This would, however, be highly inconvenient for the angel’s involvement in the physical universe. Or worse still, what if an angel had never before performed a physically oriented act but had rather spent all his existence up till this point exclusively interacting with fellow angels and God, and now, for the very first time, acts on the physical world? What would determine *which* moment of physical history is affected by this angelic act?

4.2.1. Angelic Instants Are “Exceeding Measures” of Physical Times

The first key to resolving this “arbitrariness” problem, in my view, is to insist that a single instant of angelic discrete time *can* be simultaneous with a whole stretch of physical continuous time. This will at least make it possible for a finite number of angelic instants to correspond to the potentially infinite instants of continuous time without “gaps” (and thus avoid Pecham’s objection). Now, to my knowledge, Aquinas never asserts this explicitly, although it was a common view among supporters of discrete time.⁹¹ But it is arguably implied by the fact that Aquinas asserts both that [a] angelic acts of knowing through one intelligible species take place in a single angelic instant and that [b] many changing physical events can be known by the angel in that one changeless act.⁹² It is also arguably implied by Aquinas’s assertion that the angel can move through all the intermediate places between his origin and his destination.⁹³ For, while this continuous motion is measured by continuous time on the part of the physical *place*, the action on the side of the *angel* by which he transfers his power continuously from one place to another must be a *single* action with a continuous effect (unlike non-continuous motion, which requires two distinct actions with discrete effects); otherwise an infinity of angelic actions would be required, one for each infinitesimal advance, which is obviously absurd.⁹⁴

This claim that angelic instants can be simultaneous with stretches of physical time is simply an extension of what we saw Aquinas say explicitly in *In Sent.* I.19.2.2 ad 1, on how “nows” of different types (eternal, aeviternal, and physico-temporal) can be distinct and yet simultaneous (*simul*). Just as eternity’s “now” is an “exceeding measure” of aeviternity’s “now,” and as both eternity’s and aeviternity’s “nows” are “exceeding measures” of the physico-temporal “now,” so too, I would suggest, the “now” of the angel’s discrete time

is likewise an “exceeding measure” of the physico-temporal “now,” while itself being simultaneous by “concomitance” with the “nows” of both aeviternity and eternity.⁹⁵ And just as aeviternity’s and eternity’s “nows,” as “exceeding measures,” are simultaneous with the physico-temporal “now” precisely by *including* the whole of physical time,⁹⁶ so too, I would suggest, a single angelic discrete instant, if it is indeed also an “exceeding measure,” can likewise *include* a whole stretch of continuous physical time.

4.2.2. Angels Cannot “Skip” Physical Time

The second key to the “arbitrariness” problem, I would suggest, is to reject outright Aquinas’s apparent view in *In Sent.* I.37.4.3 ad 7 that angels can “skip” periods of physical history, and indeed that they *must* do so when engaged in non-continuous locomotion. His reason for asserting this, as we saw,⁹⁷ is that the angel can neither [a] still be in the original place at the same physical instant it is in the new place nor [b] move from the one to the other instantaneously, since the latter would require an underlying continuous motion in which the instantaneous one would be grounded.

Now, [a] seems uncontroversial, at least on Aquinas’s assumption that angels cannot act simultaneously on two disparate places.⁹⁸ However, [b] seems questionable. After all, as MacIntosh (1995, pp. 564–70) notes, Aquinas has no qualm in admitting supernaturally-caused instantaneous changes, such as Transubstantiation⁹⁹ and the justification of the sinner by grace.¹⁰⁰ To be sure, in those cases, the instantaneous change is still grounded in a preparatory continuous change: the words of consecration in the Eucharist or the disposing of the soul in justification. However, surely one could say the same of angelic locomotion. For granting, as Aquinas insists, that the angel’s own action is not a continuous motion but rather a timeless “rest” (*quies*), still presumably that action continues during the whole continuous time in which the angel’s desired physical effect is being gradually achieved by continuous physical change, just as the sinner’s will (whose spiritual act is in itself supratemporal, like the angel’s) remains unrepentant during the whole continuous time during which the sinner is gradually achieving the disposition necessary for justification.¹⁰¹ Indeed, given that Aquinas stipulates at *De ver.* 28.9 that the necessary continuous change presupposed by instantaneous justification may simply be the passage of the allotted time preordained by God,¹⁰² it seems only reasonable that the continuous change required for instantaneous angelic motion could likewise be simply the passage of the allotted physical time chosen by the angel as the physical duration of its action.

This suggestion does not contradict Aquinas’s claim that the angel’s action itself must have a sharp ending boundary and that, therefore, the angel’s non-continuous locomotion must always be instant-to-instant rather than instantaneous; it merely restricts that claim, and the resultant temporal discreteness, to *angelic* instants, while allowing the corresponding *physical* motions and times to be continuous.¹⁰³ Moreover, in the other places where Aquinas discusses and rejects angelic instantaneous locomotion (*Quodl.* IX.4.4 and XI.4 and *ST* I.53.3), Aquinas’s sole concern is arguably to preserve the discreteness and separation of those angelic instants; it is only in the earlier *In Sent.* I.37.4.3 ad 7–8 that Aquinas (mistakenly, in my view) clearly applies the discreteness claim to the corresponding *physical* times, with the resulting “gap” paradox. In his later treatments, he seems more attuned to what I take to be the underlying distinction between the continuous time measuring the angel’s physical *effect* and the discrete time measuring the angel’s spiritual *action*, as evinced in *ST* I.53.1–3’s later admission of continuous angelic locomotion (which requires considering that motion from the side of the physical effect rather than from the side of the angelic agent). Admittedly, even in those later treatments, Aquinas does not articulate this distinction fully—perhaps because he was still wrestling with the question of whether causal actions are properly *in* the agent (emphasized in his earlier works) or *in* the effect (emphasized in his later works),¹⁰⁴ and thus of whether action is most appropriately measured by the agent’s duration-measure or the effect’s. Still, I think it does no great violence to Aquinas’s view to conclude that, even though non-continuous angelic locomotion cannot be instantaneous in terms of *angelic* time, it can indeed be instantaneous in terms of *physical*

time. That is, there need be no last *physical* instant of the angel's action on the original place, only a last physical stretch of time, with no "gap" between it and the first physical instant of the angel's action on the new place.¹⁰⁵

We can still grant, of course, that an angel may *choose* there to be a "gap" in its causal action on the physical world, such that it departs its origin at pt_1 and only arrives at its destination at pt_2 , as in Aquinas's scenario in *In Sent.* I.37.4.3 ad 7. However, while Aquinas is surely right that the angel need not be *acting on a place* at every physical moment, I would argue that every stretch of physical time still does require a corresponding angelic *instant*—i.e., that there can be no "gap" in physical history with respect to angelic time. This is because, in and of themselves, angelic operations, as Aquinas understands them, are temporally unextended and thus take up *no* physical time at all. From this, it follows that no number of angelic acts of, for example, conversation among each other could "add up" to even one microsecond of physical time; after all, one cannot advance along a continuum by adding dimensionless points, since from the continuum's perspective they would simply "stack" on top of each other, even if there is a causal order between them.¹⁰⁶ Indeed, it seems to me that such angelic instants should not be regarded as "simultaneous" with any physical instant or time at all—contrary to the views of other supporters of discrete time such as Giles of Rome, Henry of Ghent, and Godfrey of Fontaines (see Porro 1996, p. 347). This is because of my earlier suggestion that the "simultaneity" of different "nows" requires, at a minimum, that what exists in one of the "nows" can be cognitively present to or act immediately on what exists in the other "now." However, this requirement is not met in this case, since the angelic "now" in question is defined by an act that is turned *away* from the physical world, and since no physical creature can see or act on a pure spirit (unless the spirit takes the initiative).¹⁰⁷ Rather, the only way angelic acts, either causal or cognitive, can "take" physical time is insofar as the *objects* of those acts are extended across physical time, which renders the angelic instant measuring that act simultaneous with a whole stretch of physical time. Hence, the only way for angels to "progress" along our continuous timeline is by doing acts that are aimed, either causally or cognitively, at such temporally extended objects.

If this is right, then the only way for the angel to depart one place at pt_1 and arrive at another place at a later pt_2 is if he exerts a third, intermediate angelic operation, measured by a corresponding angelic intermediate angelic instant, in between his two causal actions on the two places: namely, a *cognitive* act of contemplatively considering the physical world. For if he either did no intermediate act at all or if his intermediate acts were aimed at temporally unextended objects (e.g., at other angels or eternal truths), then no physical time at all would have elapsed from the physical moment the angel's power was withdrawn from the first place (pt_1), and so his physical "reentry" time would necessarily be at that very same pt_1 . (This involves no contradiction so long as we take pt_1 as the *first* instant of the angel's *absence* from the first place rather than the *last* instant of his *presence* there. This is simply to take the angel's withdrawal as analogous to negative instantaneous changes like corruption or darkening.¹⁰⁸) Whereas if the angel does exert an intermediate act of willing simply to think of the physical world without acting on it, then the angelic instant measuring that contemplative act (call it at_2) may be simultaneous with the whole temporal time beginning at pt_1 and continuing up to (but not including) pt_2 . Then, pt_2 itself, when the angel's power begins to touch the physical world again, is the beginning of the stretch of physical time corresponding to the angel's discrete moment at_3 , in which he wills to both think of *and* act on the physical world. The important thing is that, because the whole intervening stretch of physical time was present to the angel in his intermediate, merely cognitive act, the physical moment of reentry (pt_2) can be freely chosen rather than random.

More generally, by my view, it does not matter how many of its first instants an angel spent thinking about purely spiritual matters: as soon as it began thinking about physical history, it would necessarily have to "begin at the beginning."¹⁰⁹ It could exert acts aimed at the physical world (either by thinking about it or by controlling it) for as much of our time as it wished, either in a single discrete, timeless act or by multiple such acts.¹¹⁰ However,

by the view I am proposing, as soon as the angel ceases to act on the physical world and begins to engage with spiritual objects instead, our history would be “paused” for the angel; and when it turned its attention back to the physical world again, it would have to pick up exactly where it had left off.

It is important to bear in mind that, on this view, even angelic acts aimed at the physical world do not themselves “take time.” The angelic *act* remains extensionless regardless of whether its object is physical or spiritual; it is only the angelic act’s *relation* of simultaneity to the physical world that is extended (“takes time”). From this, it follows that the angelic instants measuring different angels’ angelic acts all exactly align with each other, regardless of the objects of those acts: none of them is longer or shorter than any other. For example, one angel’s fifth instant would be simultaneous with every other angel’s fifth instant (at least assuming that all angels were created simultaneously).¹¹¹

A curious situation results from this claim. Suppose that Angel A in his first instant (at_1) has been observing the physical universe’s first aeon, while Angel B in that same first instant thinks instead of spiritual things. Suppose further that, in at_2 , these two angels converse. According to my proposal, Angel A could tell Angel B all about the Big Bang in at_2 ; but if Angel B then chose, in at_3 , to look at the physical universe for himself, then he too would see the Big Bang unfold before him. In other words, Angel A would have told Angel B something that, *for Angel B*, was still the future. Moreover, if Angel A also returned to observing the physical universe in at_3 , then he would be observing the universe’s *second* aeon at the same angelic instant that Angel B was observing the universe’s *first* aeon. In other words, two different physical times might both be simultaneous with the same angelic instant, albeit in different angels. This is strange, to be sure! However, if simultaneity across different duration-measures is simply a matter of relations (one thing’s ability to be known or acted on by another), rather than shared dependence on a common measure, then there is no contradiction in saying that two things are simultaneous with a third thing and yet not with each other, since relations after all need not necessarily be transitive. Just as Tom can be friends with Dick and Dick friends with Harry without Tom being friends with Harry, so too Angel B’s at_2 can be simultaneous with Angel A’s at_2 and Angel A’s at_2 with the one billionth physical year without Angel B’s at_2 being simultaneous with the one billionth physical year. This is because the foundation of both relations—the relation of friendship and the relation of simultaneity across diverse duration-types—is a *targeted act*. Just as Tom lacks Dick’s act of love *for Harry* and, therefore, is not friends with Harry, so Angel B lacks Angel A’s act of consideration of *physical history*, thanks to which the already-formed galaxies are now present to Angel A, and so Angel B is not yet simultaneous with those galaxies. Only relations based on a shared, non-targeted foundation—for example, shared quantity or shared dependence on a common measure of duration—must be transitive (e.g., where A is larger than B and B larger than C, or where A is earlier than B and B is earlier than C according to the same continuous time).¹¹²

If the theory I am proposing here holds, then we have made some progress: we have an explanation of why it is never arbitrary “what physical time it is” for the angel. The angel’s “entry point” into physical history is determined by how much physical history it has already observed and affected; its “exit point” is determined by the angel’s own decision about how much physical history to consider in one act. Moreover, since any physical time after that “exit point” will count as “future” for the angel, we have a well-defined distinction between the part of our history that the angel can naturally know and the part that it cannot.

4.2.3. An Exotic Solution to the Foreknowledge Problem: Angelic Instants Are Entirely Extensionless, and, Therefore, Are Simultaneous with a Predetermined Duration of Physical Time as a Whole

We are not done yet, however. If it is indeed up to the angel to determine its “exit point” (i.e., to determine how much of our time is simultaneous with its cognitive act), we must establish *how* the angel is able to do this, for the “exit point” is what determines which part of physical time counts as “future” for the angel. There are, it seems to me, two viable

options for determining the “exit point,” which in turn are based on two fundamentally different ways of understanding the angelic instant’s relation to physical time: a more exotic way and a more modest way. Neither of these ways, I believe, has yet been explored. In this section, we will consider the more exotic option.

The first, more exotic way of understanding the angelic instant’s relation to physical time is to model it after God’s eternity. Doing so seems at least plausible, since Aquinas frequently grounds God’s “eternal present” in the non-successiveness of his cognitive act,¹¹³ and since angelic acts seem to share that non-successiveness vis-à-vis the particular physical time to which they correspond. On this view, once the angel is engaged in a cognitive act about the physical world, no particular instant of the corresponding physical time would be privileged with respect to the angel; rather, that physical time would be simultaneous with the angel’s discrete “now” *as a whole*, just as all times and aeviternities are simultaneous with God’s eternal “now” *as a whole*. The vivid illustration Aquinas uses for God’s eternal present—the vantage point of an elevated height from which one can see the whole road at once, unlike the traveler on the road who cannot see those who follow behind him¹¹⁴—would thus apply equally to the angelic moment, except that the angel’s field of view would contain only a limited stretch of the road.

This “exotic” model raises at least two questions. First, *how* would the angel’s field of view be limited? That is, how would the “exit point” (the end of the physical duration corresponding to the angelic act) be determined? On this model, it could *not* be determined “on the fly” on the basis of what the angel is seeing in his angelic moment. For example, the angel could not simply decide that he had “seen enough” and initiate a new cognitive act through a different intelligible species, nor initiate a new voluntary act (e.g., a choice to intervene) on the basis of events he has just observed. This is because doing so would require the angel to be observing physical history *sequentially*, one event after another, rather than all at once as the “exotic” model stipulates. If the angel, in at_1 , is seeing pt_1 , pt_2 , and pt_3 all together, rather than one after another, then he could hardly set the “exit point” at pt_2 . Rather, on this model, if the angel’s cognitive act is to have an “exit point” at all, it must be *predetermined*. That is, whenever the angel chooses to think through an intelligible species corresponding to the physical world, he must choose “in advance” the amount of physical time with which he wishes that cognitive act to be simultaneous. For example, the angel would not simply choose to think “man,” but rather would choose to think “man for 15 earth minutes.” The physical duration of the angel’s gaze would thus be determined logically *prior* to the angel’s knowledge of what occurs in it.

Secondly and more importantly, *why* would the angel limit his field of view like this? Why could he not determine that his cognitive act should span all of physical time, like God’s? One reason would be that doing so would limit him to knowing the physical universe from a single perspective, through a single intelligible species, rather than taking advantage of the rich panoply of perspectives afforded by all the rest of his concreated intelligible species. A more practical reason, however, is that determining his cognitive act to span the whole of physical history would prevent the angel from *intervening* in that history.

Why so? Because, even though (on this model) the angelic intellect’s relation to physical time is akin to that of God’s intellect, the angelic *will*’s relation to physical time is quite different. God, for Aquinas, both knows and wills all things by the same self-identical act (namely his own existence) in the same eternal instant: he does not have to *first* learn a state of affairs in order to *then* respond to it.¹¹⁵ Rather, for Aquinas, God’s knowledge is unique in that it *causes* its created objects: his knowing those objects as real just *is* his willing that they exist.¹¹⁶ Thus, there can be no separation between this knowing and this willed causation.

By contrast, I would argue (though Aquinas, to my knowledge, does not state this explicitly) that the angel, on Aquinas’s terms, *would* have to learn of events first in order to then respond to them in a subsequent moment. This is because the angel’s knowledge, unlike God’s, *depends* on its object: for even though, as we saw, Aquinas denies that the

angel's mind receives anything (e.g., a form) from the object, the angel still knows the object precisely *because* of the object's existence,¹¹⁷ rather than vice versa as God does.¹¹⁸ The angel's action on those objects is, therefore, necessarily a distinct act from his knowing them. Now, it is true that Aquinas denies that angels deliberate¹¹⁹ and, therefore, holds that their volitional act may be simultaneous with the intellectual act on which it depends.¹²⁰ Thus, on this "exotic" model, the angel might simultaneously observe a century of human history by his intellect and praise God for it by his will. However, if the volitional act is one of *intervention*, and if this choice to intervene ontologically *depends on* (i.e., is informed by) the angel's knowledge of, say, a whole century of human history, then this intervention must take place at a physical instant *after* that century has elapsed. For if the angel's intervention instead took place in the middle of the century whose entirety, untouched by his intervention, he had "*already*" (ontologically speaking) observed in that moment, he would be effectively both altering the physical world's past (from the perspective of the observed century's end) and also violating the necessity of his own present (since two contradictory realities, with and without his intervention, would both be present to him in the same instant). The only way, on this "exotic" model, for the angel to intervene in the middle of the century he is currently observing would be if his choice to intervene was *not* informed by his occurrent intellectual act of observing this century in at_1 ; and since, for Aquinas, will-acts are always informed by some ontologically prior intellectual act, this will-act would, therefore, have to have been informed by a *previous* intellectual act in a *previous* angelic instant (at_0). The upshot, then, is that, on this model, *if* an angel wants to keep open the possibility of intervening at some point in the physical future, he *must* limit the temporal scope of his intellectual act, since any intervention he chooses to make on the basis of that knowledge could only take effect *after* that time has elapsed.

In that case, we have completed one solution to our original mystery: the problem of why angels do not have natural knowledge of our future—at least not in any practically relevant way. For we have shown why, even if the angelic instant's simultaneity to physical time is modeled after God's eternal present, there would nonetheless need to be a predetermined boundary separating the part of physical time that is present to the angel from the part that is still future to him. This explanation may be summarized as follows:

- (1) At a given angelic instant at_1 , the angel can have no natural knowledge of what he will see in a subsequent at_2 .
- (2) Angelic instants are divided from each other by successive acts of either intellect or will.
- (3) Any angelic act of choice in at_1 to intervene in the physical world would have to be directed at a later physical time corresponding to a subsequent intellectual act in at_2 (on pain of violating the necessity of the physical past and of the angelic present).
- (4) Hence (by 2), all physical time after any angelic intervention would still be future to the angel at the angelic instant when he chooses to intervene.
- (5) Therefore (by 1), such physical time would be hidden from the angel's natural knowledge.

An example might be helpful. On this "exotic" model, an angel might simultaneously see not only my present day in 2024 but also "side by side" with it, a future (from my perspective) day in 2025. He would, therefore, indeed enjoy a kind of natural "foreknowledge" analogous to God's within this angelic instant (at_1). However, he would not be able to *tell* me in 2024 about what he is seeing in 2025, since this would violate the necessity of what for him is my past and his present. Rather, even if he chose in at_1 to reveal to me to what he is seeing in 2025, he would only be able to do so later in 2025, in the physical time corresponding to the subsequent at_2 . By the same token, if a demon were to engage in at_1 in an act of considering me from 2024 to 2025, he would not only be (foolishly) depriving himself of the opportunity to tempt me until 2025; he would also not know the results of this temptation until the following at_2 .

I think this "exotic" solution is compatible with Aquinas's denial that angels naturally know future contingents, even though it does allow angels a restricted natural foreknowledge. This is because I take it that Aquinas's main concern is a practical one, rooted in

his theology: to ensure that angels cannot prophesy to us by natural knowledge and that demons do not have the benefit of foreknowledge when they tempt us (e.g., they would probably not have adopted the strategy of tempting Judas if they had had foreknowledge of Christ's resurrection). So he only needs to establish the narrower claim that angels cannot *act* at a certain point in human history on the basis of natural knowledge of our future. The "exotic" account, I believe, successfully secures this narrower claim.

4.2.4. A Modest Solution to the Foreknowledge Problem: Angelic Instants Are Relationally Extended and, Therefore, Sequentially Simultaneous with an Improvised Duration of Physical Time

Nonetheless, the "exotic" solution comes with some significant drawbacks. First, there is a practical problem: it seems to tie the angel's hands. As we saw on the "exotic" model, once the angel begins to consider the physical world for the predetermined amount of physical time, he would not be able to intervene until after that time had elapsed. However, this means that the angel's ability to respond to surprises would be quite poor! The only way, on this model, for the angel to prepare for surprises would be to predetermine each cognitive act to correspond to a very small amount of physical time (e.g., equivalent to human reaction time) and then constantly repeat it. However, this would require a vast multiplication of repeated cognitive acts, which is hard to reconcile with the rich simplicity that Aquinas seems to envision for angelic knowledge.

Perhaps more seriously, there are also textual problems with the "exotic" model. On the one hand, if Aquinas had actually believed that angels need to specify the physical duration of their thoughts in advance, one might have expected him to say so somewhere. However, he never does, and indeed it seems rather difficult to imagine him saying that the object of an angel's act of thinking about me is not simply "man" but rather "man for 15 earth minutes." On the other hand, and more importantly, the "exotic" all-at-once account of angelic simultaneity with physical time seems actually contrary to what Aquinas does explicitly say about angelic learning. As we saw,¹²¹ he insists that angels *newly* (*de novo*) come to know new events simply because physical things newly become similar to the angel's intelligible species, and thus present to the angel, without any change whatsoever in the angel's mind. This lack of change would seem to imply that there is no new cognitive act or new angelic instant here, though Aquinas does not draw this conclusion explicitly. However, if indeed angelic learning involves no new cognitive act or angelic instant, then it necessarily follows that the "newness" of the angel's knowledge does not lie only *between* angelic instants but rather even *within* a single angelic instant. Thus, though the angel might see what I do in both 2024 and 2025 in the same angelic instant, he would see 2025 "newly." And if the angel sees 2025 "newly," then, unlike God (who in Aquinas's view certainly does not know anything "newly"), he cannot see it "side by side" with 2024, as the "exotic" model requires; rather, 2025 must *replace* 2024 in his act of seeing.

Let us call this the "modest" model of the angelic instant's relation to physical time. On this "modest" model, the angelic operation is still intrinsically changeless and, thus, is still "*totum simul*" with respect to its own being and is still measured by a single angelic instant; however, the physical time with which that changeless angelic instant is simultaneous does change. In other words, the angelic act, unlike eternity, is *not* "*totum simul*" with respect to its extrinsic objects. Rather, there is a change with respect to *which* physical objects lie within the scope of the angel's self-identical, changeless act. The angelic instant, on this model, is still an "exceeding measure" of physical time, since it is still simultaneous with a whole potential infinity of physical instants rather than tied one-to-one to a single physical instant. However, unlike eternity or aeviternity, it is not simultaneous with that physical time *as a whole*, but rather *sequentially*. Thus, there is always a particular instant in that physical time which is privileged with respect to the angel. Rather than an observer on a height who can see the whole road at once, as in Aquinas's example of God's eternal present, the angel on this "modest" model would be more like an observer seated on a bench by the side of the road: not moving with the traffic, and thus (like the elevated

observer) able to see a whole line of travelers without stirring from his bench—but only one at a time as they pass before him, rather than all together.

The danger with this “modest” model, of course, is that it appears to surreptitiously introduce sequential parts into the angelic instant itself and, thus, negate the very essence of discrete time. How can it be possible for the angel to see one thing “earlier” and another thing “later” in the very same instant? Is this not a flagrant case of trying to have one’s cake and eat it too?

The answer, I think, is that the difference between “earlier” and “later” here is a *relational* difference, not an *intrinsic* difference. Indeed, it is arguably not even a difference between two distinct relations but rather a difference between two successive *terms* of one identical cognition-based relation. After all, the foundation of the relation in the angel remains the same (the act of knowing through a single intelligible species); and, in Aquinas’s view, a real relation gets its ontological identity from its foundation, not from its term. For example, for Aquinas, any given physical object has, thanks to its single quantity, a single relation of “greater than” to all objects smaller than it (rather than an infinite, or at least indeterminate, number of such relations), and a teacher, thanks to its single act of teaching, has a single relation of “teacher” to all his pupils. Even a father of multiple children has a single relation of “father” to them all, even though that relation is founded on multiple acts of generation, since Aquinas denies that one subject can have many instances of the same species of form. A single relation, for Aquinas, may thus have many “*respectus*,” that is, may bear on many different individual terms, and it may gain and lose terms while still remaining the same relation (as is especially obvious in the fatherhood example).¹²² Accordingly, it seems likely that Aquinas would say that an angelic act of knowing has a single, changeless real relation to the whole sequence of changing objects observed thereby. If so, then the “earlier” and “later” involved would be quite extrinsic to the angel’s act, and so they would not introduce parts into the act’s own indivisible duration.

Even if we were to grant a succession of distinct “earlier” and “later” cognition-based relations founded upon the same angelic cognitive act (e.g., a “later” relation of “knower of this new-born”), this would still not require dividing the angelic instant into successive parts. This is because, in Aquinas’s view, even a real relation itself can be gained and lost without any change to the subject, thanks to relation’s extrinsic character.¹²³ Provided that the relations’ foundation—the cognitive act itself—remains immutable, without any “earlier” or “later” *parts*, the act’s proper measure can and must, on Aquinas’s terms, remain an indivisible instant, even if there were a succession of relations founded upon that act.¹²⁴

Still, one might reasonably ask: even if we grant that the “modest” model is not self-contradictory, that it accommodates Aquinas’s claim about angelic learning better than the “exotic” model, and that it unties the angel’s hands with respect to physical intervention, is there any intrinsic, *a priori* reason for preferring it over the “exotic” model? I would suggest that there is, and that it has to do with the peculiar way in which the angelic cognitive act is *causally dependent* on its temporal object. To see why, it might be helpful to situate the angelic cognitive act in between its hylomorphic and divine counterparts with respect to dependence on temporal things.

Aquinas strikingly holds that *all* immanent acts are intrinsically changeless and, therefore, timeless, including not only angelic acts but also human spiritual acts and even animal sensory acts. Indeed, he even holds this of the existence of all corruptible things, whether substantial or accidental. Yet obviously our human intellectual and sensory acts do *take time*, as does the existence of everything physical around us! Aquinas’s solution is to say that, despite being timeless *per se*, the existence and immanent acts of physical creatures are temporally extended *per accidens* (in contrast to motion, which alone is measured by time *per se*). The basis for this *per accidens* temporal extension is the fact that all these acts *causally depend* in some way upon motion.¹²⁵ Thus, the existence of corruptible things depends on the proper motion and rest of their bodies (e.g., an organism will die either if it is torn apart or if its metabolic functions are interrupted).¹²⁶ Animal sensory acts depend on both the ongoing physical changes in the animal’s organs, which are essential to the act, and also on

the act's constantly-changing object, from which the sense power must constantly receive the sensible form by which it perceives, and which is thus an extrinsic necessary condition of the act.¹²⁷ Human intellectual acts, unlike sensory acts, do not depend on the changing physical object for a constant influx of intelligible form after the initial abstraction. They do, however, still depend for their very existence on the ongoing physical change in the sense organ, since this change is essential to sustaining the phantasm in which the universal is understood, and is, therefore, a necessary condition (albeit an extrinsic one) of the spiritual act.¹²⁸ All these things are therefore truly, albeit accidentally, measured by continuous time, since their continued existence in each case depends in some way on continued motion.

God's act of knowing, on the other hand, is not only purely spiritual but also entirely causally independent of its temporally extended objects. On the contrary, as we saw in discussing the "exotic" model, God's cognitive act instead causes its temporal objects in their whole being, including their determinate relations to itself. Those temporal objects, therefore, certainly cannot introduce *per accidens* temporal extension into God's cognitive act. If the object, in all its determinate existence, is "already" fully contained in God's intrinsically timeless cognitive act, then God neither need nor can "wait and see" in order for the object to begin to fall under the scope of his cognition and power. In other words, since the *source* of these determinate objects' presence to God's knowledge is itself entirely "*totum simul*" (God's own creative act), their presence will also be "*totum simul*."

What about the angelic case? Obviously, the angel, like God, has no need for phantasms. Moreover, the angel's act of knowing, like God's, is not caused by the temporal object in any way: for the intelligible species from which the act springs is concreated rather than derived from the object by abstraction, and the existence of the angelic act is quite independent of the existence of any corresponding physical object.¹²⁹ Hence, the angel's cognitive act, like God's, must be free even from *per accidens* temporal extension, as Aquinas insists in several places; to say otherwise would be to abandon the whole theory of angelic discrete time.¹³⁰

There is also, however, a crucial difference here between the angel and God. On Aquinas's view, even though the temporal object does not cause the angelic act, it must at least cause the angelic act's *relation* to the object. This is because the angel's intrinsically timeless act, unlike God's, does *not* "already" fully contain the object in its determinate existence and relations; rather, the only reason why this particular object falls in the angelic act's scope is the object's own independent, temporal existence. As a result, the angel's act can only become related to the object's determinate existence *as* that existence temporally unfolds: the angel sees *this* object in its act *because* the object exists. Hence, even though the angel's act remains independent of the temporal world and, therefore, completely extensionless ("*totum simul*"), it seems quite plausible that that act's *relation* to the temporal world is indeed dependent on that world and, therefore, temporally extended *per accidens*, with "earlier" and "later" parts. If that is right, then the angel's cognitive act, unlike God's, would indeed have to "wait and see" what happens, as the "modest" model claims.

On this view, then, the problem with the "exotic" model was that it did not go quite far enough in unpacking this difference between God's causal knowledge and angels' relationally object-dependent knowledge. On the "exotic" model, this difference was only taken to imply that angels, unlike God, must volitionally *respond* to changing events in a new physical stretch of time corresponding to a new angelic instant. The "modest" model retains this implication but also draws a further one: that angels must *know* changing events sequentially even *within* a single instant, seeing one event after another in a single act. The reason for this sequence is the *per accidens* temporal extension of the angelic act's relation to the physical world, which is due to that relation's dependence on its temporally extended objects. This sequence of "earlier" and "later" in the angelic act's *relation* does not, however, introduce parts into the angelic act itself, which remains *per se* indivisible on account of its own proper independence from the physical world.

If the "modest" model is right about this, though, then there is a significant implication: Aquinas's texts on God's foreknowledge would require further precision. While

Aquinas does sometimes appeal to the causality of God's knowledge to explain God's foreknowledge,¹³¹ he much more frequently relies simply on God's eternity and resultant presence to all times; and when he defends that doctrine of the eternal present, it is always simply by appeal to the immutability and non-successiveness of God's being and his act of knowing.¹³² Crucially, he never appeals to the causality of God's knowledge to explain the "*totum simul*" presence of God's eternity to all times.¹³³ But according to the "modest" model, this is a significant oversight. For, according to this model, it is not enough for a cognitive act to be *intrinsically* immutable and non-successive, having its own complete being all at once, in order to be present to many *extrinsic* physical times all at once (in the "side by side" sense), like Aquinas's elevated observer. Rather, the act must also be *relationally* immutable: that is, it must be *independent* of its temporal objects, not only with respect to its source (the intelligible species) but also with respect to its *relation* to the object in its determinate existence. The only way to secure this radical relational independence is by a cognitive act that *causes* its object's determinate existence. Thus, if the "modest" model is correct, then Aquinas should have stipulated that the "eternal present" account of God's foreknowledge itself depends on the "causal knowledge" thesis, rather than presenting them as two parallel and unrelated arguments for divine foreknowledge.¹³⁴

If the "modest" model's account of the angelic instant's relation to physical time is more complex than the "exotic" model's, its account of how the angel can determine the physical "exit point" of his act is, by contrast, far simpler. On the "modest" model, the angelic cognitive act's physical duration is not predetermined but rather open-ended: the angel can "improvise" the act's endpoint based on the events that he is seeing in the act itself. So, for example, he could decide to intervene in those events: this choice to intervene (which replaces a previous act of willing to observe without intervening) would take place in a new angelic instant at_2 , and it would terminate the physical duration of the previous purely contemplative act right at the physical instant of the event in which the angel has decided to intervene. Or, instead of intervening, he might choose to converse with another angel, or pray to God, about what he has seen at a particular physical time; this new angelic act would again initiate a new angelic instant, and the previous angelic act's "exit point" would be determined by the end of the physical time about which he now wished to converse or pray. Or he might simply decide that he had "seen enough" and choose to think about something unrelated in the new angelic instant, and, in this case, the "exit point" would be determined by the completion of the particular event that the angel had wished to see. In all these scenarios, on this model, the physical duration of the angel's gaze could *presuppose* the angel's knowledge of what occurs in it.

Finally, the "modest" model likewise gives a much simpler solution than the "exotic" model to our original problem of restricting angelic natural foreknowledge. For if the angel, in a given angelic instant, observes physical history sequentially rather than all at once, then clearly, when he is observing 2024, he does not yet have natural knowledge of 2025, even if both 2024 and 2025 are each *in turn* simultaneous with the same angelic instant. This "modest" model can, therefore, exclude angelic natural foreknowledge more completely than the "exotic" model: the "exotic" model only excludes natural foreknowledge of what follows on the angel's *intervention*, while the "modest" model excludes natural foreknowledge regardless of whether the angel intervenes or not.

5. Conclusions

Let us briefly retrace our steps. We began with Aquinas's arguments for his view that, while the blessed angels do enjoy supernatural foreknowledge, which may be the basis of human prophecy, they cannot have *natural* knowledge of the future. We considered the philosophical argument that only God's eternity can be present to all times and the theological arguments that knowledge of the future is a uniquely divine privilege. We then laid out an apparent problem for the claim that angels cannot naturally know our human future: namely, Aquinas's philosophical claim that angels, as spiritual beings, are not measured by our continuous time at all but rather *exist* in the single moment of aeviternity

and (vitally for our purposes) *act* in a finite series of discrete temporal instants. His reason for holding this “discrete time” claim is that there is no continuity either between or within spiritual acts, and this discrete (i.e., non-continuous) motion must be measured by discrete time. The problem posed by this “discrete time” claim for the “no natural foreknowledge” claim was that it makes it difficult to align angelic instants with the physical, continuous “now,” and that without such alignment there simply would be no meaningful distinction between our past and our future from the angel’s point of view.

As we saw, Aquinas was not entirely unaware of this problem, and several of the objections he raises against his “no natural angelic foreknowledge” thesis revolve around the timelessness of spiritual reality. His direct answers, however, are limited to claiming that angels do have a past, present, and future *of their own* and that their timeless intelligible species make physical things visible to them only at the moment when those physical things actually begin to be similar to their intelligible species. What these answers do *not* explain is how the angels’ present moment can *align* with ours. He elsewhere does at least remove one significant obstacle to this alignment by allowing angels to “skip” physical time, which provides a possible way to match a finite number of angelic instants with potentially infinite physical ones. This does not, however, yet provide a non-arbitrary account of *which* physical instant is simultaneous with a given angelic instant.

Accordingly, I set out to show that Aquinas does at least have such an account available to him. The first steps were to argue that angelic instants are “exceeding measures” that can be simultaneous with whole physical stretches of time and that (*pace* Aquinas’s early view) angels neither need to nor indeed can “skip” physical time. Together, these two steps provide a non-arbitrary way to identify the *first* physical instant corresponding to an angelic instant (i.e., the angelic act’s “entry point” into physical time) and, thus, partially resolve the alignment problem.

However, a full resolution to the alignment problem additionally requires a way to establish the *last* physical instant corresponding to an angelic instant (the angel’s “exit point”), beyond which the future would lie hidden from him. This, in turn, requires a more precise account of the way in which an angelic instant is simultaneous with a whole stretch of physical time. Accordingly, we explored two possible accounts of this simultaneity, which yielded two possible ways to establish the “exit point” and two resultant ways to understand the “no natural angelic foreknowledge” thesis. To the best of my knowledge, neither of these accounts has been previously proposed.

The first (“exotic”) account of the angelic instant’s simultaneity with physical time modeled it after God’s eternal instant, taking the corresponding stretch of physical time to be present *as a whole* to the angel’s instantaneous act. On this view, the angel would have to choose an “exit point” in advance, at least if he wished to retain the option of intervening in the future. While this account did allow for a limited sense of natural angelic foreknowledge within a given angelic act, it at least prevented the angel from foreseeing the results of any intervention he might choose to make in physical history, thus preventing natural angelic prophecy. The second (“modest”) account, by contrast, took the corresponding stretch of physical time to be present *successively* to the angel’s instantaneous act, thus introducing temporal extension into that act’s *relation* to the physical world (though not into the act itself). This view allowed the angel to improvise his “exit point” from a world-directed act rather than tying his hands for a preset period of physical time, and it disallowed any natural angelic foreknowledge at all.

The “exotic” model’s advantage is its relative simplicity: the “modest” model’s alternative proposal of a temporally unextended act bearing a temporally extended relation of simultaneity is perhaps harder to see one’s way around. On the other hand, the “modest” model hews more closely to Aquinas’s description of how angels “newly” come to know, provides a more fitting account of angelic interaction with the physical world, and finds more significance than even Aquinas himself seems to have realized in his claim that only God’s knowledge is *completely* causally independent of the world.

Still, I hope to have shown that either one of these two models suffices for providing an internally consistent account of which physical moment marks the dividing line between an angel's past and future. I consider the redundancy a virtue of the theory. More importantly, it is my hope that this inquiry has helped open a window into the vibrant intellectual stimulation provided by medieval philosophy's synthesis of Greek philosophical principles with the data of Judeo-Christian Revelation.

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Notes

- ¹ For discussion of Aquinas's view of the angels' natural knowledge of future contingents, see esp. John of St. Thomas, *Cursus theologicus* 42.2 (John of Saint Thomas 1931–1953, vol. 4, pp. 636–55). See also Goris (2012, pp. 178–82); Suarez-Nani (2002, pp. 54–58); Bonino (2016, pp. 145–46); and Collins (1947, pp. 228–32).
- ² Cf. Aquinas, *Quaestiones disputatae De veritate* [De ver.] 8.12 (Aquinas 1882ff, vol. 22/2), where Aquinas adds that angels can naturally know not only (a) things which follow necessarily from a single cause but also (b) things which, though they only follow contingently from their cause taken *singillatim*, follow necessarily given the *concurrence* of that cause with other causes. Thus, what seem like chance events to our limited knowledge will be known as necessary by the angels.
- ³ Aquinas, *Summa theologiae* [ST] I.57.3 (Aquinas 1882ff, vol. 5, p. 75a): “Alio modo cognoscuntur futura in seipsis. Et sic solius Dei est futura cognoscere, non solum quae ex necessitate proveniunt, vel ut in pluribus, sed etiam casuales et fortuitae: quia Deus videt omnia in sua aeternitate, quae, cum sit simplex, toti tempori adest, et ipsum concludit. Et ideo unus Dei intuitus fertur in omnia quae aguntur per totum tempus sicut in praesentia, et videt omnia ut in seipsis sunt; sicut supra dictum est cum de Dei scientia ageretur [ST I.14.13]. Angelicus autem intellectus, et quilibet intellectus creatus, deficit ab aeternitate divina. Unde non potest ab aliquo intellectu creato cognosci futurum, ut est in suo esse” (emphasis added).
Aquinas, *Quaestiones disputatae De malo* [De malo] 16.7 (Aquinas 1882ff, vol. 23, p. 315a–b, lines 184–206): “[F]utura prout futura sunt nondum habent esse in se ipsis; esse autem et verum conuertuntur; unde cum omnis cognitio sit alicuius veri, impossibile est quod aliqua cognitio respiciens futura in ratione futuri cognoscat ea in se ipsis. Cum autem praesens, preteritum et futurum sint differentie temporis temporalem ordinem designantes, omne quod qualitercumque est in tempore comparatur ad futura sub ratione futuri; et ideo impossibile est quod aliqua cognitio subiacens ordini temporis cognoscat futura in seipsis. Talis autem est omnis cognitio creature, ut post dicetur. Vnde impossibile est quod aliqua creatura cognoscat futura in se ipsis; set hoc est proprium solius Dei, cuius cognitio est omnino eleuata supra totum ordinem temporis, ita quod nulla pars temporis comparatur ad cognitionem diuinam sub ratione preteriti vel futuri, set totus decursus temporis et ea que per totum tempus aguntur presentia et conformiter eius aspectui subduntur, et eius simplex intuitus super omnia simul fertur prout unumquodque est in suo tempore” (emphasis added).
- ⁴ For Aquinas's thematic discussions of God's eternity-based knowledge of our future, see esp. ST I.14.13; *Summa contra gentiles* [SCG] I.66–67, nn. 547–51, 556–58, and 564 (Aquinas 1961); *Scriptum super libros Sententiarum* [In Sent.] I.38.1.5 (Aquinas 1929–1947); *Quodlibet* [Quodl.] XI.3 (Aquinas 1882ff, vol. 25/1); and *Compendium theologiae* [Comp. theol.] I.133 (Aquinas 1882ff, vol. 42).
- ⁵ This is, of course, Aristotle's famous claim about the future sea battle at *De interpretatione* 9.18^b25–19^b4 (Aristotle 1984), which Aquinas cites at *De malo* 16.7 s.c. 3.
- ⁶ This is the RSV-CE translation. The Vulgate rendering of Is 41:23 quoted by Aquinas is as follows: “Annuntiate quae ventura sunt in futurum, et sciemus quia [Aquinas: quod] dii estis vos.”
- ⁷ See ST I.57.5 and II-II.172.2 and SCG III.80 and III.154 nn. 3256–57. For discussion, see, for example, Oliva (2022, p. 10).
- ⁸ See esp. Aquinas, SCG I.6 & III.154 nn. 3263–67 & 3272.
- ⁹ For the demons' ability to simulate knowing the future, see Aquinas's texts on divination, notably ST II-II.95.2–3; cf. *In Sent.* II.7.2.2, SCG III.154 nn. 3268–71, *De sortibus* 4 n. 665 (Aquinas 1882ff, vol. 43), and *De malo* 16.7 ad 2.
- ¹⁰ ST II-II.95.1 (Aquinas 1882ff, vol. 9, pp. 311b–12a): “Quaedam vero causae sunt quae, si secundum se considerentur, se habent ad utrumlibet: quod praecipue videtur de potentiis rationalibus, quae se habent ad opposita, secundum Philosophum... [E]ffectus huiusmodi praenosci non possunt nisi in seipsis considerentur... Sed considerare huiusmodi in seipsis antequam fiant, est Dei proprium, qui solus in sua aeternitate videt ea quae futura sunt quasi praesentia, ut in Primo habitum est [I.14.13, I.57.3, & I.86.4]:

unde dicitur Isaiae XLI [41:23]: *Annuntiate quae futura sunt in futurum, et sciemus quoniam dii estis vos*. Si quis ergo huiusmodi futura praenoscere aut praenuntiare quocumque modo praesumpserit, nisi Deo revelante, manifeste usurpat sibi quod Dei est. Et ex hoc aliqui *divini* dicuntur: unde dicit Isidorus, in libro *Etymol.* [VIII.9]: *Divini dicti quasi Deo pleni: divinitate enim se plenos simulant, et astutia quadam fraudulentiae hominibus futura coniectant...* Tunc autem solum dicitur divinare quando sibi indebito modo usurpat praenuntiationem futurorum eventuum. Hoc autem constat esse peccatum.”

- ¹¹ For texts that contain both kinds of arguments, besides *ST* I.57.3 and II-II.95.1 and *De malo* 16.7, see also *De ver.* 8.12 c. & s.c. 1, on angelic foreknowledge; *In Sent.* II.7.2.2 c., arg. 1, & ad 1, containing Aquinas’s early treatment of divination, and IV.50.1.4 ad 4 (Aquinas 1856–1858, vol. 7); *Super Isaia* 3.3 (Aquinas 1882ff, vol. 28), which is also against divination—though curiously Aquinas does not mention Is 41:23 explicitly here, and does so only very briefly in his commentary on ch. 41 itself; *Quodl.* VII.1.3 arg. 1 & ad 1 and *Quaestiones disputatae De anima* [QD de an.] 20 arg. 4 & ad 4 (Aquinas 1882ff, vol. 24/2), which are both on how an unchanging angelic intelligible species can allow the angel to know changing singulars; and *Comp. theol.* I.133–34, on the exclusivity of God’s foreknowledge.

The following texts contain only the philosophical argument. In *ST* I.14.13 and *In Sent.* I.38.1.5 Aquinas only discusses divine foreknowledge and does not even mention angels, but he still argues that foreknowledge is *only* possible for God’s eternity. *In Sent.* II.3.3.3 ad 4 and *Quaestiones disputatae De spiritualibus creaturis* [QD de spir. Creat.] 5 arg. 7 & ad 7 (Aquinas 1882ff, vol. 24/2) both concern angelic knowledge of singulars, like *Quodl.* VII.1.3 and QD de an. 20. SCG III.154 nn. 3264–65 concerns prophecy and divination, relying in turn on SCG I.66 nn. 547–51 & I.67 nn. 557–58 on God’s foreknowledge; and *ST* I.86.4 concerns the possibility of human foreknowledge. For texts that give only a theological argument based in Is 41:23, without the philosophical argument, see also *De ver.* 12.6 arg. 5 & ad 5, *De sortibus* 2 n. 644, *Super Evangelium S. Ioannis lectura* [Super Io.] 16.3 n. 2104 (Aquinas 1972), *Super I Cor.* 12.2 n. 728 (Aquinas 1953, vol. 2), *Super Epistolam ad Romanos lectura* 2.1 n. 175 (Aquinas 1953, vol. 1), and *De decem praeceptis* 3.

- ¹² Aquinas does not raise this argument in his thematic discussions of angelic knowledge, but in his commentaries on these Scriptural passages, he does link them to the uniqueness of God’s presence to all times. See, for example, *Super Evangelium S. Matthaei lectura* [Super Matt.] 24.3 (Aquinas 1951), commenting on Mt 24:36, and also referencing Mal 3:2 and 1 Thess 5:2; see also *Super I Thess.* 5.1 (Aquinas 1953, vol. 2), where, in addition to commenting on 1 Thess 5:2, Aquinas also references 2 Pet 3:10 and Rev 3:3, both on Christ’s claim that he will come “like a thief in the night.”

- ¹³ For Aquinas’s use of the term *duratio* to signify the existence that is analogously measured by eternity, aeviternity, and time (rather than the measures themselves), see esp. *In Sent.* II.2.1.pr.–1, *ST* I.10.4 (c. & arg. 1); *Commentaria in octo libros Physicorum Aristotelis* [In Phys.] IV.20 nn. 2, 6, and 12 (Aquinas 1882ff, vol. 2); *De substantiis separatis* 9 (Aquinas 1882ff, vol. 40/D); *In De divinis nominibus* [In De div. nom.] 2.5 n. 203, 4.3 n. 310, and 5.1 n. 627 (Aquinas 1950); and *Quodl.* X.2 (though this last text seems to imply that, though *duratio* is measured by time, aeviternity, or eternity, *duratio* itself *measures* existence [*esse*])—perhaps because “duration” is being taken as a kind of quantity, which is an *intrinsic* measure, while “time” and “aeviternity” are being taken as *extrinsic* measures of everything except the *primum mobile* and the highest angel, respectively). Cf. *In Sent.* IV.43.1.3.2 ad 1, SCG IV.82 n. 4169, *De malo* 5.5 ad 6, *Quodl.* VII.4.2 ad 2, *Responsio de 30 articulis* ad 27, and *Responsio de 36 articulis* 7 (Aquinas 1882ff, vol. 42), as well as *De ver.* 23.2 arg. 8 and *Quaestiones disputatae De potentia* [De pot.] 3.10 arg. 8 and 3.14 arg. 2 (Aquinas 1965; left undisputed in the replies). For discussion of this distinction between duration and its measures, see, for example, Porro (2008, p. 77).

Often, however, Aquinas seems to use *duratio* to signify the measures themselves (eternity, aeviternity, and time). See, for example, *In Sent.* I.19.2.1–2, I.31.2.1, and II.1.1.5 (esp. ad s.c. 7 and 9); *ST* I.10.2 & 5; SCG II.35 n. 1116; *In De div. nom.* 5.1 n. 631, 10.1 n. 847, and 10.2 n. 860 (the last two being especially clear texts); *Super Io.* 1.1 n. 37; and *De pot.* 3.17 ad 20. Cf. *ST* I.10.1 arg. 2 & 6 and *Quodl.* X.2 arg. 4 (again left undisputed in the replies). Sometimes, he uses *duratio* to describe both the measure and the thing measured in the very same passage (*ST* I.10.6 arg. 3, c., and arg. 4/ad 4, and *In De div. nom.* 5.1 nn. 627 and 631); and sometimes he will attribute “duration” to *both* the thing measured *and* the measure itself (*ST* I.10.4 c. and arg. 1 and I.10.5 ad 4; *De pot.* 3.17 c. & arg. 18 and 24). For discussions that assume that Aquinas thinks time, aeviternity, and eternity simply are types of duration, see Fox (2006, pp. 35–39, 262) and Goris (2003, pp. 196–97).

- ¹⁴ Aquinas’s chief discussions of angelic aeviternity are to be found at *In Sent.* I.8.2.2, I.19.2.1–2, and II.2.1.1–2; *ST* I.10.5–6; and *Quodl.* V.4 (Aquinas 1882ff, vol. 25/2) and X.2. Other noteworthy discussions are contained in *In De div. nom.* 4.3, 5.1, 5.3, and esp. 10.2–3; *Super librum De Causis expositio* [In De causis] 2 (Aquinas 1954); and *De pot.* 3.14 ad s.c. 9 and 3.17 ad 23.—Surprisingly, however, the term “*aevum*” shows up only once, and in passing, in Aquinas’s thematic treatment of the angels at *ST* I.50–64: namely, precisely at *ST* I.57.3 arg. 2 (on the angels’ knowledge of the future)! The notion of aeviternity (as a measure of substantial duration above time but compatible with a beginning and end) also appears in that treatment at *ST* I.61.2 ad 2, but is labeled as a special kind of *tempus* rather than as *aevum*.

For discussion of Aquinas’s theory of angelic aeviternity, see esp. Porro (1996, pp. 105–15, 139–48, 159, 163–64, 199–205, 231–37) and Peter (1964). See also Bonino (2016, p. 129); and cf. Suarez-Nani (1989, pp. 45–77), which, while focused on Nicholas of Strasbourg’s theory of angelic aeviternity, presents it as based on Aquinas’s and Albert’s theories (pp. xxi and 149–55). For broader treatments of the general medieval discussion about angelic aeviternity, including but not limited to Aquinas, see Porro (2001, pp. 143–49; 2002, pp. 12–14) and Fox (2006, pp. 244–73).

- ¹⁵ For Aquinas's claim that aeviternity is in a sense *totum simul*, see esp. *In Sent.* I.8.2.2. See also *In Sent.* I.19.2.1 ad 5 (cf. I.19.2.1 c. and the immediately following I.19.2.2, which do not use the term "simul" for aeviternity but do deny succession therein) and II.2.1.1; *ST* I.10.5 ad 2; and *Quodl.* X.2.
- ¹⁶ See *ST* I.10.5, *In Sent.* II.2.1.1, and *Quodl.* X.2.
- ¹⁷ For the aeviternity of human souls, see *ST* I.10.6 ad 3 and *De pot.* 3.10 ad 8–9. For the aeviternity of celestial bodies, see *ST* I.10.5 and I.10.6 ad 2; *Quodl.* V.4 (c. and ad 1); *In Sent.* II.2.1.1; and *In De div. nom.* 8.2 n. 757. Their materiality does not pose an obstacle to their aeviternity, in Aquinas's view, because their celestial matter is in potency only to local motion, not to substantial change (see *ST* I.9.2 for a representative text).
- ¹⁸ See *In Sent.* I.37.4.3 ad 7 (an important text to which we will have occasion to return), in the Parma edition (Aquinas 1856–1858, vol. 6, p. 310b), for Aquinas's use of the Boethian phrase "*nunc stans*" to describe the "now" of aeviternity: "*cum enim unum nunc aevi stans includat omne tempus.*" The Mandonnet edition (Aquinas 1929–1947, vol. 1, p. 891) replaces the Parma edition's phrase "*unum nunc aevi stans*" with "*unum nunc et instans*"; but in my view, the Parma edition's version makes more sense in context, since [a] the "*nunc*" in question would have to be the *nunc aevi* rather than the ordinary *nunc temporis* in order for the sentence to be true, but [b] there is no prior reference to the *aevum* in the passage, which makes the Mandonnet version quite cryptic. Moreover, the reference to aeviternity at the very end of the response makes considerably less sense if it cannot rely on the prior claim that aeviternity includes all time. See also *In Sent.* I.19.2.2, where Aquinas contrasts the relationship between our time and its temporal "now" with the relationship between aeviternity and its aeviternal "now." Time differs from its temporal "now" in that time is successive while its "now" is not: time's single, unchanging "now" moves through successive parts of time. Aeviternity, however, does not differ from its aeviternal "now" in this respect, since neither one is successive.
- ¹⁹ See *In Sent.* I.19.2.1 and II.2.1.1 ad 5.
- ²⁰ See, for example, *Quodl.* V.4 and *In Sent.* I.8.2.2, I.19.2.1 ad 1, and II.2.1.1. However, cf. *ST* I.10.5 ad 1, *Quodl.* X.2, and *De pot.* 4.2 ad 19, where Aquinas contrasts the angels' natural aeviternity with their supernatural participation in eternity via the beatific vision. Porro notes that Aquinas uses *aevum* and *aeternitas participata* synonymously more frequently in his earlier works (Porro 1996, p. 147, fn. 214; Porro 2001, p. 145), though it should be noted that *Quodl.* V.4, where the terms are used synonymously, is generally regarded as later than *Quodl.* X.2, where they are distinguished. For the dating of the *Quodlibets*, see Torrell (2005, pp. 208–11).
- ²¹ See, for example, *ST* I.10.5 and *In Sent.* II.2.1.1 (which uses both the language of "participation" and "intermediate").
- ²² Indeed, this is the sole significant difference between aeviternity and eternity that Aquinas discusses in *In Sent.* I.8.2.2 and I.19.2.1 (c. and ad 5), and one of two central differences in *In Sent.* II.2.1.1 (the other being the closely related point that the divine *esse* measured by eternity is subsistent, while the angelic *esse* measured by aeviternity is distinct from the angelic supposit, the *quod est*). It is, however, notably absent from *ST* I.10.5, which puts all the emphasis on another difference absent from the *Sentences* commentary: aeviternity's "annexation" to time, to be discussed below. (The same is true of *De pot.* 3.14 ad s.c. 9.) To my knowledge, only *Quodl.* X.2 ad 4 and *De pot.* 3.17 ad 23 present both differences (namely, that aeviternity measures a *received* existence and that it can be *annexed* to time).
- ²³ For this use of the term "duration," see, for example, *In Sent.* II.1.1.5 ad s.c. 9 (Aquinas 1929–1947, vol. 2, p. 40): "*duratio autem significat quamdam permanentiam.*"
- ²⁴ Indeed, Aquinas twice considers the related view that aeviternity is distinguished by *actually having* a beginning but no end, and rejects it as merely an accidental difference; see *In Sent.* I.19.2.1 and *ST* I.10.5. (In *Quodl.* X.2 ad 4 Aquinas does accept "having a beginning but not an ending" as a characteristic of aeviternity, without adding qualifiers; but it is the last of the characteristics he lists, and he does not address whether it is a necessary or contingent characteristic.) The reason for this rejection is simple enough: Aquinas is committed to the metaphysical *possibility* of a beginningless created universe (see esp. Aquinas's *De aeternitate mundi*; cf. *ST* I.46.2, *In Sent.* II.1.1.5, SCG II.38 nn. 1142–50, and *De pot.* 3.14), as well as of the annihilation of any creature.
- ²⁵ For Aquinas's claim that angels did not exist from all eternity but rather that their existence has a beginning, see esp. *ST* I.61.2; cf. his acceptance of the claim that aeviternity does, in fact (though not necessarily), have a beginning in *In Sent.* I.19.2.1, *ST* I.10.5, and *Quodl.* X.2 ad 4. See also *In Sent.* II.2.1.3, *ST* I.61.3, and *De pot.* 3.18 (c. and ad 20), though these texts are primarily focused on whether the angels were created before the physical universe.
- ²⁶ For Aquinas's claim that God can annihilate existing angels, see *In Sent.* II.2.1.1 ad 7; *ST* I.10.5 (c. and ad 3) and I.50.5 ad 3; *Quodl.* X.2 ad 1; and *De pot.* 5.3. For God's power to annihilate creatures in general (both corruptible and incorruptible), see also *ST* I.9.2 and I.104.3–4; *De pot.* 5.3; *Quodl.* IV.3.1; *De ver.* 5.2 ad 6; and *QD de an.* 14 ad 19.
- ²⁷ See Aquinas, *In Sent.* I.19.2.2 ad 1 and II.2.1.1.
- ²⁸ Aquinas, *In Sent.* I.19.2.2 ad 1 (Aquinas 1929–1947, vol. 1, p. 471): "*Non est idem nunc aeternitatis, temporis et aevi; et quando dicitur: Quando est motus, est angelus et Deus, potest significari tripliciter: nunc vel aeternitatis, vel aevi, vel temporis. Si significetur nunc temporis; tunc dicitur motus esse in illo, sicut in propria mensura; angelus autem et Deus, non secundum rationem mensurationis, sed magis secundum concomitantiam quamdam, prout aeternitas et aevum cum tempore simul sunt, nec sibi deficiunt. Si autem significetur nunc aeternitatis, tunc dicitur Deus esse in illo sicut in mensura propria et adaequata; angelus autem et mobile, sicut in mensura excedenti. Si autem significetur nunc aevi, respondebit angelo sicut mensura adaequata, et Deo secundum concomitantiam, et mobili sicut mensura excedens*" (emphasis added).

- For this claim that a higher measure of duration—usually eternity—can be a *mensura excedens* of lesser durations, see also *In Sent.* I.19.2.1 ad 2 and I.19.2.2 ad 2 and *In De div. nom.* 2.5 n. 203. For other passages that claim that eternity can be simultaneous with time due to their being different kinds of measures, but without using the phrase “*mensura excedens*,” see *In Sent.* I.40.3.1 ad 5 and *ST* I.10.4 ad 1.
- ²⁹ Aquinas describes the single “now” of aeviternity as “including” (*includat*) all time at *In Sent.* I.37.4.3 ad 7. He applies the same language of “inclusion” to eternity’s “now” at *ST* I.10.2 ad 4 and I.13.1 ad 3; *De ver.* 2.12 and 3.3 ad s.c. 1; *Super Io.* 16.3 n. 2104. Cf. *In Sent.* I.8.2.3 ad 1.
- ³⁰ For this contrast between possessing duration (in the sense of the subject’s proper actuality) in full vs. in part, analogically applied to both the time-aeviternity contrast and the aeviternity-eternity contrast, see esp. *In Sent.* I.8.2.2.
- ³¹ Given Einstein’s relativity theory, it might be impossible to assert that any two separate physical objects share the same “now,” simply speaking, without additionally specifying the frame of reference from which this assertion is made. Even granting this, however, would not affect the broader sense of “simultaneity” that obtains between higher and lower measures of duration (e.g., between physical time and angelic aeviternity or angelic discrete time). Moreover, it is not clear that even Aquinas’s narrow (“proper and adequate measure”) sense of “simultaneity” is necessarily incompatible with the qualification that whether or not two physical objects share a “now” is determined by the frame of reference, especially since arguably even on relativity’s terms there is still an objective ontological basis (the speed of light) for the differences in simultaneity across different frames of reference. For discussion, see [Moreno \(1981, pp. 62–79\)](#).
- ³² See esp. *Quodl.* X.2 ad 1 ([Aquinas 1882ff](#), vol. 25/1, p. 129b, lines 101–20): “[R]ei eterne uel euiterne aliquid potest attribui dupliciter. Vno modo ratione sui ipsius; et sic non attribuitur ei nec fuisse nec futurum esse, set solum esse, quia in preterito et futuro implicatur prius et posterius, non autem in presenti. Alio modo ratione mensure adiacentis uel subiacentis, id est ratione temporis; et sic attribuitur ei fuisse per concomitantiam ad tempus preteritum, et futurum esse per concomitantiam ad futurum: ipsum enim *momentum eternitatis* adest toti tempori, unde dicit Augustinus de Deo quod *fuit, quia nunquam defuit, erit, quia nunquam deerit*. Sic igitur Deus non potest facere angelum non fuisse, quia non potest facere quin tempus preteritum simul cum esse angeli fuerit; potest autem facere angelum non esse, quia potest facere ut esse angeli non sit simul cum tempore quod presens est nunc uel erit in futuro. Et sic ista diuersitas magis pendet ex modo locutionis quam ex natura rei” (emphasis original). Cf. the parallel argument at *ST* I.10.5 ad 3. However, at *In Sent.* II.2.1.1 ad 7 [[Mandonnet 2:65](#)], Aquinas had earlier answered a similar objection differently, arguing that God can make an angel not be (*facere angelum non esse*) only in the sense that God *might* have made the angel not be—not in the sense of making him not be *given that he exists* (*ut simul sit et non sit*). For discussion, see [Porro \(1996, pp. 235–37\)](#).
- ³³ For Aquinas’s claim that angels were created simultaneously with the physical universe, see *In Sent.* II.2.1.3, *ST* I.61.3, and *De pot.* 3.18–19; for his appeal to physical “imaginary time” to explain the possibility of angels existing “before” the physical universe, see specifically *In Sent.* II.2.1.3 ad s.c. 2 and *De pot.* 3.19 ad 5. For his more general appeal to “imaginary time” to explain how God can be said to “preexist” the world and why we can say that he could have made the universe “earlier” than he did, see *In Sent.* II.1.1.5 ad 7 & ad 13; *SCG* II.36 n. 1126; *ST* I.46.1 ad 8; *De pot.* 3.1 ad 10, 3.2, 3.14 ad 6, and 3.17 ad 20; *Comp. theol.* I.98; *In Phys.* VIII.2 n. 20; and *In duodecim libros Metaphysicorum Aristotelis expositio* [*In Met.*] XII.5 n. 2498 ([Aquinas 1971](#)).
- ³⁴ See Aquinas’s arguments that angels, unlike God, cannot know other things through their own essence but rather require additional intelligible species: *ST* I.55.1 and I.57.1, *In Sent.* II.3.3.1, *SCG* II.98 nn. 1834–36, and *De ver.* 8.7–8. See also his arguments that lower angels require more intelligible species than higher ones do: *ST* I.55.3, *In Sent.* II.3.3.2, *SCG* II.98 nn. 1836–45, and *De ver.* 8.10.
- ³⁵ For Aquinas’s claim that angelic natural knowledge cannot happen all at once but rather requires temporal succession, see esp. *ST* I.58.2, *De ver.* 8.14, *In Sent.* II.3.3.4, *De malo* 16.4, and *SCG* II.101 nn. 1858–59. See also, for example, *In Sent.* I.35.1.2 arg. 3 and ad 3, I.37.4.1, and III.14.1.2.4; *ST* I.12.10 and I.85.4; *SCG* I.55 nn. 456–57; and *Quodl.* VII.1.2 and IX.4.2. For discussion of this claim, see esp. [Dubouclez \(2014, pp. 333–37\)](#); see also John of St. Thomas, *Cursus theologicus* 42.4 nn. 1–41 ([John of Saint Thomas 1931–1953](#), vol. 4, pp. 667a–79a); Cajetan, *Commentaria in Summam theologiae* [*In ST*] I.58.2 ([Cajetan 1888–1906](#), vol. 5, pp. 82a–83b); [Goris \(2012, pp. 167–69\)](#); [Suarez-Nani \(2002, pp. 63–65\)](#); and [Bonino \(2016, p. 149\)](#). For Aquinas’s claim that the succession of angelic cognitive acts is non-continuous, see also the texts cited below in note 45.
- ³⁶ For Aquinas’s claim that aeviternity is “conjoined” to a kind of time and that this is its main difference from eternity, see esp. *ST* I.10.5 (c. and ad 1–2), *De pot.* 3.14 ad s.c. 9, and *Quodl.* X.2 (esp. ad 4). For other places where he also claims that angels are measured by time with respect to their actions, but without identifying this as a difference between aeviternity and eternity, see *ST* I.57.3 ad 2 and I-II.113.7 ad 5; *In Sent.* II.2.1.1 ad 4; *De ver.* 8.4 ad 14–15 and 8.14 ad 12; and *De Div. nom.* 4.3 n. 310. (Oddly, none of the *Sentences* commentary’s three thematic discussions of aeviternity identify its “conjunction” to time as a factor distinguishing it from eternity at all.) Aquinas frequently cites Augustine’s claim in *De Genesi ad litteram* VIII.26 n. 48 ([Augustine of Hippo 1845](#), p. 391) that God “*movet per tempus creaturam spiritualem*” as an authority for measuring angelic operations by a kind of time; for Aquinas’s thematic discussion of this Augustinian formula, see *Quodl.* II.3.
- ³⁷ For explanations of Aquinas’s theory of angelic discrete time, see esp. [Porro \(1996, pp. 297–306, 316–20; 2001, pp. 150–58\)](#), [Jocelyn \(1946, pp. 39–57\)](#), and [Suarez-Nani \(1989, pp. 23–44\)](#), who, as noted in note 14, focuses on Nicholas of Strasburg but highlights Aquinas’s influence. For briefer explanations, see also [Peter \(1964, pp. 30, 34–35, 38, 68, 71–76\)](#), [Goris \(2012, pp. 168, 180\)](#), [Bonino](#)

(2016, p. 124), and Suarez-Nani (2002, p. 57, fn. 1). For critical discussion, see Fox (2006, pp. 273–78), Cross (2012, pp. 141–46), and MacIntosh (1995).

- 38 Aquinas, *In Sent.* I.37.4.1 (Aquinas 1929–1947, vol. 1, pp. 779–80): “Secundus motus [angeli] est per tempus; quem assignat ei Augustinus, ut habetur in *Littera*; et quia tempus est mensura successivorum, ideo omnem successionem nominat motum per tempus. Invenitur autem successio in intellectu angeli: quod sic patet. Omnis intellectus qui cognoscit diversa per diversas species, non potest simul actu illa cognoscere, ut ex praedeterminatis patet [I.35.1.2 ad 3; Mandonnet erroneously gives the reference as I.25.1.2]. Intellectus autem angeli potest cognoscere res dupliciter, sive duplici specie: scilicet vel in consideratione Verbi, quod est una similitudo omnium rerum, et sic simul potest multa videre; vel per species innatas, vel concreatas rerum, quae sibi inditae sunt, quae plures plurium sunt; unde oportet quod secundum illas species non cognoscat plura simul. Unde secundum hoc est successio in intellectu angeli; et ista successio largo modo dicitur motus. Differt tamen a motu proprie dicto in duobus ad minus. Primo, quia non est de potentia in actum, sed de actu in actum. Secundo quia non est continuus: continuus enim motus est ex continuitate ejus super quod est motus, ut in *Lib. V Physic.* probatur. Sed inter duas species intellectas non est aliqua continuatio, sed successio tantum; et haec eadem successio motus dicitur; et similis ratio est de successione affectionum. “Tertius motus est secundum locum... Et quia moveri in loco sequitur ad esse in loco, ideo eodem modo convenit angelo moveri in loco sicut esse in loco: et utrumque est aequivoce respectu corporalium. Dicitur enim angelus esse in loco in quantum applicatur loco per operationem; et quia non simul est in diversis locis, ideo successio talium operationum per quas in diversis locis esse dicitur, motus ejus vocatur. Unde sicut conceptiones intellectus consequenter se habent sine continuatione, ita et operationes ejus; unde motus localis angeli non est continuus; sed ipsae operationes ejus consequenter se habentes circa diversa loca, secundum quas in illis esse dicitur, localis motus ejus vocantur.” See also *ST* I.53.1–2 and *Quodl.* I.3.2 ad 1.
- 39 For Aquinas’s claim that continuous motion requires a continuous magnitude to move through, see esp. *In Phys.* IV.17 nn. 6–7, IV.18 nn. 4 and 11, IV.19 n. 7, V.5 n. 4, VI.2 n. 2, and VIII.17 n. 7. See also *ST* I.53.1, *In Sent.* I.8.3.3 c. and ad 4 and I.37.4.3, *Quodl.* IX.4.4, and *In Met.* V.15 n. 985 and XI.10 n. 2354.
- 40 See *In Sent.* I.37.3.1, *ST* I.52.1, and *Quodl.* I.3.1; cf. *In Sent.* II.6.1.3 and *De pot.* 3.19 ad 2.
- 41 Even in this early work, Aquinas thinks this claim that angelic locomotion is necessarily non-continuous is compatible with the claim he makes in the following article (*In Sent.* I.37.4.2) that an angel’s locomotion *can* pass through all the intermediate places if he so wishes. However, as Aquinas recognizes in the later *ST* I.53.2 and *Quodl.* I.3.2, the latter claim seems to imply *some* sort of continuity on the part of the angel’s locomotion; see discussion of these passages below.
- 42 For Aquinas’s view on the subtle connection between the categories of time and quantity, see esp. *In Met.* V.15 nn. 985–96. For discussion of different interpretations of Aristotle’s view on the matter, focused on the possible difference between Aristotle’s “time” (χρόνος) and “when” (πότε) with respect to quantity, see Porro (1996, ch. 4). In particular, see p. 389 for a good formulation of the problem: why does Aristotle identify “when” (πότε) as a category in its own right while subsuming “time” (χρόνος) under the category of quantity?
- 43 For this definition of time and the claim that it derives its continuity from what it measures, see esp. *In Phys.* IV.17 nn. 10–11. Cf. *In Phys.* IV.19 nn. 2–4; *In Sent.* I.8.3.3 (c. and ad 4), I.19.2.1, II.2.1.1 ad 4 (cf. II.2.1.2 on time as the *numerus numeratus* of motion), and II.3.2.1 ad 5; *ST* I.10.6 and I.53.3; *De ver.* 28.2 ad 10; *In Met.* XI.10 n. 2354; and *Quodl.* II.3, IX.4.4 and XI.4.
- 44 *In Sent.* I.37.4.3 (Aquinas 1929–1947, vol. 1, pp. 889–90): “In tempore enim est aliquid quasi formale, quod tenet se ex parte quantitatis discretæ, scilicet numerus prioris et posterioris; et aliquid materiale, per quod est continuum, quia continuitatem habet ex motu in quo est sicut in subjecto et primo mensurato, scilicet motu caeli, ut dicitur *IV Phys.* [text. 99]. Motus autem ille habet continuitatem ex magnitudine. Unde cum motus Angeli non sit continuus, quia non est secundum necessitatem conditiones habens magnitudinis per quam transit, sicut est in illis quae sunt sic nata in loco esse ut eorum substantia sit commensurata terminis loci, scilicet corporibus, sed per successionem operationum, in quibus nulla est ratio continuitatis; ideo *tempus illud non est continuum, sed est compositum ex ‘nunc’ succedentibus sibi ut numerus ipsarum operationum succedentium sibi tempus vocetur*, sicut ipsa successio operationum dicitur motus: et *quot sunt operationes ex quibus componitur motus secundum diversa loca, tot erunt ‘nunc,’ ex quibus componitur tempus*” (emphasis added). All translations of Aquinas are my own. For Aquinas’s parallel treatments of the discrete time measuring the succession of spiritual operations, see *In Sent.* I.8.3.3 c. and ad 4, I.19.2.1, II.2.1.1 ad 4, and II.3.2.1 ad 5; *ST* I.53.3 (c., ad 1, and ad 3), I.61.2 ad 2, I.62.5 ad 2, I.63.6 ad 4, I.85.4 ad 1, and I-II.113.7 ad 5; *Quodl.* II.3, IX.4.4, and XI.4; *De malo* 16.3 and 16.7 ad 3; and *De ver.* 28.2 ad 10.
- 45 *De ver.* 8.14 ad 12 (Aquinas 1882ff, vol. 22/2, p. 266b, lines 308–23): “operationes vero quae statim habent suam speciem completam, non mensurantur tempore nisi per accidens, sicut intelligere, sentire et huiusmodi, unde Philosophus dicit in *X Ethicorum* quod delectari non est in tempore; per accidens autem in tempore possunt esse tales operationes in quantum motui coniunguntur in natura temporis subiecta existentes, quae est natura corporea generabilis et corruptibilis qua ut organo potentiae sensitivae utuntur a quibus etiam noster intellectus accipit. Unde patet quod *ipsum intelligere angeli neque per se neque per accidens cadit sub tempore; unde in una eius operatione qua intelligit unum intelligibile, non est prius et posterius*” (emphasis added). See also *In Sent.* II.6.1.2 and IV.49.3.1.3; *De substantiis separatis* 20 ad fin. (though this text is essentially presenting an objection to which Aquinas never wrote a reply, this being an unfinished work); *SCG* II.96 n. 1820; *Quodl.* V.4; and *In De causis*, 7 and 31 (commenting on *Liber de causis*, 6 and 30, on which several of the foregoing texts rely). *In De causis* 31 and *Quodl.* V.4 are especially striking texts in which Aquinas asserts that angelic operations, no less than their substantial being, are *in momento aeternitatis*, i.e., measured by aeternity. However, in *Quodl.* V.4 he restricts the claim to the

angels' proper operation. This "proper operation" is arguably the angels' natural knowledge of self and God through their own essence, which (unlike their knowledge of other things through concreated species) is unceasing; see Porro (1996, pp. 203–5) and Peter (1964, pp. 5–8, 62). (See also *In Sent.* II.2.1.1 ad 4 and *Quodl.* X.2, where Aquinas seems to reserve aeviternity to the supernatural operation of beatitude.) Still, it seems to me that Aquinas at least *could* have said that even successive angelic acts are measured by aeviternity with respect to their own timeless inner duration, while still being measured by discrete time with respect to their succession. After all, Aquinas states at *ST* I.61.2 ad 2 that even the angels' being, although *intrinsically* measured by aeviternity, is nonetheless measured by a kind of time inasmuch as it "*succeeds*" non-being (given the doctrine of their creation *ex nihilo*); and he explicitly compares this succession of the angels' aeviternal being to the succession of their operations.

- 46 *De ver.* 8.9 ad 3 (Aquinas 1882ff, vol. 22/2, p. 251, lines 217–36): "Cum enim cognitio sit per assimilationem cognoscentis ad cognitum, hoc modo contingit novam cognitionem de aliquo accipere, quomodo contingit de novo aliquid alicui assimilari; quod quidem contingit dupliciter: uno modo per motum suum, alio modo per motum alterius ad formam quam ipse iam habet; et similiter aliquis incipit aliquid de novo cognoscere uno modo per hoc quod cognoscens de novo accipit formam cogniti, sicut in nobis accidit, alio modo per hoc quod cognitum de novo pervenit ad formam quae est in cognoscente. Et hoc modo angeli de novo cognoscunt praesentia quae prius fuerunt futura, ut puta si aliquid nondum erat homo, ei non assimilabatur intellectus angelicus per formam hominis quam habet apud se, sed cum incipit esse homo, secundum eandem formam incipit intellectus angelicus sibi assimilari *sine aliqua mutatione facta circa ipsum*" (emphasis added). See also esp. *Quodl.* VII.1.3 ad 2 (Aquinas 1882ff, vol. 25/1, p. 15a, lines 194–99): "Quando aliquid incipit esse praesens, *angelus de nouo cognoscit illud, non facta aliqua innouatione in ipso angelo*, set in re cognoscibili, in qua est aliquid quod prius non fuit, quod simul ea cognita cognoscitur" (emphasis added), and cf. ad 1.

For other instances of Aquinas's claim that angels know changing events without any intrinsic change, see *De ver.* 8.11 ad 9, 8.12 ad 1 and ad 7–8, and 8.15 ad 4 and ad 7; *ST* I.57.3 ad 3 (cf. ad 4) and I.64.1 ad 5; and *De malo* 16.7 ad 6, ad 9, and ad 13. Cf. *QD de an.* 20 ad 4 and *In Sent.* II.7.2.1 ad 4 and II.11.2.4. For discussion of this claim, see, for example, John of St. Thomas, *Cursus theologicus*, 42.2, esp. nn. 1, 8, and 25–32 (John of Saint Thomas 1931–1953, vol. 4); Cajetan, *In ST* I.57.2 n. 18 and I.58.5 n. 3 (Cajetan 1888–1906, vol. 5); Goris (2012, p. 181); Bonino (2016, p. 146, fn. 42); and Collins (1947, pp. 230–31).

- 47 In the afterlife, prior to the resurrection, Aquinas thinks the separated soul takes on an angel-like mode of knowing to replace the loss of its senses. However, he denies that the separated soul has natural knowledge of even present contingent events in the physical world on account of lacking the intellectual strength to use its newly infused intelligible species for this purpose; its natural knowledge of contingent things is now limited to the spiritual world. (Indeed, Aquinas is even uncertain if the separated souls of the blessed have supernatural knowledge of physical contingent events through the beatific vision.) See, for example, *ST* I.89.8, relying on I.89.1 and I.89.4. Hence, our puzzle of synchronizing discrete time with continuous time strictly concerns the angels, not separated souls, whose acts have no bearing on our continuous time.

- 48 *ST* I.58.4 (Aquinas 1882ff, vol. 5, p. 85a–b): "si intellectus statim in apprehensione quidditatis subiecti haberet notitiam de omnibus quae possunt attribui subiecto vel removeri ab eo, nunquam intelligeret componendo et dividendo, sed solum intelligendo *quod quid est*. Sic igitur patet quod ex eodem provenit quod intellectus noster intelligit discurrendo, et componendo et dividendo: ex hoc scilicet, quod non statim in prima apprehensione alicuius primi apprehensi, potest inspicere quiddam in eo virtute continetur. Quod contingit ex debilitate luminis intellectualis in nobis, sicut dictum est. Unde cum in angelo sit lumen intellectuale perfectum. . .; relinquitur quod angelus, sicut non intelligit ratiocinando, ita non intelligit componendo et dividendo. Nihilominus tamen compositionem et divisionem enuntiationum intelligit, sicut et ratiocinationem syllogismorum: intelligit enim composita simpliciter, et mobilia immobiliter, et materialia immaterialiter." See also *ST* I.58.5 and I.85.5, and *De malo* 16.6 c. and ad s.c. 1.

For discussion of angelic non-propositional knowledge of reality, see Feingold (2024), Bonino (2016, pp. 150–51), Goris (2012, pp. 171–73), Suarez-Nani (2002, pp. 65–68), Collins (1947, pp. 180–84), and Pegis (1940, p. 168). For more extensive treatments, see Cajetan, *In ST* I.58.4–5 (Cajetan 1888–1906, vol. 5, pp. 85–88) and John of St. Thomas, *Cursus theologicus*, 42.4 nn. 42–50 (John of Saint Thomas 1931–1953, vol. 4, pp. 679a–81b).

- 49 *De malo* 16.6 ad s.c. 1 (Aquinas 1882ff, vol. 23, p. 312b, lines 449–52): "Vnde angelus per simplicem apprehensionem subiecti cognoscit esse uel non esse sicut et nos componendo et diuidendo."

- 50 See also Aquinas's discussions of the changelessness of God's knowledge at *ST* I.14.15 ad 3 and *De ver.* 2.13 ad 7. The fact that God, like the angels, knows states of affairs (*enuntiabilia*) without needing to form propositions ("composing and dividing") is, for Aquinas, a necessary condition for enabling God's knowledge of changing events to be changeless and so timeless.

- 51 Aquinas, *In Sent.* I.37.4.3 ad 3 (Aquinas 1929–1947, vol. 1, p. 890): "Ad tertium dicendum, quod *non potest accipi aliqua proportio temporis in quo movetur corpus, ad tempus in quo movetur Angelus, quia tempus quo movetur Angelus, non est divisibile divisione continui, sed discreti in plura instantia finita; in tempore autem quo movetur corpus, sunt infinita instantia in potentia; et ita nulla est proportio, sicut nec infiniti ad finitum*" (emphasis added).

For this claim that discrete and continuous time are incommensurable—that is, share no common measure—see also *Quodl.* II.3 (Aquinas 1882ff, vol. 25/2, p. 219b, lines 57–60): "Discretorum autem et continuorum non potest esse una mensura communis, cum sint diuersorum generum in quantum sunt mensurabilia." Cf. *ST* I.53.3 ad 1 (Aquinas 1882ff, vol. 5, p. 35b): "si tempus motus angeli non sit continuum, sed successio quaedam ipsorum *nunc*, non habebit proportionem ad tempus quod mensurat

motum corporalium, quod est continuum: cum non sit eiusdem rationis” (though, as we will see, Aquinas’s position in this text is more circumspect than in the *Sentences* commentary).

- 52 See the texts cited in note 43, esp. *In Phys.* IV.17 nn. 10–11.
- 53 See *In Phys.* IV.15 n. 5; cf. IV.16 n. 2 and IV.17 n. 3. Sharing a single time is unnecessary for simultaneity only when one of the two simultaneous things is an “exceeding measure” of the other, which is not the case for any physical motions.
- 54 For the causal role in earthly events that Aquinas attributes to the heavenly bodies, see, for example, *ST* I.115.3–6; *SCG* III.82 & 84–86; *In Sent.* II.15.1.2–3; *De ver.* 5.9–10; & *Comp. theol.* I.127–28.
- 55 For this argument that time is an accident inhering in a substance in motion, and that, therefore, the unity of physical time is due to the fact that all physical motions can be measured by the number of a single first motion, see: *In Phys.* IV.23 nn. 2 and 13 (cf. IV.17 nn. 2–4), *ST* I.10.6 (c. and ad 4), *Quodl.* II.3, *In Sent.* II.2.1.2 (c. and ad 1) and II.12.1.5 ad 2, and *QD de spir. creat.* 9 ad 11; cf. *In Met.* X.2 n. 1947. (See also Aquinas’s parallel argument at *Quodl.* V.4 for the need for a unifying primary angelic duration to allow angels to share the same aeviternity.) It should be noted, though, that for Aquinas, the absence of the first heavenly sphere would not spell the fragmentation of physical time; rather, as he argues at *ST* I.66.4 ad 3, in that case its time-unifying role would be taken over by whatever other motion was now the “first motion.” For discussion, see, for example, [Moreno \(1981\)](#), pp. 73–76).
- 56 For this suggestion, see [Moreno \(1981\)](#), pp. 76–79). The rationale for transferring the first sphere’s unifying role to light’s movement would be that modern relativity theory asserts that light’s movement is the maximum movement possible and, indeed, that the passage of time for any given thing is measured by how closely the thing approximates light’s movement. Given this, it does not seem implausible that the numbering of light’s movement should also serve as an extrinsic measure for the movement of all other things.
- 57 For Aquinas’s claim in other contexts that angels are unaffected by the heavenly bodies’ movement, see *ST* I.115.5 and *De pot.* 6.10.
- 58 For this argument against the possibility of any unifying measure for physical and angelic motion, see esp. *In Sent.* I.19.2.1 and I.37.4.3, *ST* I.53.3, and *Quodl.* II.3, IX.4.4, and XI.4.
- 59 Aquinas, *ST* I.53.1 ([Aquinas 1882ff](#), vol. 5, p. 30a–b): “Quia enim angelus non est in loco nisi secundum contactum virtutis, ut dictum est, necesse est quod motus angeli in loco nihil aliud sit quam diversi contactus diversorum locorum successive et non simul: quia angelus non potest simul esse in pluribus locis, ut supra dictum est. Huiusmodi autem contactus non est necessarium esse continuos. Potest tamen in huiusmodi contactibus continuitas quaedam inveniri. Quia, ut dictum est, nihil prohibet angelo assignare locum divisibilem, per contactum suae virtutis; sicut corpori assignatur locus divisibilis, per contactum suae magnitudinis. Unde sicut corpus successive, et non simul, dimittit locum in quo prius erat, et ex hoc causatur continuitas in motu locali eius; ita etiam angelus potest dimittere successive locum divisibilem in quo prius erat, et sic motus eius erit continuus. Et potest etiam totum locum simul dimittere, et toti alteri loco simul se applicare: et sic motus eius non erit continuus” (emphasis added). See also the immediately ensuing *ST* I.53.2.
- 60 *ST* I.53.3 ([Aquinas 1882ff](#), vol. 5, p. 35a): “Unde relinquatur quod motus angeli sit in tempore. *In continuo quidem tempore, si sit motus eius continuus*; in non continuo autem, si motus sit non continuus (utroque enim modo contingit esse motum angeli, ut dictum est): continuitas enim temporis est ex continue motus, ut dicitur in *IV Physic.*” (emphasis added).
- 61 *ST* I.53.3 ad 1 ([Aquinas 1882ff](#), vol. 5, p. 35b): “si tempus motus angeli non sit continuum, sed successio quaedam ipsorum *nunc*, non habebit proportionem ad tempus quod mensurat motum corporalium, quod est continuum: cum non sit eiusdem rationis. Si vero sit continuum, est quidem proportionabile, non quidem propter proportionem moventis et mobilis, sed propter proportionem magnitudinum in quibus est motus.”
- 62 *ST* I.53.3 ([Aquinas 1882ff](#), vol. 5, p. 35a): “Sed istud tempus, sive sit tempus continuum sive non, *non est idem cum tempore quod mensurat motum caeli, et quo mensurantur omnia corporalia, quae habent mutabilitatem ex motu caeli. Motus enim angeli non dependet ex motu caeli*” (emphasis added).
- 63 *ST* I.63.6 ad 4 ([Aquinas 1882ff](#), vol. 5, p. 133a–b): “inter quaelibet duo instantia esse tempus medium, habet veritatem in quantum tempus est continuum, ut probatur in *VI Physic.* [VI.1.231b9]. Sed in angelis, qui non sunt subiecti caelesti motui, qui primo per tempus continuum mensuratur, tempus accipitur pro ipsa successione operationum intellectus, vel etiam affectus.” Cf. *ST* I.61.2 ad 2 and I.62.5 ad 2.
- 64 *ST* I-II.113.7 ad 5 ([Aquinas 1882ff](#), vol. 8, p. 339a–b): “Si qua enim successio sit ibi affectuum vel intellectualium conceptionum, puta in Angelis, *talis successio non mensuratur tempore continuo, sed tempore discreto*, sicut et ipsa quae mensurantur non sunt continua, ut in Primo habitum est. Unde in talibus est dandum ultimum instans in quo primum fuit, et primum instans in quo est id quod sequitur: nec oportet esse *tempus medium*, quia *non est ibi continuitas temporis*, quae hoc requirebat” (emphasis added).
- 65 *Quodl.* II.3 ([Aquinas 1882ff](#), vol. 25/2, p. 219b, lines 64–74): “Manifestum est autem quod motus spiritualium creaturarum . . . non sunt motus continui, set vicissitudines quaedam discrete... Vnde manifestum est quod, cum tempus non habeat continuitatem nisi ex motu, quod tale tempus non est continuum et quod est aliud a tempore corporalium rerum.” For the dates of the *Prima Pars* and this *Quodlibet* see [Torrell \(2005\)](#), pp. 146 and 211, respectively).
- 66 *In Sent.* I.37.4.2 ([Aquinas 1929–1947](#), vol. 1, p. 884): “secundum quod habet aliquid operari vel in omnibus mediis locis, vel in aliquibus vel in nullo, secundum hoc potest pertransire omnia media vel quaedam vel nullum.”

- ⁶⁷ *In Sent.* I.37.4.2 ad 5 (Aquinas 1929–1947, vol. 1, pp. 884–85): “angelus potest pertransire per omnia media; non tamen oportet quod numeret infinita puncta existentia in linea: quia locus in quo est angelus, non semper est indivisibilis, sed quandoque divisibilis, ut dictum est; et cum nullum spatium dividatur in infinita divisibilia actu accepta, constat quod omnia media pertransire potest.”
- ⁶⁸ *Quodl.* I.3.2 ad s.c. (Aquinas 1882ff, vol. 25/2, pp. 182b–83a, lines 63–71): “angelus non est in loco per commensurationem, set per applicationem sue uirtutis ad locum, que quidem potest esse indifferenter et ad locum diuisibilem et ad indiuisibilem; unde potest continue moueri, sicut aliquid in loco diuisibili existens, continue intercipiendo spacium; secundum uero quod est in loco indiuisibili, non potest eius motus esse continuus, nec pertransire omnia media” (emphasis added).
- ⁶⁹ See note 59 above.
- ⁷⁰ See, for example, *In Sent.* I.37.4.1 (Aquinas 1929–1947, vol. 1, p. 880), where he explicitly defines the angel’s locomotion as the “successio talium operationum per quas in diversis locis esse dicitur” (emphasis added).
- ⁷¹ See *ST* I.53.1 (Aquinas 1882ff, vol. 5, p. 30b), where he instead defines the angel’s locomotion as “diversi contactus diversorum locum successive et non simul” (emphasis added).
- ⁷² *In Sent.* I.37.4.2 (Aquinas 1929–1947, vol. 1, p. 884): “essentia angeli. . . non definitur ad locum nisi per operationem; non autem per operationem secundum quod exit ab essentia, sed secundum quod terminatur ad operatum in loco” (emphasis added).
- ⁷³ This point that locomotion is not a change in the angel is, I take it, part of what Aquinas meant by insisting in *ST* I.53.1 (Aquinas 1882ff, vol. 5, p. 30a) that “angelus non est in loco ut commensuratus et contentus, sed magis ut continens.”
- ⁷⁴ For a similar account of Aquinas’s apparently conflicting texts on whether the time measuring angelic locomotion time can be continuous (indeed barely noting the conflict at all), see Porro (1996, pp. 300–305; 2001, pp. 155–56). John of St. Thomas, by contrast, thinks that Aquinas changed his mind in a notable way; see *Cursus theologicus* 40.4 n. 14 (John of Saint Thomas 1931–1953, vol. 4, p. 524a).
- ⁷⁵ Aquinas, *De malo* 16.7 arg. 3 (Aquinas 1882ff, vol. 23, p. 313a, lines 16–26): “Si demones sunt substantie incorporee, oportet quod secundum substantiam et operationem sint supra tempus, secundum illud uod dicitur in libro *De causis*, quod intelligentie substantia et operatio est supra tempus; set presens, preteritum et futurum sunt differentie temporis; ergo quantum ad cognitionem demonis non differt utrum sit aliquid presens, preteritum aut futurum. Set demones possunt cognoscere presentia et preterita. Ergo etiam possunt cognoscere futura.”
- ⁷⁶ Aquinas, *De malo* 16.7 ad 3 (Aquinas 1882ff, vol. 23, p. 316a, lines 274–80): “substantia et operatio demonis est quidem supra tempus quod est numerus motus caeli; tamen in eius operatione adiungitur tempus, secundum quod non omnia simul actu intelligit. Quod quidem tempus est uicissitudo quedam affectionum et conceptionum intelligibilium.” This is also the gist of the parallel response at *ST* I.57.3 ad 2 (Aquinas 1882ff, vol. 5, p. 75b), which is similarly unhelpful for our purposes: “licet intellectus angeli sit supra tempus quo mensurantur corporales motus, est tamen in intellectu angeli tempus secundum successionem intelligibilium conceptionum... Et ita, cum sit successio in intellectu angeli, non omnia quae aguntur per totum tempus, sunt ei praesentia.”
- ⁷⁷ Aquinas, *De malo* 16.7 arg. 4 (Aquinas 1882ff, vol. 23, p. 313a–b, lines 27–35): “Set dicebat quod ad hoc quod aliquid possit cognosci non solum requiritur quod cognoscens sit presentialiter et in actu, set etiam cognitum.—Set contra. Certior est cognitio Dei quam cognitio demonis. Si ergo ad certitudinem cognitionis demonis requiritur quod cognitum sit presentialiter in actu, multo magis hoc requiretur ad cognitionem Dei; et sic nec Deus futura cognosceret. Quod est inconueniens.”—Ad 4 (Aquinas 1882ff, vol. 23, p. 316a, lines 283–87): “Ad quantum dicendum quod alia ratio est de Deo, qui totum tempus presentialiter intuetur eo quod eius intellectus est omnino liber a tempore et sic respicit futurum ut existens; quod non potest dici de angelo uel demone.” The reply to the eighth objection (Aquinas 1882ff, vol. 23, p. 316b, lines 329–38) makes a similar point: “licet species que sunt in intellectu angelico sint utcumque similes rationibus ydealibus intellectus diuini, non tamen possunt eas adaequare, ut uidelicet ad omnia se extendant ad que se extendunt rationes ydeales intellectus diuini. Vnde licet ydeales rationes intellectus diuini, que penitus sunt supra tempus, se habeant indifferenter ad presens, praeteritum et futurum, non sequitur quod eodem modo se habeat de speciebus intellectus angelici.” See also *QD de spir. creat.* 5 ad 7 for this contrast between the divine and angelic intellects.
- ⁷⁸ Aquinas, *De malo* 16.7 arg. 5 (Aquinas 1882ff, vol. 23, p. 313b, lines 39–42): “Cum igitur intellectus abstrahat ab hic et nunc, uidetur quod non differat quantum ad cognitionem demonis utrum aliquid sit presens, preteritum uel futurum.”—Ad 5 (Aquinas 1882ff, vol. 23, p. 316b, lines 295–303): “Intellectus autem angeli boni uel mali abstrahit ab hic et nunc quantum ad ipsas species intelligibiles, que sunt immateriales et uniuersales, non autem quantum ad ipsa cognita: cognoscit enim per species intelligibiles propter earum efficaciam non solum uniuersalia set etiam singularia; et ita differt in cognitione demonis cognoscere presentia uel futura.” See also the parallel response at *De ver.* 8.12 ad 8.
- ⁷⁹ See note 46 above.
- ⁸⁰ Aquinas, *De malo* 16.7 ad 6 (Aquinas 1882ff, vol. 23, p. 316b, lines 304–21): “angeli non cognoscunt singularia, quando fiunt in actu, per species de nouo acquisite set per species quas prius habebant, per quas tamen non cognoscebant ea prout erant futura. Cuius ratio est quia omnis cognitio fit per quamdam assimilationem cognoscentis et cogniti; species autem intelligibiles que sunt in intellectu angelico sunt directe similitudines respicientes naturas specierum; per quas tamen singularia cognoscere possunt, non tamen nisi in quantum participant naturam specierum, quod non est antequam sint in actu: et ideo statim quando sunt in actu

cognoscuntur ab angelo, sicut e conuerso accidit apud nos quod oculus statim quod accipit speciem lapidis cognoscit lapidem preexistentem; forme enim intellectus angelici preexistunt rebus temporalibus sicut forme rerum preexistunt sensibus nostris.” See also the reply to the ninth objection (Aquinas 1882ff, vol. 23, p. 317a, lines 345–50): “species intellectus angelici secundum seipsas semper eodem modo se habent, set ex transmutatione indiuiduorum naturalium prouenit quod quandoque assimilantur speciebus existentibus in intellectu angeli, quandoque autem non assimilantur.”

The reply to the thirteenth objection (Aquinas 1882ff, vol. 23, p. 317a–b, lines 377–82) also hinges on this principle that a changeless species only serves as a medium for knowledge of a changeable thing *when* that changeable thing has, in fact, begun to participate in the represented nature: “hoc quod demon non cognoscit id quod est futurum, non prouenit ex eo quod intellectus suus sit in potentia, set ex eo quod singulare futurum nondum participat formam speciei cuius similitudo actu preexistit in intellectu demonis.”

The parallel response at ST I.57.3 ad 3 (Aquinas 1882ff, vol. 5, p. 75b) follows the same lines as *De malo* 16.7 ad 6: “licet species quae sunt in intellectu angeli, quantum est de se, aequaliter se habeant ad praesentia, praeterita et futura; tamen praesentia, praeterita et futura non aequaliter se habent ad rationes. Quia ea quae praesentia sunt, habent naturam per quam assimilantur speciebus quae sunt in mente angeli: et sic per eas cognosci possunt. Sed quae futura sunt, nondum habent naturam per quam illis assimilentur: unde per eas cognosci non possunt.”

See also *De ver.* 8.12 ad 1 & ad 8 (as well as 8.9 ad 3); *Quodl.* VII.1.3 ad 1; *QD de spir. creat.* 5 ad 7; and *QD de an.* 20 ad 4.

- ⁸¹ Aquinas, *In Sent.* I.37.4.3 arg. 7 (Aquinas 1929–1947, vol. 1, p. 887): “moveatur angelus de A in B, ita quod in hoc instanti quod est C, sit in A, et in hoc instanti quod est D, sit in B. Item ponatur quod aliquod corpus sit G, et moveatur similiter de A in B, et incipiat simul moveri cum angelo, scilicet in C. Inde sic. Angelus citius pervenit ad B, quam corpus G. Ergo in instanti D corpus nondum pervenit ad B; sed erit citra B. Et sit ille locus R. Inde sic. G movetur de A in R, in tempore CD. Sed spatium AR est divisibile. Dividatur ergo in puncto H [following the Parma edition (6:309a); Mandonnet mistakenly has “G” instead of “H”]. Inde sic. Corpus illud, scilicet G, in instanti C est in A, et in instanti D est in R. Ergo H erit in aliquo alio instanti medio inter illa duo, et sit illud N. In N ergo Angelus vel erit in A vel in B, vel in medio. Sed non in A, quia sic in duobus instantibus esset in eodem ubi; et eadem ratione non est in B. Ergo oportet quod in instanti N sit in medio: et sic semper procedendo, invenitur inter quaelibet duo instantia instans et tempus. Ergo oportet quod motus angeli sit in tempore continuo.”

- ⁸² See John Pecham, *Quodl.* II.10 n. 6 (Pecham 1989, p. 99, lines 22–36): “Item, quod [angeli] in primo instanti fuerunt boni et statim immediate fuerunt mali, impossibile videtur. Quoniam inter quaelibet duo instantia cadit tempus medium, et instans instanti non est continuum nec contiguum, nec consequenter ens.—Sed dicunt quod est tempus quod est continuum et mensura continui, et tempus aliud quod est discretum et compositum ex instantibus quod mensurat operationes angelorum instantaneas, et de hoc non est verum.—Sed contra: Accipiamus unum instans temporis discreti in quo fuit bonus, et dicatur *a*, et alius instans in quo fuit malus, et dicatur *b*. *A* instans est simul cum aliquo instanti temporis continui, quia etiam aeternitas Dei est simul cum tempore; sit *c*. Item, *b* est simul cum aliquo instanti illius communis temporis; sit *d*. Aut ergo *c* et *d* sunt unum instans aut duo. Si unum, in eadem ergo instanti fuit angelus bonus et malus. Si duo, sed inter quaelibet instantia illius temporis [scil. temporis continui] cadit tempus medium, ergo aliqua erat pars temporis in quo vel cum quo angelus nec erat bonus nec malus.” For discussion and endorsement of this argument, see Fox (2006, pp. 276–77) and following him Cross (2012, p. 143).

- ⁸³ For the origin of this principle, which Aquinas relies on in all his treatments of instantaneous change, see Aristotle *Physics* VI.6.237a34–b21 (Aristotle 1984); cf. Aquinas, *In Phys.* VI.8 nn. 9 and 15.

- ⁸⁴ Besides *In Sent.* I.37.4.3 c. & arg. 8–9/ad 8–9, see also esp. ST I.53.3 (which, like *In Sent.* I.37.4.3 arg. 8, focuses on the “quies” of the angel in the original place in non-continuous locomotion), as well as *Quodl.* IX.4.4 and XI.4.

- ⁸⁵ Again, following the Parma edition; see note 18.

- ⁸⁶ Aquinas, *In Sent.* I.37.4.3 ad 7 (Aquinas 1929–1947, vol. 1, p. 891): “si ponatur motus angeli et corporis simul incipere, quando angelus erit in alio termino secundum aliud instans sui temporis, corpus etiam erit in alio termino secundum aliud instans sui temporis. Inter duo autem instantia temporis istius corporis est tempus medium in eo quod motus ejus est continuus; unde est ibi signare medium instans. Sed inter duo instantia angeli non est tempus medium. Unde nec medium instans oportet ibi signari, sed contingit signari, si in tribus locis successive sit, quia ita etiam tempus ex tribus ‘nunc’ componetur; unde unum erit medium; et illa duo instantia possunt includere omnia instantia temporis, cum etiam unum nunc et instans [Parm: “aevi stans”] includat omne tempus: et ita non est inconveniens quod dum motus angeli est in duobus tantum instantibus, motus corporis sit in infinitis; quamvis quantumcumque duret motus corporis, tantumdem etiam duret motus angeli, et quamvis utrumque non sit indivisibile. Et praeterea contingit quod quando corpus est in medio instanti, angelus in nullo loco sit, cum non sit necessarium, eum semper esse in loco, ut dictum est [I.37.4.1]; et ita secundum coordinationem illius temporis nullum ‘nunc’ angelo respondeat, sed tantum aevum” (emphasis added).

- ⁸⁷ That “including” in this context means merely “surrounding” rather than “being simultaneous with the whole duration” is even clearer in the preceding reply to the fifth objection (*In Sent.* I.37.4.3 ad 5).

- ⁸⁸ Cf. Porro’s similar discussion of *In Sent.* I.37.4.3 ad 7 (Porro 1996, pp. 318–20, 327).

- ⁸⁹ See note 82.

- ⁹⁰ See esp. *In Phys.* II.6 n. 9, *In Met.* V.3 n. 794, and *Expositio libri Posteriorum* II.10 (Aquinas 1882ff, vol. 1*/2, p. 212a, lines 40–54); for discussion, see Frost (2022, pp. 52–57).

- ⁹¹ See, for example, John of St. Thomas, *Cursus theologicus* 10.3 n. 2 and 40.4 n. 36 (John of Saint Thomas 1931–1953, vol. 2, p. 98; vol. 4, p. 530a). For this reason, in the latter text he calls angelic instants “virtualiter divisibiles.” Cf. Jocelyn (1946, p. 52).
- ⁹² See the texts cited above in notes 45–46 and 80.
- ⁹³ See ST I.53.1–3, *Quodl.* I.3.2, and *In Sent.* I.37.4.2, discussed above. Cf. Aquinas’s claim that angels can move physical objects from one place to another, presumably by continuous motion, at, for example, ST I.110.3, *De pot.* 6.3, and *Quodl.* IX.4.5.
- ⁹⁴ For a similar argument, see John of St. Thomas, *Cursus theologicus* 40.4 n. 17 (John of Saint Thomas 1931–1953, vol. 4, pp. 524b–25a).
- ⁹⁵ For the text of *In Sent.* I.19.2.2 ad 1, see note 28 above.
- ⁹⁶ For Aquinas’s explicit claim that eternity “includes” (*includit*) all times, see, for example, ST I.10.2 ad 4 and I.13.1 ad 3; *De ver.* 2.12 and 3.3 ad s.c. 1; and *Super Io.* 16.3.
- ⁹⁷ See the texts cited above in note 84.
- ⁹⁸ For Aquinas’s defense of this assumption, see, for example, ST I.52.2 (cf. I.8.2 ad 2 and I.112.1) and *In Sent.* I.37.3.2.
- ⁹⁹ See ST III.75.7 (esp. ad 1), *In Sent.* IV.11.1.3.2, and *Quodl.* VII.4.2.
- ¹⁰⁰ See *De ver.* 28.9 (cf. 28.2 ad 10), ST I-II.113.7 (esp. ad 5), and *In Sent.* IV.17.1.5.2–3.
- ¹⁰¹ See ST I-II.113.7 ad 5.
- ¹⁰² *De ver.* 28.9 (Aquinas 1882ff, vol. 22/3, pp. 846b–47a, lines 192–99): “oportet quod transitus de uno in alterum sit in instanti,—quamvis causa huius privationis successive tollatur, vel secundum quod homo cogitando disponit se ad gratiam, vel saltem secundum quod tempus praeterit post quod Deus se gratiam daturum praeordinavit –, et sic gratiae infusio fit in instanti” (emphasis added).
- ¹⁰³ MacIntosh, surprisingly, does not consider this aspect of Aquinas’s view. As a result, while he rightly argues that Aquinas could have allowed the *physical* time measuring the angel’s action on the original place to be an “open interval” extending up to, but not including, the first instant of the angel’s action on the destination, he wrongly infers that Aquinas could, therefore, have done away with the discreteness of the angel’s time as well (MacIntosh 1995, pp. 564–75).
- ¹⁰⁴ Bernard Lonergan argues that Aquinas, in his early work, considered causal actions to be inherent in the agent, but that he later, at the time of writing the *De potentia*, the *Summa theologiae*’s Prima Pars, and the *Physics* commentary, shifted to the more faithfully Aristotelian view that such actions exist only in the effect (Lonergan 2000, pp. 66–73, 253–77). While I do not think that the difference between Aquinas’s early and mature views on this issue is as deep as Lonergan claims (in part because *De pot.* 8.2, a mature text, seems to reaffirm the early view), he is right at least to point to a shift in emphasis on Aquinas’s part. For a recent discussion of the problem of action’s ontological location in Aquinas, see Frost (2018, pp. 47–82; 2022, pp. 158–88).
- ¹⁰⁵ In the continuous angelic locomotion Aquinas envisions in ST I.53.3, by contrast, it seems to me that there would be no succession of angelic instants at all, since there would only be one angelic action involved, not two. Thus, in this case, the only time measuring the locomotion would be the physical time measuring the *continuous* (and thus still not instantaneous) change in the place affected by the angel.
- ¹⁰⁶ See, for example, Aristotle *Physics* VI.1.231a29–b9; cf. Aquinas *In Phys.* VI.1 nn. 4–5.
- ¹⁰⁷ This move allows us, for example, to avoid Godfrey of Fontaines’s argument all angelic indivisible instants *must* correspond to a stretch of physical time on the grounds that two different angelic acts—even ones that had nothing to do with the physical world—would require two parallel physical instants with the accompanying intermediate physical time because, otherwise, two contradictory things would be true *at* the same physical instant. See his *Quodlibet* VI.13 (Godfrey of Fontaines 1914; for discussion, see Porro 1996, p. 344). Instead, I am suggesting that neither of those angelic acts occurs *at* any physical instant at all.
- ¹⁰⁸ For Aquinas on instantaneous changes, see notes 99 and 100.
- ¹⁰⁹ Presumably, this “beginning” would be the origin of the physical universe. However, as we saw earlier, God could, if he wished, create an angel “at” a later point in our history by making the angel’s aeviternity simultaneous only with a certain part of our history. In that case, the “beginning” for this angel would be the first moment of physical history with which the angel’s *existence* is simultaneous.
- ¹¹⁰ For this view that it is up to the angel how much physical time should correspond to his changeless act, see John of St. Thomas, *Cursus theologicus* 40.4 n. 36 (John of Saint Thomas 1931–1953, vol. 4, p. 530a); cf. Jocelyn (1946, pp. 53–54) and Porro (2008, p. 82).
- ¹¹¹ While Aquinas does not explicitly discuss whether angels all share the same discrete time, he does frequently say that they all share the same aeviternity, namely that of the highest and simplest angel. See *In Sent.* II.2.1.2 (c. and ad 5), ST I.10.6, and esp. *Quodl.* V.4 (c. and ad 1), where Aquinas says that not only the highest angel’s being but also his equally aeviternal “proper operation” (arguably his natural knowledge of self and God; see note 45 above) measure the other angels’ aeviternity. (Aquinas brings in “proper operation” in this text to explain why Lucifer would not still be the measure of the blessed angels’ duration!) One might, therefore, reasonably suppose that, by the same token, they would all share the discrete time of the highest angel with the simplest and richest successive operations. See Jocelyn (1946, pp. 52–53), citing Cajetan *In ST* I.10.5 n. 13 (Cajetan 1888–1906, vol. 4, p. 102b) and John of St. Thomas, *Cursus theologicus* 10.3 n. 4 (John of Saint Thomas 1931–1953, vol. 2, p. 98). Nonetheless, even if there were no hierarchy here and thus no common discrete time, the different angels’ discrete instants would presumably still be simultaneous with each other; for, as we have seen, Aquinas thinks that even measures as radically different as aeviternity and physical time can still be simultaneous with each other.

- 112 The alternative would be to deny that angelic instants always align exactly with each other and hold instead that one angelic instant can “take longer” than another, such that one angel can traverse several instants while another remains motionless in a single instant. This is John of St. Thomas’s view; see *Cursus theologicus* 10.3 nn. 3 & 6 (John of Saint Thomas 1931–1953, vol. 2, pp. 98–99), endorsed by Jocelyn (1946, pp. 54 and 56). On this alternative view, Angel B would not be able to converse with Angel A at all until he had “caught up” on the physical universe’s history. However, this alternative has the awkward consequence that it makes angelic time *dependent* on physical time as the real objective yardstick, and this, in turn, would give angelic acts *intrinsic* temporal extension like that of our own human spiritual acts, which is quite incompatible with discrete time. (To return to the recent example, if Angel B in his *at*₂ wanted to ask Angel A about what Angel A had seen in the physical universe, he would have to *wait*—distending an *angelic* instant!—until Angel A “finished” his billion-year act of observation.) Moreover, Aquinas himself seems to assume that angelic instants do align exactly with each other in his discussions of Lucifer’s temptation of the other angels in their first instant; see in *ST* I.63.8 (cf. I.63.6 ad 4) and *In Sent.* II.6.1.2. This is perhaps not decisive, since Aquinas assumes that the angels in their first instant were considering themselves, not the physical world. Still, it at least strongly suggests that angelic instants are perfectly synchronous.
- 113 See esp. *In Sent.* I.38.1.5; see also the preceding *In Sent.* I.38.1.4, *ST* I.14.9 and I.14.13, *De ver.* 2.12, *De malo* 16.7, *Expositio libri Peryermeneias* [*In Pery.*] I.14 (Aquinas 1882ff, vol. 1*/1), *De rationibus fidei ad cantorem Antiochenum* [*De rat. fid.*] 10 (Aquinas 1882ff, vol. 40/B), *Quodl.* IX.3, *Comp. theol.* I.133, and SCG I.66 nn. 543 and 546 and I.67 nn. 557–58 and 564.
- 114 For Aquinas’s use of this illustration, see *ST* I.14.13 ad 3, *In Pery.* I.14 (Aquinas 1882ff, vol. 1*/1, p. 77b, lines 379–93), *Quodl.* XI.3, *De malo* 16.7, *De rat. fid.* 10, and *Comp. theol.* I.132.
- 115 See, for example, *ST* I.19.1 (for the identity of God’s willing to his existence), 4 ad 4 (for the identity of God’s will to his intellect), and 7 (for the changelessness of God’s will to intervene at various points in history); cf. II-II.83.2 (on why petitionary prayer does not “change God’s mind”).
- 116 For the causality of God’s knowledge, see *ST* I.14.8, *In Sent.* I.38.1.1, and *De ver.* 2.14. It is perhaps worth noting that one can hold the “causal knowledge” claim without holding the stronger claim that God knows by *preordaining* what will happen. It is true that Luis de Molina, one of the foremost opponents of the “preordaining” claim, does think this position requires rejecting the “causal knowledge” claim, too, at least with respect to contingent realities; see *Concordia* I.1 nn. 5–6 (de Molina 1876). Jacques Maritain, however, another well-known opponent of the “preordaining” claim, nonetheless vigorously affirms the “causal knowledge” claim even regarding contingent realities insofar as they are positive beings (see for example Maritain 1948, pp. 105–13). Maritain can do so because he holds that free creatures “nullify” God’s causal action when they sin; thus, even though God knows by causing, *what* he actually causes is subject to the free creature’s “nullification” rather than preordained. On this view, then, one could reject the “preordaining” claim and still hold that angels, unlike God, would have to will creatures in an act subsequent to their knowledge.
- 117 See notes 46 and 80 above.
- 118 See esp. *ST* I.14.8 ad 1 and *De ver.* 2.14 ad 1.
- 119 See *ST* I.58.3, where Aquinas denies that angels engage in discursive reasoning, and I.59.3 ad 1, where he infers that, therefore, angelic free choice does not require deliberation.
- 120 See *De malo* 16.4, as well as *ST* I.63.5.
- 121 Again, see notes 46 and 80 above.
- 122 Aquinas elaborates this theory of the numerical identity of relations primarily in texts on whether Christ has one or two relations of “sonship”: *ST* III.35.5, *Quodl.* I.2.1 (cf. IX.2.3), and *In Sent.* III.8.1.5.
- 123 See esp. *In Phys.* V.3 nn. 7–8; see also *De pot.* 7.8 (c. and ad 5) and 7.9 ad 7, and *In Sent.* I.26.2.1 ad 3 and I.30.1.1 (though it is less clear that this last text is specifically about real relations). For discussion, see esp. Henninger (1989, pp. 19–23).
- 124 See *In Sent.* II.2.1.1, *Quodl.* X.2, and *ST* I.10.5 for Aquinas’s adamant insistence that one cannot admit “before” and “after” (*prius et posterius*) into a duration without also admitting sequential temporal parts. The context in these passages is Aquinas’s rejection of Bonaventure’s view, which he states at *In Sent.* II.2.1.1.3 (Bonaventure 1885) that aeternity can lack “newness” or “aging” (*innovatio* and *inveteratio*) yet still be extended into “before” and “after”; but the principle would equally exclude “before” and “after” from a partless, non-successive instant.
- 125 For a clear statement of this causal criterion of *per accidens* causation, see, for example, *In Sent.* IV.17.2.1.3 ad 3 (Aquinas 1856–1858, vol. 7, p. 784a): “*quamvis motus intellectus et voluntatis habeat totam suam speciem in uno instanti, sicut res permanens; tamen secundum accidens mensuratur tempore, secundum quod causae suae variabiles sunt per tempus*” (emphasis added). I follow the Parma edition in reading “permanens” instead of “permanent,” as Moos has it (Aquinas 1929–1947, vol. 4, p. 862). For Aquinas’s notion of *per accidens* divisibility in general, see, for example, *In Phys.* VI.7 n. 8 (in the context of motion); cf. *ST* I.76.8 (in the context of the soul).
- 126 For the *per accidens* temporal extension of physical existence, see *In Sent.* IV.17.1.5.2 ad 3, IV.17.1.5.3 ad 1, IV.17.2.1.3 ad 3, and IV.49.3.1.3; *ST* I-II.31.2; *Quodl.* IV.3.2; *De pot.* 5.1 ad 2 and 5.4 ad 1; SCG I.20 n. 175; and *In Phys.* VIII.21 n. 15. The last three texts are noteworthy in that Aquinas there considers whether to apply the notion of *per accidens* temporal extension also to the incorruptible heavenly bodies; interestingly, he answers affirmatively in the earlier SCG text but negatively in the later *De Pot.* and *In Phys.* texts.

The fact that, for Aquinas, causal dependence on motion is central to *per accidens* temporal extension is also presumably why Aquinas never applies the notion of *per accidens* temporal extension to aeternity, even though it would otherwise seem plausible that the angel's aeternal existence should be *per accidens* distended by the sequence of his acts: for his existence is in no way dependent on his acts or their sequence.

Porro critiques this claim of Aquinas that substantial sublunar existence is in time only *per accidens* (Porro 2008, pp. 82–83), though perhaps without giving sufficient weight to the causal dependence aspect on which the claim rests.

127 For the *per accidens* temporal extension of sensory acts based on the physical change of the sense organ, see *In Sent.* IV.17.1.5.2 ad 3 and *De ver.* 8.14 ad 12; for the same claim based instead on the sense act's physical, mutable object, see *In Sent.* IV.49.3.1.3 (c. & ad 3) and *ST I-II* 31.2 c. (cf. ad 1). See also *In Sent.* I.8.3.3 ad 4, which ascribes *per accidens* temporality to any act of the soul that is in some way connected to the body, and IV.17.1.5.3 ad 1, which attributes *per accidens* temporality to sensory acts without giving a reason.

128 For the phantasm-based *per accidens* temporal extension of human spiritual acts, see *In Sent.* IV.17.1.5.2 ad 3, IV.17.2.1.3 ad 3, and IV.49.3.1.3; SCG I.102 n. 846; *ST I* 107.4, I-II.31.2 ad 1, and I-II.113.7 ad 5; *De ver.* 8.14 ad 12; *De substantiis separatis* 20 ad fin.; and *In Pery.* I.14 (Aquinas 1882ff, vol. 1*/1, pp. 77b–78a, lines 393–97). For the same point without explicitly using the term “*per accidens*,” see also *ST I* 85.5 ad 2, SCG II.96 n. 1820, and *In Sent.* I.38.1.3 ad 3. For the role that the phantasm plays in Aquinas's theory of human intellectual knowledge, see, for example, *ST I* 84.7–8.

129 See, for example, *De ver.* 2.14 (Aquinas 1882ff, vol. 22/2, p. 92a, lines 86–91), where Aquinas states that angelic knowledge is neither caused by the object like ours nor causes the object like God's: “Sed scientia angelorum neque est causa rerum neque ab eis causata est sed utrumque est ab una causa: sicut enim Deus formas naturales influit rebus ut subsistant ita similitudines earum infundit mentibus angelorum ad cognoscendum res.”

130 For Aquinas's contrast of the *per accidens* temporal extension of human spiritual acts with the absolute unextendedness of angelic acts, see esp. *De ver.* 8.14 ad 12 (quoted above in note 45); see also *In Sent.* IV.49.3.1.3, *ST I* 107.4 and I-II.113.7 ad 5, and *De substantiis separatis* 20 (Aquinas 1882ff, vol. 40/D, p. 79b, lines 298–307).

John of St. Thomas claims to follow Aquinas in rejecting even *per accidens* temporal extension in angelic cognition; see *Cursus theologicus* 40.5 n. 37 (John of Saint Thomas 1931–1953, vol. 4, pp. 542b–43a). Nonetheless, in practice, he actually seems to endorse something even stronger than *per accidens* extension, since he holds that the angel's intelligible species itself—and therefore, presumably, also the cognitive act arising from that species—changes *intrinsically* insofar as it becomes applied to different individual objects (rather than merely depending on some *extrinsic* changing thing: either for the act's existence, as with ordinary *per accidens* extension, or for its relations, as my “modest” model proposes). See this striking passage from *Cursus theologicus* 42.2 n. 56 (John of Saint Thomas 1931–1953, vol. 4, p. 653b): “*variatio intrinseca in specie* [i.e., in the angel's concreated intelligible species] non est essentialis seu formalis, sed *modalis*, seu determinatio quaedam virtualiter et implicite contenta in illa specie ex vi suae primae infusionis, nunc autem de novo explicata ex vi ejusdem infusionis ad positionem objecti singularis. . . Variatio autem *modalis*, seu determinatio materialis, consistit in *applicatione* aliqua eorum quae representabantur quasi in abstracto et quidditative, et modo determinate applicantur in exercitio hic et nunc, posita aliqua condicione quae ante non ponebatur” (emphasis added). If nothing else, this apparent inconsistency on the part of such a master of Aquinas's angelic theory as John of St. Thomas indicates just how thorny the issue is.

131 See esp. *De ver.* 2.8, where the causality of God's knowledge is the only explanation Aquinas gives for why that knowledge extends to future things, without mentioning God's eternity. See also SCG I.66 nn. 543 & 546 and I.67 nn. 562–63, where the appeals to God's causal knowledge to explain God's foreknowledge are separate from parallel appeals to God's eternity in the same chapters, and *In Sent.* I.38.1.5, where Aquinas brings up the causality of God's knowledge first as an *objection* to God's knowledge of future contingents, and then again only to instantly insist that this causal route is not God's *only* way of knowing future contingents—“Deus ab aeterno non solum vidit ordinem sui ad rem, ex cuius potestate res erat futura, sed ipsum esse rei intuebatur” (Aquinas 1929–1947, vol. 1, p. 911; emphasis added)—spending the rest of the response instead on developing the “eternal present” approach.

132 In particular, see *In Sent.* I.38.1.5 (Aquinas 1929–1947, vol. 1, p. 911), where Aquinas claims that being able to observe different events at different times by a *single non-successive act* is a sufficient condition for seeing them all together “side by side,” as God does: “Sint quinque homines qui successive in quinque horis quinque contingentia facta videant. Possum ergo dicere, quod isti quinque vident haec contingentia succedentia praesentialiter. Si autem poneretur quod isti quinque actus cognoscentium essent *actus unus*, posset dici quod una cognitio esset praesentialiter de omnibus illis cognitis successivis. Cum ergo Deus *uno aeterno intuitu, non successivo*, omnia tempora videat, omnia contingentia in temporibus diversis ab aeterno praesentialiter videt” (emphasis added). Yet on the “modest” model the angel does precisely that, and nonetheless sees those events sequentially.

133 For texts on God's eternity-based foreknowledge which do not mention the causality of God's knowledge at all, see *ST I* 14.9 and I.14.13, *In Sent.* I.38.1.4, *De ver.* 2.12, *De malo* 16.7, *In Pery.* I.14 (Aquinas 1882ff, vol. 1*/1, pp. 77b–78b, lines 369–436, *De rat. fid.* 10, *Quodl.* IX.3, and *Comp. theol.* I.133. For eternity-based texts occurring alongside causality-based texts rather than in dependence on them, see SCG I.66 nn. 543 and 546 and I.67 n. 557–58 and 564; and see also *In Sent.* I.38.1.5, where, again, Aquinas's preferred eternity-based approach is explicitly contrasted with the causality-based approach.

134 Aquinas may perhaps have been reluctant to ground God's foreknowledge in the “causal knowledge” thesis in order to avoid appearing to eliminate created contingency and freedom by conflating God's foreknowledge with a puppetmaster's control-based

foreknowledge. This appearance really stems, however, from holding the “causal knowledge” thesis in the first place (to which Aquinas is certainly committed), not from making that thesis the basis of foreknowledge. As previously noted, holding the “causal knowledge” thesis, even with its implication that God’s knowledge “already contains” the object in its determinate existence, need not, in fact, necessarily imply that God has “preordained” creatures’ free evil acts if, for example, Maritain is right that God allows his causation to be subject to the free creature’s “nullification”; see note 116.

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