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1. Introduction

1.1 *Setting the Question: What is Change?*

Since the beginning of philosophy, there have been various attempts at defining change. Even though some philosophers have denied that change is real,¹ most have taken the phenomenon to be primitive and in need of a conceptual explanation.

In the wake of the contemporary metaphysical debate about change and time among analytic philosophers, scholars have been paying increasing attention also to theories advanced in the past. Studies on Aristotle's concept of change and of time abound.² In his commentary on the *Physics*, Thomas Aquinas gave a substantial contribution to the debate concerning the nature and the principles of change. His solution, albeit Aristotelian in spirit, cannot be reduced to a mere repetition of Aristotle's opinions. Despite its philosophical interest, few scholars have paid attention to Aquinas' metaphysical account of change. Some studies have covered general issues that involve change and time,³ but no specific book focuses directly on Aquinas' understanding of change. With this short book, I intend to expound Thomas' definitions of change and time and his account of the relationship between the two concepts, as they are outlined in his commentary on the *Physics*.

A few preliminary remarks will help us to better grasp Aquinas' philosophy of change. Change is part of our daily experience of the world. Even if some philosophers had already denied that things do change as of Aquinas' writing,⁴ most human beings do not doubt that there are changing things in the extra-mental world. Ordinary intuitions about the world are a starting point for Thomas Aquinas. But despite the quasi-universal acceptance of the existence of change, it is a rather difficult task to build a conceptual framework to understand the phenomenon, and Thomas chose a route different from the one undertaken by most recent philosophers. While in the contemporary debate on the definition of

1 According to a commonly held reconstruction, Parmenides denied that change is real. McTaggart (1908) denied the reality of time.

2 Cf. e.g., Coepe (2005) and Roark (2009) on time and Odzuck (2014) on change.

3 Cf. e.g., Brower (2014).

4 According to Aquinas, Parmenides and Melissus maintained that the whole universe is one unique unchangeable being. Cf. Thomas Aquinas, *in Phys.* Lib. I, l. 2, n. 2: "Quidam enim eorum posuerunt unum principium, quidam multa. Et eorum qui posuerunt unum, quidam posuerunt illud esse immobile, sicut Parmenides et Melissus."

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change philosophers presuppose that time is definitionally prior and that change can be accounted for on the basis of already given temporal coordinates, Aquinas follows Aristotle and Augustine in maintaining that change is a more fundamental phenomenon that can help us understand the nature of time.

According to B. Russell's definition, change is the difference, in respect of truth or falsehood, between a proposition concerning an entity e and a time T and a proposition concerning the same entity e and another time T' , provided that the two propositions differ only by the fact that T occurs in the one where T' occurs in the other.⁵ According to Russell, if a certain statement about the world is true at the time t^k and no longer true at the time t^{k+n} , then a change has taken place. In particular, the entity e described by the two statements has changed. Russell's definition includes both real changes and what would be later called "Cambridge changes", i.e., changes that involve only extrinsic properties and that satisfy Russell's criterion, but that we would not intuitively take to be *real* changes. For instance, suppose that at t^l it is true to state that

(i) Peter is taller than Paul.

It might be the case that at t^2 Peter is as tall as he was at t^l , but Paul has grown taller than Peter, because, for instance, Paul is a growing teenager, while Peter is a grown-up man. Consequently, at t^2 it will not be true anymore that (i) "Peter is taller than Paul." Intuitively, one would say that Paul has changed by becoming taller and Peter has not. Yet, if "being-taller-than-Paul" is construed as a property, Peter will have that property at t^l but not at t^2 . Peter Geach noticed the inconsistency between Russell's criterion and our most common intuitions about change.

I have urged that we need to distinguish 'real' changes, processes that actually go on in a given individual, from 'Cambridge' changes. The great Cambridge philosophical works published in the early years of this century, like Russell's *Principles of Mathematics* and McTaggart's *Nature of Existence*, explained change as simply a matter of contradictory attributes' holding good of individuals at different times. Clearly any change logically implies a 'Cambridge' change, but the converse is surely not true; there is a sense of "change", hard to explicate, in which it is false to say that Socrates changes by coming to be shorter than Theatetus when the boy grows up, or that the butter changes by rising in price, or that Herbert changes by 'becoming an object of envy to Edith'; in this cases, 'Cambridge' change of an object (Socrates, the butter, Herbert) makes no 'real' change in that object.⁶

5 Russell (1992), 476.

6 Geach (1972), 321–322.

After Geach's remarks, philosophers started distinguishing between intrinsic and extrinsic property changes. Contemporary theories of change are designed to explain the phenomenon of real change, i.e., of change involving intrinsic properties. Most contemporary philosophers would add qualifications to Russell's definition of change, in order to leave off extrinsic changes from its scope, but their definition would still presuppose the notion of time as an already given coordinate. Aquinas is also interested in defining "real changes," but his definition does not include any reference to time. According to him, change is the actuality of a potentiality that is potentially such-and-such. The more fundamental notions of potentiality and actuality are the sole concepts that Aquinas needs to define change, but thanks to them, he can distinguish between real and non-real changes. According to Aquinas, a "change" is nothing but a changing thing, i.e., an extra-mental entity conceived as in relation between preceding and successive states. The changing-thing is a substance or a quality or a quantity or a place and within Aquinas' ontology, this is tantamount to state that there is no "changing-thing" that has no real extra-mental existence. Accordingly, all changes analyzed by Aquinas are real.

1.2 *The Structure of this Book*

This short book is divided into three main chapters followed by a general conclusion.

In the chapter devoted to "The Definition of Change", I expound Aquinas' account of change. I maintain that Aquinas' account is meant to describe both immaterial and material changes. Hence, the hylomorphical account of change as the passage from form-less matter to enformed matter is not able to capture all types of change. Contrary to Brower (2014), I suggest that Aquinas' favourite model to explain change involves a passage from potentiality to actuality rather than from form-less matter to enformed matter. I argue that 'change' is an extra-mental entity and is identical to the second potentiality/first actuality of a process that includes three steps, a first potentiality, a second potentiality (or first actuality), and a second actuality. This second potentiality (or first actuality) is nothing but a changing thing, that is understood as tending towards a further actualization and coming from a previous potential stage. There are "changing things" in several genera. Hence, there is not a univocal "definition" of change, because there is not a single genus for all changing things. There can only be a general account of change, that will be said in an analogical way of "changing things" belonging to different categories.

In the chapter on "Aquinas between Presentism and Adverbialism", I analyze the semantics of propositions that describe changing processes. In many natural

languages, tensed statements are often employed to describe change. I maintain that Aquinas subscribed to the view that past and future tense sentences can have a truth-value. In contemporary terminology, this means that Aquinas would not have accepted classical presentism, i.e. the theory that only present tense statements have a truth-value. Some scholars have inferred that Aquinas was a temporal realist and that his theory entails that the subjects of true past or future statements exist at times different from the present. I challenge this conclusion and I state instead that Aquinas was an adverbialist. In my interpretation, if one rephrases the tensed statement as a tenseless statement with a time-index, the time-index modifies the copula, not the other parts of the sentence. Yet, Aquinas' adverbialism is atypical, since it is paired with a 'metaphysical' presentism, i.e., with the claim that only things located in the present exist, apart from God, who is located in an a-temporal present.

An appendix to chapter 3 reproduces a reply to a paper by D. Costa, who argued that Thomas Aquinas was an eternalist. I thank the *European Journal of Philosophy of Religion* and its editor Georg Gasser for permission to reprint here my reply that appeared with the title "Aquinas on Predication and Future Contingent. A Reply to Costa" in the issue 12/3 (2020) (215–224).

In chapter 4, I expound Aquinas' definition of time. I maintain that Aquinas' definition is not circular and time is distinct from change in both definition and in being. I conclude by stating that time has extra-mental existence, because its definition is not circular. I argue that the *definiens* of time includes the term 'change', but 'change' has a definitional account that does not include time. If time and change have two different definitions, their essences are also different. According to Aquinas, definitions are designed to expound the content of an essence. Time is said to be "something of change" (*aliquid motus*), and change has extra-mental existence. Therefore, whatever inheres in change as in a subject, should also have extra-mental existence. It is true that time is a measure and thus involves the presence of a measuring agent, i.e., a mind. But to grant extra-mental existence to time, it is sufficient to state that change should have a disposition towards its being measured by a possible mind. This mind-independent feature of change is the objective element of time.

In the conclusion, I show the conceptual connections between each of the topics discussed in the book and I argue that Aquinas' notions of change and time are philosophically appealing. Contemporary readers may find the conceptual framework of Thomas' solution rather different from what they are accustomed to, but the theory appears to be consistent and to have the same explanatory power of more recent philosophical proposals. In addition, Aquinas offers not only definitions of change and time, but also a philosophy of language and a metaphysics that are consistent with his understanding of change and time. Much of the

contemporary debate on change is concerned with the merits of the presentist and of the eternalist theory. In this context, alternative accounts are particularly appealing and adverbialism, that was once a rather popular explanation of the linguistic descriptions of change, could again attract the attention of contemporary readers.

Unlike many versions of adverbialism in the past few decades, Aquinas' theory is not limited to language, but include a metaphysical explanation of what lies behind the tensed descriptions of change. In Aquinas' metaphysics, only present entities *exist* in a full sense, i.e., only substances located in the present partake in the *actus essendi*. Consequently, the truthmaker of a past or future tense true sentence should be an entity located in the present. It seems to me that this theory has not been explored in contemporary debates on adverbialism. In this sense, a historical reconstruction of Thomas' account of change and time can stimulate the contemporary philosophical debate, by offering new insights.

2. The Definition of Change

Change is a primitive phenomenon: we cannot *prove* that it takes place, we simply *know* that it occurs. This does not prevent us from studying it and from trying to define its nature. Thomas Aquinas, however, believes that there is no single scientific discipline (*scientia*) that studies change (*motus*). Like other Aristotelian philosophers, Thomas maintains that there can be a scientific discipline about ‘*x*’ only if ‘*x*’ is a unified domain of inquiry.¹ This claim follows from the Aristotelian idea that scientific disciplines are theoretical habits (*habitus*) and habits are ultimately defined by their objects: as the Scholastic motto goes, *potentiae distinguuntur per actus, et actus per obiecta*.² Hence, for any type-differentiated object of investigation, there must be a different scientific discipline that deals with it. If change is suitable of scientific investigation, one would expect it to be the object of a scientific discipline, i.e., of a hypothetical “science of change,” but for Aquinas “change” is not a unified object like any other. In this chapter, I will argue that Aquinas takes change to be really (*in re*) identical with the changing entity. If this reconstruction is correct, there will be as many changes as there are types of changing things. There is, however, a single scientific discipline that considers all beings, *qua* changing beings. Aquinas called it *physica* in Latin, and we should probably translate this term with the expression “philosophy of nature,” to avoid any confusion that could emerge if we were to resort to the English word “physics.” Similarly, I will use “change” to translate the Latin *motus*, “actuality” for *actus* and “potentiality” for *potentia*.³ The philosophy of nature is a unified scientific discipline as much as metaphysics is, because it is about an object that is one in virtue of analogical predication: everything that is said to be changing changes in virtue of an analogical conception of change. The true “science of change” will thus be philosophy of nature, if we grant that change *in re* is nothing but *what* changes. If philosophy of nature is the “science of change,” it is natural to turn to Aquinas’ commentary on Aristotle’s *Physics* to flesh out Thomas’ understanding of change and time.

1 According to Aristotle, the domain of inquiry should belong to the same genus. There is, however, an exception to this rule: metaphysics is a scientific discipline that deals with being, i.e., with an object that does not belong to a unified genus but is nevertheless displaying a certain unity. Aquinas will remark that the object of metaphysics is unified in virtue of analogy.

2 Cf. e.g. Thomas Aquinas, *De veritate*, q. 15 a. 2 arg. 5.

3 Quotes from available English translations of Aquinas’ texts will be modified accordingly for consistency.

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As I anticipated in the introduction, Thomas Aquinas does not define change by using the more basic notion of time, as many contemporary philosophers have been doing following in B. Russell's footsteps. Aquinas believes instead that change is a more fundamental notion that explains what time is, but it is nevertheless possible to illustrate what change is. There is, in other words, something even more fundamental than change, i.e., the notions of potentiality and actuality. These notions stem from the very concept of being in general and it is up to the metaphysician to demonstrate that being includes these fundamental characteristics. Since philosophy of nature is subordinate to metaphysics, it can adopt as some of its principles the conclusions of metaphysics. The claim that potentiality and actuality are fundamental determinations of being in general is a conclusion in metaphysics and a starting point in the scientific discipline that focuses only on some beings, i.e., on changing entities.

Properly speaking, change cannot be defined, because the formula that expounds its essence does not include a genus or a differentia: potentiality and actuality are analogical notions. In this chapter, I intend to expand Aquinas' account of change in four steps.

First (2.1), I observe that Aquinas does not propose the "hylomorphic model" of change as the most encompassing. Contrary to Brower (2014), I do not think that change is ultimately explainable in terms of a form that is joined to an underlying subject. In my opinion, Aquinas argues that Aristotle's "definition" of change in terms of a passage from potentiality to actuality has more explanatory power than any other account advanced by Aristotle, including the hylomorphic account expounded in *Physics* I, 7. There is a reason for this: the hylomorphic model does not accommodate immaterial changes, such as acts of volition, but these are real changes, not Cambridge changes. In Aquinas' view, separate substances undergo change and this demonstrates that the "hylomorphic model" cannot account for their changes, since they are separate from any type of matter.

Second (2.2), I focus on a problem that has been frequently discussed in recent Aristotle scholarship. Aristotle's "definition of change" seems to be circular, and the wording is puzzling. The Stagirite says that change is the actuality of what is potential, *qua* potentially such (cf. *Physics* III, 1, 201 a10–11). How is it possible to infer the notion of a succession of stages – something that seems to be involved by the very concept of change – from this definition? And even if a succession of stages is implicit in Aristotle's reference to potentiality and actuality, are we not relying on an intuitive notion of change, rather than expounding change with the help of more fundamental concepts? In section 2.2.1, I expound some recent attempts at answering these questions and I claim that Aquinas' solution to these problems is like the solution advanced by A. Kosman. According to Kosman, the notion of actuality is primitive, and change is a type of actuality. Aquinas also

endorses the main tenet of this interpretation. After setting the stage by looking at the current interpretations of Aristotle, I move to Averroes – the source that Aquinas certainly had on his workdesk while he was drafting his commentary on Aristotle’s *Physics*. Unsurprisingly, Aquinas’ reading was prepared and partly anticipated by Averroes’ exegesis. In section 2.2.2, I expound Averroes’ reading of change as the succession of stages that are ordered from the less perfect to the more perfect – an idea that closely resembles Aquinas’ proposal to distinguish between pure potentiality, first and second actuality, and to identify change with the first actuality/second potentiality. In section 2.2.3, I briefly flesh out Albert the Great’s understanding of change, to stress Aquinas’ originality in the context of the Latin exegesis of the *Physics* in the second half of the XIII century. Despite his proximity to Aquinas, Albert defended a radically different notion of change and maintained that change is a flux that is not ultimately reducible to a changing thing, while Aquinas does not think of change as a process – everything that there is is a present entity, including change.

Third (2.3), I discuss Aquinas’ definition of change. I begin by observing that Aquinas solves the apparent inconsistencies of Aristotle’s text by identifying change with the second potentiality, i.e., with the first actuality. According to Aquinas, a potentiality is always ordered towards an actuality. Their reciprocal order may be schematized thus:

- (a) pure potentiality → (b) second potentiality/first actuality → (c) second actuality.

Aquinas believes that change consists in the intermediate step: pure potentiality and pure actuality are not two stages of a change-process, but rather starting and the ending point of it. Pure potentiality (towards a given actuality Φ) or second actuality (Φ) are not ‘changes-towards- Φ ’ since pure potentiality is conceived of as a mere possibility to become- Φ not as the actual *moving-towards- Φ* . What is actually- Φ (second actuality) does not change towards Φ anymore. Aquinas concludes that change is identical to a stage in a change process. After having excluded the starting and the ending stages, all such changing stages turn out to be second potentialities/first actualities.

Fourth (2.4), I argue that change *qua* first actuality is ultimately identical to the changing thing. In a slogan, change is nothing but the changing thing. From this premise, Aquinas concludes that changes have extra-mental existence. In making this claim, I propose an interpretation that is different from the one recently proposed by Löwe (2015). In his paper, Can Löwe argues that the notion of change necessarily involves a reference to a mind that grasps change. I propose instead to conceive of change as identical *in re* to the changing extra-mental entity, even

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though change involves a relation of reason to its previous and past stages in the process.

2.1 Brower's Hylomorphic Interpretation

J. Brower (2014) maintains that Aquinas' general account of change involves the notions of matter and form. Although persuasively argued for, it seems to me that Brower's account does not do justice to Aquinas' complex theory of change. After expounding Brower's interpretation, we will move to Aristotle's account in terms of potentiality and actuality (section 2.2.1) as a more satisfactory model. In my opinion, Aquinas believed that the potentiality/actuality account has more explanatory power than the hylomorphic account suggested by Brower. The hylomorphic model can explain most changes, but not all.

According to Brower,

A change *C* occurs if and only if:

- (i) There is some portion of matter, *M*, which endures from some time t^1 to some later time t^2 ;
- (ii) There are some forms, *F*-ness and *G*-ness;
- (iii) *M* has *F*-ness at t^1 (thereby composing a hylomorphic compound, *HMC*¹, which is *F* at t^1) and *M* has *G*-ness at t^2 (thereby composing a distinct hylomorphic compound, *HMC*², which is *G* at t^2).⁴

Brower specifies that his model does not explain certain changes, like Cambridge changes or transubstantiation. Transubstantiation implies that the whole substance changes, not the mere form of a substance. Cambridge changes, on the other hand, do not seem to involve any change in form, but only changes in accidental properties, like relations, or in relations of reason. But Brower contends that the above model can explain "ordinary intrinsic changes."⁵

This reading however cannot explain immaterial changes, unless we interpret the hylomorphic model in a metaphorical way that accommodates non-material changes too. In my opinion, Aquinas maintains that there is a case of "ordinary intrinsic changes" that cannot be explained as passages from formless matter to enformed matter, if the terms are taken literally.⁶ Separate substances, Aquinas maintains, can undergo "ordinary intrinsic changes:" they can undergo local mo-

⁴ Brower (2014), 63.

⁵ Brower (2014), 64.

⁶ Brower (2014), 241–245 observes that there are special cases in his general hylomorphic model but does not address the case of immaterial changes.

tion⁷, they perform acts of willing⁸ and of understanding.⁹ All these actions are “changes”, at least according to one account of change that Aquinas endorses in his commentary on Aristotle’s *Physics*, III.¹⁰ If change is the actuality of what is potentially something,¹¹ separate substances change by performing an act of willing or of understanding.¹² Aquinas maintains that these acts are changes of a peculiar type, because their starting point is not pure potentiality, as in the case of physical changes.¹³

The will is called a mover which is moved, as to will and to understand are termed movements of a kind; and there is nothing to prevent movement of this kind from existing in the angels, since such movement is the act of a perfect agent, as stated in *De Anima* iii (*Summa Theol.* I^a, q. 59, a. 1, ad 3).¹⁴

7 Cf. *Sent. Lib.* I, dist. XXXVII, q. 4, a. 1; *Summa Theol.* I^a, q. 53, a. 1.

8 Cf. *Summa Theol.* I^a, q. 59, a. 1, ad 3.

9 Cf. *Summa Theol.* I^a, q. 58, a. 1; I^a-II^{ae}, q. 50, a. 6, ad 3; *Contra Gentiles*, Lib. III, cc. 97–98.

10 Cf. *in Phys.* Lib. III, lect. II, n. 284, 144–145.

11 Cf. *in Phys. Lib.* III, lect. II, n. 286, 145: “motus est entelechia, ides actus existentis in potentia secundum quod huiusmodi.” It should be noted that, according to Aquinas, this definition only applies to physical changes – a point that seems to support Brower’s reading. According to Aquinas’ definition, change is an “imperfect actuality,” because it is the actuality of what is potentially X, *qua* potentially X, i.e., it is the first, but not the last actuality of a process that includes three steps: pure potentiality, imperfect actuality, perfect actuality. Separate substances only admit “perfect changes,” i.e., changes that have a first actuality as a starting point. However, if change is understood as the actuality of a potentiality broadly understood, that includes second potentialities too, acts of willing and of understanding would count as changes (*motus*), as Aquinas explicitly states in *Summa Theol.* I^a, q. 59, a. 1, ad 3.

12 I do not mention the local motion of separate substances, because Aquinas makes clear that it is nothing but an act of willing about spatially located material substances (cf. *Summa Theol.* I^a, q. 53, a. 1c). I think that local motion could be grouped together with the acts of willing in the case of separate substances.

13 It might be worth underlying that “pure potentiality” is matter in Aquinas’ thought.

14 “[V]oluntas dicitur movens motum, secundum quod velle est motus quidam, et intelligere; cuiusmodi motum nihil prohibet in Angelis esse, quia talis motus est actus perfecti, ut dicitur in III de anima.” See also *Sententia De anima*, Lib. III, cap. VI, 230, ll. 17–36 (= ed. Marietti, lib. III, lect. 12, n. 766, 182): “Et quia motus, qui est in rebus corporalibus, de quo determinatum est in libro physicorum, est de contrario in contrarium, manifestum est, quod sentire, si dicatur motus, est alia species motus ab ea de qua determinatum est in libro physicorum: ille enim motus est actus existentis in potentia: quia videlicet recedens ab uno contrario, quamdiu movetur non attingit alterum contrarium, quod est terminus motus, sed est in potentia. Et quia omne, quod est in potentia, in quantum huiusmodi, est imperfectum, ideo ille motus est actus imperfecti. Sed iste motus est actus perfecti: est enim operatio sensus iam facti in actu, per suam speciem. Non enim sentire convenit sensui nisi in actu existenti; et ideo iste motus simpliciter est alter a motu physico. Et huiusmodi motus dicitur proprie operatio, ut sentire et intelligere et velle. Et secundum hunc motum anima movet seipsam secundum Platonem, in quantum cognoscit et amat seipsam.”

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From the above passage and other similar texts, it may be argued that separate substances also undergo change, and that change is a phenomenon that affects all created substances. Since separate substances are pure forms,¹⁵ there is no underlying matter that can endure a process of change, and the above examples of acts of willing and of understanding cannot be explained in a hylomorphic framework. Brower could reply to the above by claiming that the acts of willing and of understanding of separate substances are not “ordinary intrinsic changes,” but all the available textual evidence suggests the opposite. These changes are not supernatural, because they do not presuppose grace, since separate substances are by nature endowed with will and intellect.¹⁶ Accordingly, their acts of willing and of understanding are “ordinary” as physical changes are in the sense proposed by Brower, i.e., they do not presuppose any supernatural intervention, as in the case of transubstantiation or any other change that a separate substance could initiate in virtue of their partaking in God’s grace. In a slogan, intellectual changes are true changes.¹⁷ Already in his early commentary on Peter Lombard’s *Sentences*, Aquinas devotes an entire article to the question whether separate substances do change,¹⁸ and argues that they do on the basis of several arguments drawn from the tradition and because their intellectual “operations” (*operationes*) are changes,¹⁹ and the above-mentioned passages²⁰ from the *Summa theologiae* and from Aquinas’ later commentary on Aristotle’s *De anima* suggest that the Dominican master did not alter his view throughout his career and consistently maintained that intellectual “operations” are genuine changes. Brower could only explain their changes by stating that “matter” and “form” in his model only refer to different analogical notions that are opposed to each other. This charitable interpretation, however, would be rejected by Aquinas, who explicitly criticized Ibn Gabirol’s angelology,²¹ since the latter maintained that separate substances

15 See *Sent.* Lib. I, dist. VIII, q. 5, a. 2; Lib. II, dist. III, q. 1, a. 1; *De ente et essentia*, c. 5; *Summa Theol.* I^a, q. 50, a. 2; *Contra Gentiles* Lib. III, cc. 50–51; *Quodl.* IX, q. 4, a. 1; *De Spir. Creat.* a. 1.

16 Aquinas notes in *Summa Theol.* I^a, q. 59, a. 2 that separate substances have will and intellect, but they needed grace to obtain the beatific vision (cf. *Summa Theol.* I^a, q. 62, a. 2). Hence, they are naturally able to act willingly and to understand, but not to see God. Accordingly, their acts of willing and of understanding do not presuppose the fact that they have received God’s grace.

17 Cf. *Summa Theol.* I^a, q. 59, a. 1, ad 3.

18 Cf. *Sent.* Lib. I, dist. XXXVII, q. 4, a. 1.

19 Aquinas makes this point in *Sent.* Lib. I, dist. XXXVII, q. 4, a. 1, ad 1. On Aquinas’ claim that separate substances undergo change see MacIntosh (1995).

20 Cf. footnote 14.

21 On Ibn Gabirol see Pessin (2010). On his understanding of separate substances, see Pessin (2009).

are composite substances that include both a “spiritual” matter and a form.²² In Aquinas’ ontology, there is no “spiritual” matter, nor is Thomas willing to identify it with an “essence” that needs the actuality provided by the *esse*. On the contrary, Aquinas objects that matter cannot perform any intellectual operation, and since separate substances perform only intellectual operations, they cannot include any matter in their essence.²³ If Aquinas rejects Ibn Gabirol’s angelology on these grounds, one is tempted to state that Brower’s reconstruction should be rejected too, because the latter does not allow for the changes that are proper to separate substances.

There is yet another problem with Brower’s model for change. He observes that change takes place if and only if “[t]here is some portion of matter, *M*, which endures from some time *t*¹ to some later time *t*².”²⁴ This elucidation of change presupposes the concept of time, but Aquinas believes that the definition of change cannot include any reference to time, because circular definitions should be avoided, and the definition of time includes a reference to change.²⁵ Brower’s brilliant scheme appears to be in conflict with textual evidence and despite its philosophical appeal, it does not seem to capture all claims that Aquinas was ready to uphold.

If the hylomorphic account is not able to render the complexity of Aquinas’ picture, the only other candidate is the account in terms of potentiality and actuality that is at work also in Aristotle’s definition of change in *Physics* III, 1, 201 a10–11. In the following section, I will show why Aristotle’s definition has been considered very puzzling by many recent interpreters, so that I can later flesh out Aquinas’ take on Aristotle’s passage.

2.2 Interpreting Aristotle's Account of Change in *Physics* III, 1, 201 a10–11

Aristotle’s definition of change (*Physics* III, 1, 201 a10–11) raises several interpretative issues and Aquinas’ interpretation thereof is rather subtle. In the preceding section, I stressed that the hylomorphic model does not capture all types of change. Similarly, Aquinas believes that Aristotle’s elucidation in *Physics* III, 1, 201 a10–11 does not account for non-material changes either. Thomas’ interpretation can be summarized as follows:

22 This interpretation of Ibn Gabirol is proposed by Aquinas in *Summa Theol.* I^a, q. 50, a. 2c and ad 2.

23 Cf. *Summa Theol.* I^a, q. 50, a. 2c.

24 Brower (2014), 63.

25 Cf. *in Phys.* Lib. IV, lect. xvii, n. 580, 283.

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- 1) First, he maintains that *Physics* III, 1, 201 a10–11 does not present a “definition” of change. A standard definition, Aquinas observes, includes a genus and a specific difference but the account of change includes potentiality and actuality, and neither of these notions is a genus or a difference, because they are basic properties of being. In Aquinas’ view, however, *Physics* III, 1, 201 a10–11 is the most appropriate “account” of change.
- 2) Second, the “account” expounded in *Physics* III, 1, 201 a10–11 primarily applies to physical changes. Aquinas is explicit in stating that non-material changes are changes too, but they are “perfect actualities,” whereas the elucidation provided by Aristotle describes changes as “imperfect actualities.” Therefore, *Physics* III, 1, 201 a10–11 properly speaking applies to material changes, even though it offers us a rationale to understand all types of change.
- 3) Third, from the account of *Physics* III, 1, 201 a10–11 it is possible to form a general account for all types of change, both material and non-material, because they may all be regarded as midpoints in successions of actualities. Material changes are “imperfect actualities,” non-material changes are “perfect actualities.”²⁶

In order to flesh out these points in more detail, it is necessary to turn to Aquinas’ commentary on *Physics* III. Thomas presents his overall understanding of the structure of Aristotle’s *Physics* in the opening lines of his commentary on *Physics* III. According to him, Aristotle devotes the first two books of the treatise to the principles of ‘natural beings’ and to the principles of the philosophy of nature. Book III marks the beginning of the analysis of the subject matter (*obiectum*) of philosophy of nature (*physica*), i.e., changeable beings. The central books (III–VI) of Aristotle’s *Physics* are devoted to the study of the subject matter and to its properties (time, continuity, infinity). Books VII and VIII are devoted to the *causes* of changeable beings, i.e., to the movers and to the things they do move.

Book III begins with the most accurate account of “change” (*motus*), because in every science it is necessary to begin with the definitions (or, at least, with elucidations) of the subject matter of the discipline. Aquinas subscribes to the view

26 Cf. *Sent.*, Lib. I, dist. XXXVII, q. 4 a. 1 ad 1: “Ad primum ergo dicendum, quod motus, proprie sumendo, semper est existentis in potentia; sed aliquando improprie ipsa operatio rei dicitur motus ejus, ut intelligere et sentire; et tunc motus est actus perfecti, ut in 3 de anima dicitur. Quod autem operatio a motu differat, patet ex 10 *Ethic.*: et sic sumitur motus a Dionysio, scilicet pro operatione quantum ad primum modum, qui tripartitus est, secundum eum. Sed duo alii modi motus ponunt aliquam imperfectionem in Angelo, quae tamen non repugnat beatitudini. Imperfectio autem potest attendi si comparetur ad Deum, qui uno et eodem, scilicet essentia sua, simul omnia videt et simul ubique est; in quo Angelus deficit a perfectione ejus; et ideo de loco in locum transit quantum ad tertium modum motus ejus, et de intellectu ad intellectum quantum ad secundum.”

shared by virtually all Aristotelian commentators, according to whom Aristotle provides us with an account of change in the opening lines of *Physics* III:

Change (κίνησις) is the ἐντελέχεια of what is potentially, *qua* such (*Physics* III, 1, 201 a10–11).²⁷

This formula, however, raises several puzzles. In what follows, I will focus on the so-called “product puzzle” and the alleged circularity of Aristotle’s account.

(a) The “product puzzle”

Suppose we know what it is to be an ἐντελέχεια and what it is for a being to be potentially such-and-such. If these two notions, the ἐντελέχεια and the potentially such-and-such, refer to two different *beings*, Aristotle would identify change with the products of change, i.e., with beings, not with the process itself, i.e., with the motion from one stage in the diachronic history of a being to another stage.

(b) The circularity of the definition

Even if we were to take for granted that Aristotle’s formula refers to the *process* of change, we should ask whether it is possible to give an account of ἐντελέχεια and of potentiality that does not make any reference to change itself. This puzzle becomes clearer if we understand “potentiality” and ἐντελέχεια in the following way:

[Definition of potentially-φ] X is potentially-Y iff X may become Y, provided that the *process* of becoming Y is not prevented by interfering causes.

This hypothetical definition basically says that “potentiality” is the starting point of any *process* of change.

[Definition of ἐντελέχεια] X is the ἐντελέχεια of Y, if X is the result of the process of change of Y, that was potentially-X.

If the above tentative definitions were to be accepted, both potentiality and ἐντελέχεια would not only be defined in terms of each other, but their “definitions” would also include a reference to the notion of change. Circularity seems to be unavoidable. Contemporary commentators tried to solve these interpretative puzzles and Aquinas was aware of both issues: his solution consists in maintaining that actuality and potentiality cannot be defined because they are among the first properties of being (*ens*) and being is not a genus. It is only possible to offer a

27 ἢ τοῦ δυνάμει ὄντος ἐντελέχεια, ἣ τοιοῦτον, κίνησις ἐστίν. I intentionally leave untranslated the word ἐντελέχεια because much of the interpretative debate has focused on how to understand it. ἐντελέχεια can either mean “actuality” or “actualization,” i.e., either the result of a process of actualization, or the process itself.

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non-definitional account of potentiality and of actuality that would enable us to identify something as a potentiality or as an actuality. According to Aquinas, it is possible to give an account of actuality without mentioning change. Potentiality will be understood as something related to actuality, and change will be defined by referring to both potentiality and actuality. In this way, Aquinas avoids circularity. The solution to the “product puzzle” consists in pointing out that the definition of “change” does not refer to either extreme of the process of change, i.e., neither to the first potentiality nor to the last actuality. It rather refers to the “imperfect actuality” (*actus imperfectus*) that is not the final “stage” of a (segment of a) change process – this would lead us again to the “product puzzle” – but is rather a being (*ens*) conceived of as in relation to its previous and later stages. The relation is a relation of reason.

To appreciate the originality of Aquinas’ solution, it is useful to contrast it with the interpretations proposed by today’s Aristotle scholars and the ones by Averroes and Albert the Great.

2.2.1 Contemporary Readings of Aristotle’s Formula

In his influential commentary on Aristotle’s *Physics*, William David Ross proposed to understand the term ἐντελέχεια as “actualization” rather than as “actuality.” This suggestion would allow us to avoid the “product puzzle,” because “actuality” seems to refer to the endpoint of a process, whereas “actualization” is a dynamic term that describes the very action of changing.²⁸ Ross’ proposal, however, had the shortcoming of seemingly introducing circularity: how can an “actualization” be accounted for, if not by stating that it is the act of *changing* from a potentiality to an actuality? If the notion of change includes that of “actualization” and this latter is nothing but a stage in the process of change, we avoid the product puzzle at the cost of introducing circular accounts.

It was an easy task for Aryeh Kosman to reject Ross’ simplistic solution. In an influential article,²⁹ A. Kosman stressed that the whole of the corpus aristotelicum does not present any other occurrence of ἐντελέχεια with the meaning of “actualization.” The consistent meanings seemingly employed by Aristotle are that of “actuality” or “act.” Kosman did not add that ἐντελέχεια is not to be found outside of Aristotle’s works in the IV century BC, nor in the previous extant Greek literature: the available evidence strongly suggests that Aristotle coined the

28 Cf. Ross (1970), 537: “ἐντελέχεια must here mean ‘actualization’, not ‘actuality’: it is the passage from potentiality to actuality that is κίνησις.” For a clear presentation of the issues raised by *Physics* III, cf. Giardina (2012).

29 Kosman (1969).

term. It is thus highly unlikely that Aristotle would employ ἐντελέχεια with a meaning that is very rare in his extant writings, i.e., that of “actualization,” as Ross suggested when commenting on *Physics* III. According to Kosman, the changing-thing is an actuality, but the actuality of a potential being, *qua* potentially able to become something else – i.e., to become a full-fledged actuality. The phrase “*qua* such” (ἧ τοιοῦτον) is essential in Kosman’s reading of the passage. As we shall see, Aquinas’ interpretation is similar to Kosman’s in many respects. In a recent article, Andreas Anagnostopoulos has convincingly argued that the ‘*qua* such’ clause does not rule out products of change from being identical with change itself.³⁰ Anagnostopoulos’ claim becomes clearer with an example: in the process of building a house, we certainly need to have (a) bricks and concrete, which are *potentially* a house, and which represent the first stage of the building process, and (b) the already built house, which represents the final stage or ‘actual house’. What is then the actuality of bricks and concrete, *qua* potentially an already built house? Is their actuality different from mere potentiality, i.e., from a pile of bricks and some concrete, with no carpenters using them to build walls, roofs, etc.? Anagnostopoulos seems to suggest that the answer is no, and that any interpretation that attempts to make sense of Aristotle’s definition, by stressing that an actuality-of-a-potential-being, *qua* potential, is different from mere potential being – or mere actual being – cannot but be inconsistent. Anagnostopoulos’ proposal is to understand the ἐντελέχεια of *Physics* III, 1, 201 a10 as an ἐνέργεια, i.e., as an “activity.” This interpretation relies on *Physics* III, 1, 201 b5–13, where Aristotle seems to use the terms ἐντελέχεια and ἐνέργεια interchangeably. According to Anagnostopoulos, an activity (ἐνέργεια) has a wider meaning than that of being the mere end of a process of change, or the process of change itself, because it can cover also the realizations of habits, like seeing and contemplating, discussed by Aristotle in *De Anima* II, 5, “end-containing activities,” and “transitive agency—an agent’s acting on (even changing) a patient.”³¹ According to Anagnostopoulos, it is by being wider than the mere activity involved in a process of change that the use of “activity” in the definition of change secures us from the risk of circularity.³² As we shall see, Aquinas thinks instead that circularity is avoided not because the terms employed may be used also in different contexts, but because they are *prior* to the very notion of change, since they are inferred from the very first notion of being (*ens*). Anagnostopoulos’ proposal has some appeal, but I do not see why realization of habits like seeing and contemplating should not be counted among changes. Anagnostopoulos goes on by saying that the phrase “*qua* such” (ἧ τοιοῦτον) is meant to exclude accidental activities of potential beings and to inclu-

30 Anagnostopoulos (2010), especially 52–59.

31 Anagnostopoulos (2010), 61.

32 This point is also raised by Waterlow (1982), 113–114.

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de only the proper activities of these beings. I am inclined to think that accidental activities may be accounted for as changes too. In my opinion, the weakest point of Anagnostopoulos' interpretation consists in implying that Aristotle would employ the term ἐντελέχεια with the meaning of "activity" *only* in the context of *Physics* III, 1, 201 a10. Anagnostopoulos is aware of this issue with his interpretation but claims that the philosophical benefits of his reconstruction are higher than its costs. There is, however, an additional problem, that Anagnostopoulos does not appear to have identified: if his interpretation is correct, Aristotle would be using ἐντελέχεια with the almost unique meaning of 'activity' while he is *defining* change, thereby turning the *definiens* into a rather enigmatic account – a formula that could arguably shed little light on the *definiendum*, and this is a major shortcoming according to the theory of definition outlined in *Topics* VI. Despite these philosophical quibbles, I stress that many points made by Anagnostopoulos are reminiscent of Aquinas' interpretation. Unlike Anagnostopoulos, Thomas does not go as far as to state that the ἐντελέχεια that is included in the "definition" of change is an "activity" (*operatio* in Aquinas' Latin) but believes that change includes both *operationes* ("activities") and actualizations/actualities of pre-existing potentialities. Aquinas makes this claim in his autonomous treatises and not in his commentary on Aristotle's *Physics*, and this probably explains why his point went unnoticed in contemporary Aristotle scholarship. In his commentary on the *Sentences* of Peter Lombard, Thomas argues that change (*motus*) includes both immaterial *operationes*, like willing and understanding, and material changes.³³ It is reasonable to conclude that change is either the actualization of a previous potentiality or the ἐνέργεια (*operatio*) of a subject. Even though Aquinas does not explicitly maintain that the account advanced in *Physics* III, 1, 201 a10–11 includes both ἐνέργεια and material processes, he believes that any general elucidation of change should accommodate both types of process, as Anagnostopoulos suggests. In addition, Aquinas can avoid the possible objection of circularity that could be raised against Anagnostopoulos' reading, because according to Thomas, Aristotle is not *defining* change in *Physics* III, 1, 201 a10–11, he is only providing the most accurate account of the phenomenon.

More recently, A. Kosman has proposed a new interpretation of Aristotle's metaphysics centered around the fundamental notion of change. Kosman acknow-

33 Cf. *Sent. Lib. I, dist. XXXVII, q. 4, a. 1, arg. 1 and ad 1*. Aquinas observe in the objection that acts of willing and of understanding cannot be considered as "changes" (*motus*), because they are "perfect actualities," whereas "changes" are defined as "imperfect actualities", i.e., actualities of something that is potentially such-and-such. In his reply to the argument, Aquinas concedes that the "*operationes*" of the intellect and of the will are perfect actualities, unlike the actualizations of what is potentially such-and-such. These "*operationes*" are genuine changes.

ledges that the inquiry into being is the same as the inquiry into substance, but he adds that,

a proper theory of substance as substratum must account for the necessity of substances being what they are and thus recognize that essence is a condition of a substance's capacity to serve as subject.³⁴

On these grounds, Kosman thinks that *Metaphysics* VII is a dialectical inquiry into substances whereby we infer that matter and form should not be thought of solely in terms of explanatory principles of change, because they play a crucial role in the constitution of being itself.³⁵ According to Kosman, matter is the “principle of indeterminacy relative to some beings,”³⁶ whereas form should be conceived of as “a determining principle of being.”³⁷ Kosman criticizes the idea that substance is not a combination of matter and form, although he likewise denounces the conventional account of Aristotelian hylomorphism, according to which matter and form are *elements* that join in to constitute a substance: form cannot be an element, he argues, in the same way that a syllable is not only composed of its constituent letters (cf. *Met.* VII, 17). Kosman maintains that Aristotle distinguishes between motion (which is defined as something that has its end outside motion itself) and activity, which does not have an external end. He argues that Aristotle is explicit in maintaining that motion/change is some sort of activity, although an imperfect one (cf. *Phys.* III, 2, 201 b31–32). He translates Aristotle's account of motion/change as follows: “the realization of what is able to be [something], as such, is motion” (*Phys.* III, 1, 201 a10–11), and stresses that:

- (1) “the realization in terms of which he [Aristotle] defines motion is not itself a process”;
- (2) “the ability is an ability to be and not to go through a process of becoming something”;
- (3) “the definition yields motion and not its result.”³⁸

There are different realizations of a certain ability or capacity. The first realization, however, is not change. The account of change in terms of activity and ability is more fundamental than the account of change in terms of matter receiving a certain form. It seems to me that Kosman does not want to identify activity with form and that he is not willing to identify matter with ability either, because he sees the notions of matter and form as being understood and distinguished in

34 Kosman (2013), 21.

35 Cf. Kosman (2013), 22.

36 Kosman (2013), 24.

37 Kosman (2013), 25.

38 Kosman (2013), 53.

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virtue of a process of change, whereas the term “activity” refers to something more basic that does not necessarily entail change. This claim, however, is controversial, because Aristotle appears to be taking the two accounts of change, i.e., the one in terms of a certain form being received by a certain underlying nature, and the one in terms of a passage from “ability” (“potentiality”) to “activity” (or “actuality”), as being equivalent to each other (cf. *Phys.* I, 8, 191 b27–30). Kosman (2013) seems to be restating the conclusions of the 1969 paper, while setting them in a more comprehensive interpretation of Aristotle’s metaphysical thought. The analogies with Aquinas’ strategy are striking, as I will argue in section 2.4.

2.2.2 Averroes on the Definition of Change

Averroes is Aquinas’ main interlocutor in all the latter’s commentaries on Aristotle.³⁹ The large commentary on the *Physics* by the Arabic philosopher seems to have been the main source of inspiration for both Albert the Great and Thomas Aquinas while they were drafting their own expositions of Aristotle’s text.⁴⁰ In order to flesh out Aquinas’ own understanding, it is vital to recall the main points of Averroes’ interpretation. According to the Arabic philosopher, change can be understood as a *perfection* of the potentiality of a changing thing and not as a *perfection* of any actuality thereof. In so doing, Averroes was most likely wrestling with the so-called “product puzzle.” He begins by observing that in each genus we find potentialities and actualities, and things may be said to be *perfect* or *imperfect* according to either their potentiality or their actuality. This scheme suggests that a changing thing may be observed in three different stages:

(a) A thing *imperfect* according to its potentiality.

This is the starting stage of any change process. The thing is potentially- φ but has none of the properties of φ – it is only remotely disposed towards becoming φ , and hence is potentially- φ only in an *imperfect* sense.

(b) A thing *perfect* according to its potentiality & *imperfect* according to its actuality.

39 In what follows, I will be referring to the Arabic philosopher by the name under which he was known among the Latin *magistri* of the XIII century, and I will be quoting from the Latin translations of his works, since I am concentrating on the reception of his doctrine in Thomas Aquinas’ exposition of the *Physics*. On Ibn Rushd’ philosophy see Di Giovanni (2017) and Di Giovanni-Adamson (2019).

40 Trifogli (2001) offers an excellent reconstruction of Averroes’ concept of time. Trifogli studies the reception of Averroes’ doctrine in the Latin West but does not focus on Aquinas.

This is the intermediate stage of any process of change. The thing is potentially- ϕ in a fuller sense, because it has already some of the properties of ϕ , and their presence is a proximate disposition of the thing to actually be fully- ϕ . However, the thing is not yet fully- ϕ , and hence its actuality (*qua* ϕ) is still *imperfect*.

(c) A thing *perfect* according to its actuality.

This is the end stage of any process of change, and refers to the situation in which the thing has acquired all the properties that constitute a full-fledged ϕ .

Averroes' model allows him to avoid any identification of the process of change with its starting or ending stages, but it is unclear whether the reference to the intermediate *stage* of change consists in the identification of the process of change with one of the intermediate *beings* that appear in the process. Averroes, however, makes it clear that something may be said to be potential and actual at the same time, provided that this something is potential with respect to something, and actual with respect to something else.⁴¹

According to the Latin version of his commentary, Averroes identifies an "actus" and a "potentia" in each genus. The Latin term "actus" preserves the ambiguity of the corresponding Greek ἐντελέχεια and may be translated either with "actualization" or with "actuality." The first option seems to be nearer to the idea of a process, whereas the latter suggests some "actual stage," which is possibly reached through a process, but which does not imply any further change. As is clear from the contemporary debate on Aristotle's definition, if we were to take ἐντελέχεια/*actus* to refer to an "actualization," we would possibly end up in accepting a circular definition of change. On the other hand, the "actuality" reading is open to the so-called "product puzzle." Accordingly, I stick to the customary translation of "actuality" for the Latin "actus," without thereby implying any attribution to Averroes of a Kosman-like interpretation of Aristotle's definition of change. Nevertheless, it seems reasonable to maintain that Averroes would have rejected the "process view" about change. According to the process interpretation, change is nothing but the potentiality-to-change to a certain state. Pure potentiality and last actuality are the two static polarities, among which we find a "process", i.e., change. According to J. McGinnis, Avicenna discusses the "process view" and

41 Cf. Averroes, *In Phys.* 88r, A-B: "Cum unumquodque generorum motus diuidatur in potentiam et actum, quoniam unumquodque eorum quandoque est in potentia, quandoque est in actu, et manifestum est quod motus est perfectio rei motae; ergo manifestum est, si non fuerit perfectio eius secundum quod est in actu, necessario erit perfectio secundum quod est in potentia. Et addit in definitio 'secundum quod est in potentia', quia omne motum, secundum quod est in actu, et habet potentiam, habet enim duas perfectiones, perfectionem scilicet in actu, non secundum quod est motum, et perfectionem secundum quod est in potentia, quae dicitur motus."

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rejects it, on the grounds that it involves circularity.⁴² Averroes does not refer to any disagreement with Avicenna on this issue. Naturally, this is not enough evidence to claim that Averroes agrees with Avicenna on the rejection of the process interpretation of change, but it seems reasonable that Averroes would have adopted the non-process interpretation of change. According to this reading, change is a *state*, not a process. Averroes is explicit in maintaining that there are imperfect and perfect conditions within each of the genera of being and one can hardly look at “perfections” and “imperfections” as anything other than states. Everything that is included in a category of being is an instance of that category and that would include perfections and imperfections if they are to be found in the genera of being. Accordingly, Averroes is implicitly stating that change is nothing but an extra-mental being, that has not yet reached its ultimate perfection.

Averroes underlines that the “changing thing” is a mixture of “actus” and “potentia” – it is thus an imperfect actuality or, in other words, an “actualizing potentiality.” Does Averroes succeed in avoiding circularity? It may be argued that he introduces a circular account when he maintains that “change/motion is a perfection of the changed thing” (*motus est perfectio rei motae*). This remark, however, should be regarded as an explanatory note. Averroes subscribes to the view that change should be accounted for based on potentiality and actuality, i.e., in virtue of notions that are prior to it. Thanks to the auxiliary notions of perfection and imperfection, Averroes distinguishes between pure potentiality, pure actuality, and the intermediate point, that he identifies with change (*motus*). Against this solution, it could be objected that it does not solve the “product puzzle” and the problem of circularity in a very straightforward way. If we were to accept Averroes’ perspective, we should ask ourselves on what basis we can grant that potentiality is ordered towards imperfect actuality, which is in turn ordered towards full actuality. The reference to perfection and imperfection is probably meant to solve this problem without implicitly invoking an order of stages in a change process. The whole and perfect is thus prior to the partial and imperfect, according to a sense of priority which does not involve any reference change. As we shall see, Averroes’ point of view will be further developed by Thomas Aquinas.

2.2.3 Albert the Great on the Definition of Change

Albert the Great wrote his paraphrase of Aristotle’s *Physics* after the year 1248, and certainly shortly before 1257.⁴³ This seems to entail that while Aquinas was

⁴² See McGinnis (2010), 60–61.

⁴³ Cf. Alberti Magni, *Phys.* I-IV, Prolegomena (written by the editor P. Hossfeld), V, l. 60ff.

writing his own commentary on the *Physics*, around the years 1270–1271, he might have read his master's paraphrase.⁴⁴ There is however no explicit evidence of any acquaintance with Albert's paraphrase in Aquinas' commentary. In what follows, I shall use Albert's text as a useful witness of what an Aristotelian philosopher might have made of Aristotle's definition of change shortly before Aquinas drafted his own text.⁴⁵

Albert the Great seems to be aware of the “product puzzle,” but not of the possible circularity of the definition of change. Following in Averroes' footsteps, he stresses that change is not a “perfect actuality” but rather an “imperfect actuality.” Unlike Averroes, however, Albert distinguishes these two stages of perfect and imperfect actuality by invoking the priority in time of the imperfect over the perfect actual stage. Time, however, is defined as the “measure of change.” Albert's attempt at making sense of Aristotle's claim leads to a possibly even more troublesome circularity:

After distinguishing the thing that is “entelechia”, here we assume that change [*motum*] is the first “entelechia” of what is potentially<- ϕ > according to temporal succession; for what is potentially<- ϕ >, *qua* potentially<- ϕ >, is not in its perfection or in its “entelechia”. And its first perfection is a way to perfection, when it has a perfection mixed together with privation, and thanks to that it continuously proceeds towards pure “entelechia” (my translation).⁴⁶

As is often the case with Albert, many ideas are conflated in few lines. Albert seems to be repeating Averroes' non-process account of change, but by stating that the changing thing *continue vadit ad entelechiam puram*, Albert is seemingly suggesting that the imperfect actuality is not a state but a continuous process (*via ad perfectionem*). If this were the dominant accent of his interpretation, Albert would be endorsing the “process interpretation” of change. Albert borrows from Averroes also the idea that there is an imperfect actuality, which can be accounted for as a mixture of perfection and privation (*quando habet perfectionem mixtam privationi*). Pure potentiality is thus mere privation of actual properties of a thing

44 See Porro (2012), 374–381 for an overview of Aquinas' commentaries on Aristotle's physical treatises.

45 On the relation between Albert's paraphrase of Aristotle's *Metaphysics* and Aquinas' commentary on the same work see Galluzzo (2013), 325–329. Galluzzo's analysis might be applied also to the relation between Albert's paraphrase of the *Physics* and Aquinas' commentary on the same work.

46 Alberti Magni, *Phys.* I-IV, lib. 3, tr. 1, c. 4, 157, ll. 1–9: “Cum autem supra divisimus id quod est entelechia, accipimus hic motum esse entelechiam primam secundum tempus eius quod est in potentia; id enim quod est in potentia secundum quod est in potentia, non est in sui perfectione sive entelechia. Et prima ipsius perfectio est via ad perfectionem, quando habet perfectionem mixtam privationi, et per illam continue vadit ad entelechiam puram.”

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qua ϕ , whereas the second perfection (*entelechia secunda*) is pure perfection with no admixed privation. This scheme reproduces Averroes' main idea, but the vocabulary is not the same. Albert also speaks of a "flux" – a notion that helps us understand motion/change.⁴⁷ This doctrine, which presumably Albert found in Avicenna, is juxtaposed to the Averroistic explanation of Aristotle's text, and it is not easy to recompose Albert's point of view in a consistent model:

In addition, if we imagine that the flux of a point is drawing a line and that the flux of the point ends in a certain point, where the flux ends, it is evident that the end of the line, in which the flux of the point stops, belongs to, and is an essential component of the line; and we cannot say that the point that ends the flux has a different essence from the essence of the point that flows. (...) And this is what Averroes meant when he said that "change is nothing but the generation of a part after another of that perfection that is the aim of change." (my translation).⁴⁸

Unlike Thomas Aquinas, Albert seems to be misreading Averroes' claim. Averroes is careful in stressing that change is identical with imperfect actuality because he wants to avoid the risk of identifying change, which is commonly understood as a process (a "flux," in Albert's and Avicenna's vocabulary),⁴⁹ with the static stages of pure potentiality and of pure actuality. Albert, on the other hand, says that all the three stages, which Averroes distinguishes, equally belong to change, as its temporal parts. The imperfect actuality step is identical to a "fluens punctum" for Albert. This metaphor clearly suggests that Albert is endorsing the process view about change, thereby proposing an interpretation opposite to what Averroes maintained.

2.3 Aquinas' Reading of Aristotle's Formula

Aquinas deals with change in many of his works. In his theological treatises, he suggests that there is only one notion of change, that applies to both material and spiritual changes. Despite the importance of change in many fields of Thomas'

47 Cf. Alberti Magni, *Phys.* I-IV, lib. 3, tr. 1, c. 3, 152, ll. 71–84.

48 Alberti Magni, *Phys.* I-IV, lib. 3, tr. 1, c. 3, 152, l. 85–153, l. 4; 153, ll. 12–15: "Adhuc autem, si nos imaginemur puncti fluxum facere lineam et terminari fluxum puncti in aliquot puncto, ubi terminatur fluxus eius, constat, quod terminus lineae, in quo stat fluxus puncti, intrinsecus est et essentialis lineae; et non possemus dicere, quod punctus terminans fluxum esset alterius essentiae quam punctum fluens. (...) Et hoc volebat dicere Averroes, quando dixit 'motum nihil aliud esse nisi generationem unius partis post aliam illius perfectionis, ad quam intendit motus.'"

49 On Avicenna's theory of flux see Lizzini (2011).

inquiry, we find a systematic treatment of this notion only in his commentaries on Aristotle.⁵⁰ Unsurprisingly, Aquinas' commentary on the *Physics* offers the most extensive treatment of the notion.⁵¹ In that commentary, Aquinas adopts a terminology similar to his master's but but pays special attention to avoid the circularity which could be detected in Albert's wording. As I anticipated, Aquinas does not regard Aristotle's formula as a "definition" in the strictest sense,⁵² but he nevertheless tries to avoid any circularity while expounding Aristotle's account. Even though he refers to the formula of *Physics* III, 1, 201 a10–11 as a *definitio*, a closer look at Aquinas' *corpus* strongly suggest that we are not dealing with a "standard definition,"⁵³ because in Aquinas' reading change turns out to be identical to the changing-thing⁵⁴ and the changing thing can be found in different *genera*, thereby excluding the possibility of *defining* change (*motus*) by means of a genus and specific difference.⁵⁵ But even if we are not dealing with a standard definition, it is better to avoid circularity that would make Aristotle's non-standard account less clear.

50 There are not many scholarly essays exclusively dedicated to the notion of change in Aquinas. Brower (2014) and Löwe (2015) are among the most recent contributions to the debate.

51 On Aquinas' commentary on the *Physics* see Elders (2013).

52 Aquinas follows Aristotle in stating that a definition includes a genus and a *differentia*. See, e.g., *Super De Trinitate*, pars 3 q. 6 a. 4 s.c. 3. Aquinas often uses the term *definitio* (or *diffinitio*, as the word is spelled in other editions of his works) for accounts that are not strictly speaking a genus and a specific *differentia* (see, e.g., *Sent. Lib. 1 dist. XXIV, q. 1 a. 3 ad 3*, where Aquinas maintains that there is a 'definition' of the transcendental one [*unum*]).

53 In his commentary *in Phys. Lib. III, lect. III, n. 293, 148*, Thomas observes that Aristotle's "definition" (*definitio*) is the best account, because change (*motus*) cannot be explained in a better way. Despite the wording, I believe that Aquinas does not provide a "standard" definition, because he takes "actuality" to be the "genus" of change ("manifestum est motum esse bene definitum ex duobus: primo quidem quia definitiones quibus alii definierunt motum, sunt inconvenientes; secundo ex hoc quod non contingit eum aliter definire. Cuius ratio est, quia motus non collocari potest in aliquo alio genere quam in genere actus existentis in potentia" *in Phys. Lib. III, lect. III, n. 293, 148*). But "actuality" ("actus") is not a "genus" in the strictest sense, because it is a common property of being (cf. *Sent. Lib. 4 dist. XLIX, q. 2, a. 6c*: "potentia et actus dividunt quodlibet genus entis"; analogously, in *Contra Gentiles, Lib. II, cap. 54 n. 10*: "potentia autem et actus dividunt ens commune").

54 The claim that "change" (*motus*) is ultimately identical to the changing thing is one of the main interpretative claims of this chapter. I argue for this claim based on texts such as *in Phys. Lib. III, lect. III, n. 296, 149*, where Aquinas identifies change with the intermediate stage of "imperfect actuality", and texts like *in Phys. Lib. I, lect. XIV, n. 127, 64*, in which Aquinas maintains that the account of change in terms of an underlying subject, privation and form may be translated into the account that explains change as a process from potentiality to actuality. Consequently, the intermediate stage of an "imperfect actuality" may be understood as an underlying subject that has only partially received the final form – if we apply the translation-principle expounded in *in Phys. Lib. I, lect. XIV, n. 127, 64* to the text that identify change with the imperfect actuality.

55 Aquinas states that the definition of change applies to different genera in his commentary *in Phys. Lib. III, lect. II, n. 286, 149*.

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According to Aquinas, the notions of “actuality” and “potentiality,” and the corresponding notions of “perfection” and “imperfection” are sufficient to order the different stages of a process in a series.⁵⁶ These notions (actuality/perfection and potentiality/imperfection) generate a relation of order.⁵⁷ Accordingly, for every event or state of affair “x,” “actually x” (“Ax”) is the successor (predicate letter “S”) of “potentially x” (“Px”). This may be expressed as follows:

(i) for every x (Ax=S(Px))

The most important feature of the order established by the notion of ‘being successor of’ (‘S...’) is transitivity.

(ii) for every x for every y for every z (x=Sy ^ y=Sz) → x=Sz

The relation is also trichotomous:

(iii) for every x for every y (x=y ∨ x=Sy ∨ y=Sx)

In the above rule, the variables “x” and “y” quantify over different stages of the same process of change. The relation “being the successor of” does not indicate a temporal order,⁵⁸ but a priority in perfection and in being.⁵⁹ It is essential to stress

56 See in *Phys. Lib. III*, lect. II, ns. 287–288, 145.

57 See in *Phys. Lib. III*, lect. III, n. 296, 149.

58 Aquinas cannot state that the potentiality stage precedes the actuality stage according to temporal priority, because time follows change and is defined in virtue of the notion of change. There are, however, several senses of “priority” according to Thomas (see in *Met. Lib. V*, lect. XIII, nn. 936–953, 250–253) and Thomas does not agree with Aristotle’s claim that substances are said to be prior to accidents in time too (on this issue see Gili 2011).

59 It is worth noting that Aquinas believes that there are three ways in which X can be prior to Y in being. Aquinas makes this distinction in his commentary in *Met. Lib. V*, lect. XIII, nn. 950–952, 252–253: “Et hoc tripliciter. Primo ratione communitatis aut dependentiae: secundum quod priora dicuntur, quae possunt esse sine aliis et illa non possunt esse sine eis. Et hoc est prius a quo non convertitur essendi consequentia, ut dicitur in praedicamentis. Et hac divisione, idest isto modo prioris et posterioris contra alios diviso usus est Plato. Voluit enim quod propter hoc universalis essent priora in essendo quam singularia, et superficies quam corpora, et lineae quam superficies, et numerus quam omnia alia. Secundus modus attenditur secundum ordinem substantiae ad accidens. Quia enim ens multipliciter dicitur, et non univoce, oportet, quod omnes significationes entis reducantur ad unam primam, secundum quam dicitur ens, quod est subiectum aliorum entium per se existens. Et propter hoc primum subiectum dicitur esse prius: unde substantia prius est accidente. Tertius modus attenditur secundum divisionem entis in actum et potentiam. Nam uno modo dicitur aliquid esse prius secundum potentiam et alio modo secundum actum: secundum potentiam quidem dimidium rei est prius re ipsa, et quaelibet pars toto, et materia quam substantia, idest quam forma. Haec enim omnia sic comparantur ad ea, respectu quorum sic dicuntur priora, ut potentia ad actum.”

First, “X is prior to Y in being” if X can exist without Y existing, but Y cannot exist without X existing. Potentiality and actuality, however, are not ordered according to this sense of “priority in being,” because this would entail that no potentiality could be the case without its

that Aquinas is able to describe the order between the different stages of a process without referring to any priority in time, thereby avoiding circularity.⁶⁰

The existence of an order between the stages of a process of change does not explain why change happens. In providing an account of change, Aquinas observes that Aristotle's "definition" should be endorsed, because it is the most convenient and adequate explanation of the phenomenon.⁶¹ Thomas adds that if something is *actually-φ*, we are at the end of the process for a thing to become φ, whereas if a being is *potentially-φ*, we are only at the beginning of a process to become φ. Both stages are not change, but rather the *termini a quo* and *ad quem* that are involved in the mental relations that allow us to look at the changing thing as an intermediate step in the process of becoming φ.⁶² Aquinas states that even an intermediate stage cannot be said to be changing, unless we conceive of it as the successor of pure potentiality and the predecessor of full-fledged actuality. In other words, change is nothing but a being, which is potentially-φ (and is thus ordered towards a further actuality, i.e., the stage of being actually-φ), and is actually-ψ (and, hence, is the successor in the relation of order of its stage *qua* potentially-ψ):

It must be noted, therefore, that to be only in actuality is one thing, to be only in potentiality is another thing, and to be a mean between potentiality and actuality is a third thing (Blackwell-Spath-Thirlkel (1995), 146).⁶³

corresponding actuality being the case. This statement is tantamount to the endorsement of the principle of plenitude – a principle that Aquinas rejects.

There is a second meaning of priority: X is prior to Y in being, if X is a substance and Y is an accident. Clearly, this sense of priority cannot be applied to the stages of change because these include the stages of substantial changes, in which a substance generates a different substance. The third meaning of priority in being is priority "according to potentiality and actuality." This is certainly the sense according to which a potential stage precedes an actual stage in a change process. It should be noted that Aquinas' account ultimately turns out to be circular, because the stages of change are ordered according to potentiality and actuality, these are ordered based on their perfection in being, but the order of priority and posteriority in being turns out to be an order grounded on the notions of potentiality and actuality. This circularity, however, is inevitable. Potentiality, actuality, and being are fundamental metaphysical notions that cannot be further analyzed. This entails, in my interpretation, that the order of the series of the stages of change is primitive and cannot be explained on the basis of other more fundamental notions.

60 Aquinas maintains that time is "something of change" ("aliquid motus") in his commentary *in Phys.* Lib. IV, lect. XVII, n. 572, 282. Moreover, he adds that the species of change that is most relevant to the definition of time is local motion (cf. *in Phys.* Lib. IV, lect. XVII, n. 576, 282).

61 Cf. *in Phys.*, Lib. III, lect. II, n. 285, 145.

62 See *in Phys.* Lib. III, lect. II, n. 288, 145.

63 *In Phys.* Lib. III, lect. II, n. 285, 145: "Considerandum est igitur, quod aliquid est in actu tantum, aliquid vero in potentia tantum, aliquid vero medio modo se habens inter potentiam puram et actum perfectum."

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What is merely potentially x does not change yet; what is mere actuality, i.e., the full actualization of x , does not change anymore. The only stages in which “ x ” is said to be changing are the intermediate stages:

That, then, which is in potentiality only is not yet moved. That which is in perfect actuality is not moved but has already been moved. That, therefore, is moved which is a mean between pure potentiality and actuality, which is, indeed, partly in potentiality and partly in actuality, as is clear in alteration. For when water is hot only in potentiality, it is not yet moved. On the other hand, when it is already heated, the change of heating is finished. But when it participates in something of heat although imperfectly, then it is being moved to heat. For that which is becoming hot gradually participates in heat more and more (Blackwell-Spath-Thirlkel 1995, 146, slightly modified).⁶⁴

Change (*motus*), says Aquinas, is identical with the changing thing, i.e., with the intermediate stage(s) of a changing process. Since the distinction among the various stages of a change process is not circular, because we can order the various stages with no reference to either change or time, Aquinas’ account avoids circularity at this level. The “changing thing,” however, should be understood as related to its previous and following stages:

Therefore, change is that imperfect actuality of heat existing in the heatable, not, indeed, insofar as it is only in actuality, but insofar as already existing in actuality it has an ordination to further actuality. For if this ordination to further actuality were removed, the actuality [which it already has], however imperfect, would be the end of change and not the change, as happens when something is partially heated. Furthermore, an ordination to further actuality belongs to that which exists in potentiality too. Likewise, if the imperfect actuality were considered only in its ordination to further actuality, insofar as it has the nature [*ratio*] of change, it would not have the nature [*ratio*] of change, but of a principle of change. For heating can begin from the tepid as well as from the cold. Hence, change is neither the potentiality of that which exists in potentiality, nor the actuality of that which exists in actuality. Rather change is the actuality of that which exists in potentiality, such that its ordination to its prior potentiality is designated by what is called “actuality,” and its ordination to

64 *In Phys.* Lib. III, lect. II, n. 285, 145: “Quod igitur est in potentia tantum, nondum movetur: quod autem iam est in actu perfecto, non movetur, sed iam motum est: illud igitur movetur, quod medio modo se habet inter puram potentiam et actum, quod quidem partim est in potentia et partim in actu; ut patet in alteratione. Cum enim aqua est solum in potentia calida, nondum movetur: cum vero est iam calefacta, terminatus est motus calefactionis: cum vero iam participat aliquid de calore sed imperfecte, tunc movetur ad calorem; nam quod calefit, paulatim participat calorem magis ac magis.”

further actuality is designated by what is called "existing in potentiality." Hence, the Philosopher has defined change most adequately by saying that change is the entelechy, i.e., the actuality, of that which exists in potentiality insofar as it is such (Blackwell-Spath-Thirlkel, 1995, 146, slightly modified).⁶⁵

In the above text, Aquinas is offering an account of change that applies to both physical and spiritual change and states that change has an objective mind-independent reality. Its formula does not include any actual reference to a mind that is considering that a change is taking place. In making this claim, my interpretation differs from Löwe (2015). Following McGinnis (2010), Löwe aptly distinguishes between a process-interpretation and a non-process interpretation of change.⁶⁶ In Löwe's reconstruction, the process-interpretation presents change as identical with the actualization of what is potentially changing-to-*F*, *qua* potentially changing-to-*F*. The actualization is a "process" that includes different stages.⁶⁷ The non-process-interpretation identifies change with a state. Defenders of this view believe that the process-interpretation does not avoid the circularity charge. As Löwe observes, the non-process-interpretation "offers a non-circular account of Aristotle's definition, but at the cost of the controversial claim that change is a state."⁶⁸ Accordingly, Löwe maintains that Aquinas supports the process interpretation and suggests that change cannot be understood if there is no relation to a mind that is grasping that change is taking place in the extra-mental world. Unlike Löwe, I think that Aquinas' "definition" of change does not include any reference

65 *In Phys.* Lib. III, lect. II, n. 285, 145: "Ipse igitur actus imperfectus caloris in calefactibili existens, est motus: non quidem secundum id quod actu tantum est, sed secundum quod iam in actu existens habet ordinem in ulteriorem actum; quia si tolleretur ordo ad ulteriorem actum, ipse actus quantumcumque imperfectus, esset terminus motus et non motus, sicut accidit cum aliquid semiplene calefit. Ordo autem ad ulteriorem actum competit existenti in potentia ad ipsum. Et similiter, si actus imperfectus consideretur tantum ut in ordine ad ulteriorem actum, secundum quod habet rationem potentiae, non habet rationem motus, sed principii motus: potest enim incipere calefactio sicut a frigido, ita et a tepido. Sic igitur actus imperfectus habet rationem motus, et secundum quod comparatur ad ulteriorem actum ut potentia, et secundum quod comparatur ad aliquid imperfectius ut actus. Unde neque est potentia existentis in potentia, neque est actus existentis in actu, sed est actus existentis in potentia: ut per id quod dicitur actus, designetur ordo eius ad anteriorem potentiam, et per id quod dicitur in potentia existentis, designetur ordo eius ad ulteriorem actum. Unde convenientissime philosophus definit motum, dicens quod motus est entelechia, idest actus existentis in potentia secundum quod huiusmodi."

66 See McGinnis (2010), 60–61.

67 In Löwe's reconstruction (see Löwe 2015, 47, n. 8), defenders of the process interpretation include Ross (1936), 536, Ackrill (1965), Charles (1984), 19, Heinaman (1994), 32. Heinaman's interpretation rests on the distinction between a potentiality to a state *S* and a potentiality to a change to a state *S*. According to Heinaman, Aristotle's definition of change is not circular, even though it identifies change with the potentiality to change to a state *S*.

68 Löwe (2015), 48.

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to a thinking mind, even though change is conceptually distinguished from the changing thing in virtue of a relation of reason that has other stages in the process as its *termini a quo* and *ad quem*. The crucial evidence for this claim is a passage from Aquinas' commentary on Aristotle's *Physics* where it is stated that

change is that imperfect actuality of heat existing in the heatable.⁶⁹

By identifying change (*motus*) with imperfect actuality (*actus imperfectus*), Aquinas is endorsing the tripartite scheme expounded above, according to which every process of change can be analysed into three fundamental stages: pure potentiality towards state *F*, second potentiality towards state *F* (= first actuality of the state *F*), second actuality/state *F*. The first and the last of these three steps are not change, but rather "rest" when it comes to the "becoming *F*" of a thing. The change in virtue of which a thing *becomes F* turns out to be identical with the intermediate step. Accordingly, change (*motus*) is a state (and not a process) that nevertheless should be (in principle) "understood" (by a possible mind) as the result of a previous step and as the step that will lead to a further stage. The dynamic component of the intermediate state consists in its being included in an ordered series of stages. All these stages are ordered among each other by the priority-relation that is established by the presence of potentiality and actuality. Aquinas specifies that change is an imperfect actuality:

Not insofar as it is only in actuality, but insofar as already existing in actuality it has an ordination to further actuality. For if this ordination to further actuality were removed, the actuality [which it already has], however imperfect, would be the end of change and not the change, as happens when something is partially heated.⁷⁰

Further evidence of Aquinas' rejection of the process-interpretation is his insistence that the account of change (*motus*) should avoid any circularity. In the first lines of his explanation of Aristotle's passage that includes the "definition" of change, Aquinas notes,

[c]oncerning the first part it must be noted that some would define change by saying that change is a passage from potentiality to actuality which is not sudden. These thinkers have erred in formulating the definition because they have placed in the definition of change certain things which are posterior to

69 *In Phys.* Lib. III, lect. II, n. 285, 145: "[i]pse igitur actus imperfectus caloris in calefactibili existens, est motus."

70 *In Phys.* Lib. III, lect. II, n. 285, 145: "non quidem secundum id quod actu tantum est, sed secundum quod iam in actu existens habet ordinem in ulteriorem actum; quia si tolleretur ordo ad ulteriorem actum, ipse actus quantumcumque imperfectus, esset terminus motus et non motus, sicut accidit cum aliquid semiplene calefit."

change. For a “passage” is a certain species of change. Moreover “sudden” has time in its definition, for that is sudden which happens in an indivisible time. But time is defined by change. And so it is altogether impossible to define change by what is prior and better known other than as the Philosopher here defines it (Blackwell-Spath-Thirlkel, 1995, 147, slightly modified).⁷¹

Aquinas explicitly states that any definition of change in terms of *exitus* is incorrect because the notion of *exitus* in turn includes a reference to change. In the above passage, Aquinas is thus assuming that it is possible to provide a non-circular account of change, even though change cannot be formally defined,⁷² and argues that the definition of any “*x*” can only include terms that are “prior” to “*x*.” Priority and posteriority in this context are priority and posteriority *in definition* (cf. Aristotle, *Met.* Z 1 and Aquinas' commentary *ad loc.*). *A* is prior in definition to *B*, iff the definition of *A* does not include *B*, but the definition of *B* includes *A*.⁷³ If the account of “*x*” were to include terms that are definitionally posterior to “*x*,” the account of “*x*” would include the term “*x*” as well. Aquinas concludes that change (*motus*) should be accounted for in virtue of what is definitionally prior to it, and only Aristotle's formula in *Physics* III meets this requirement. By stressing that the definitional account must avoid circularity, Aquinas explicitly maintains that change cannot be identified with a process (*exitus*) because the latter term is definitionally posterior to change. Accordingly, it seems unlikely that Aquinas ever endorsed any interpretation that resembles the process view.

In his paper, however, Löwe stresses that Thomas presents “potentiality” as open to two different actualizations: imperfect actuality and perfect actuality:

Aquinas shares these two convictions with advocates of the process view. To see this, consider the following text:

[B][...] before something is changed, it is in potentiality to two acts, the complete act, which is the terminus of change, and the incomplete act, which is change. For example, water, before it begins to be heated, is in potentiality to being

71 *In Phys.* Lib. III, lect. II, n. 284–285, 144: “Circa primum sciendum est, quod aliqui definierunt motum dicentes, quod motus est exitus de potentia in actum non subito. Qui in definiendo errasse inveniuntur, eo quod in definitione motus posuerunt quaedam quae sunt posteriora motu: exitus enim est quaedam species motus; subitum etiam in sua definitione recipit tempus: est enim subitum, quod fit in indivisibili temporis; tempus autem definitur per motum. Et ideo omnino impossibile est aliter definire motum per priora et notiora, nisi sicut philosophus hic definit.”

72 Aquinas makes this claim later in his text. See especially *in Phys.* Lib. III, lect. II n. 285–286, 145.

73 Peramatzis (2011) offers an excellent overview of Aristotle's thought on priority in being and in definition. In my review of Peramatzis 2011 (cf. Gili 2012b), I argued that Aquinas had a similar understanding of priority in being and in definition.

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heated and to being hot. When it is being heated it is reduced to its incomplete act, which is change; not yet to its complete act, which is the terminus of change. But with respect to this act it remains in potentiality (*In Phys.* III, l. 2, n. 5, p. 106).

Like Ross, Aquinas here makes a distinction between the potentiality to change to F (here: the potentiality to be heated) and the potentiality to be F (here: the potentiality to be hot). Moreover, Aquinas tells us, like Ross, that change is the ‘being reduced to act’ of the potentiality to change to F rather than the potentiality to be hot.⁷⁴

The text discussed by Löwe does not seem to straightforwardly support the process-interpretation. Rather, Aquinas is saying that every pure potentiality may be read as the starting point of a series of several actualizations, that are reciprocally ordered. The imperfect actuality is not “potentiality to change to *F*”, but rather a (second) potentiality to become *F*. The distinction between “processes” and “states” is absent in the above passage, even though Löwe tries to read the intermediate step as a “process” and the first and the last steps as “states.” Aquinas seems to be considering all these three steps as similar in their being “states.” The dynamic aspect of the intermediate state is provided by its position in the ordered series, i.e., by its being the successor of pure potentiality and the predecessor of second actuality in the sight of a (possible) mind that were to understand the order of the series. As will be clearer in the next section, Aquinas identifies the intermediate step, i.e., the imperfect actuality, with the changing thing. A changing thing is nothing but an item falling under one of the categories in which change takes place, i.e., substance, quantity, quality, and place. Accordingly, change is ultimately identical with an extra-mental entity. As Aquinas’ ontology does not make room to “processes” (the only entities being items falling under the ten categories),⁷⁵ change itself cannot but be an item belonging to a category, because it is an extra-mental thing and there is no mind-independent created object outside of the categories. Aquinas makes this point explicitly:

Concerning the first part it must be noted that since change, as he will explain below, is an imperfect actuality, and since whatever is imperfect falls under the same genus as the perfect (not, indeed, according to species, but by reduction, as primary matter is in the genus of substance), there cannot be any change outside of the genera of things in which change occurs. This is what he means when he says that change is not “over and above the things,” that is over and

⁷⁴ Löwe (2015), 49–50.

⁷⁵ See *in Met.* Lib. V, lect. IX, nn. 891–893, 238–239; *in Phys.* Lib. III, lect. I, n. 282, 141.

above the genera of things in which there is change, as if it were something extraneous or something common to these genera. [...] Hence it is clear that there is no change or mutation outside the above mentioned genera. For there is nothing beyond these genera, since they divide being sufficiently well (Blackwell-Spath-Thirlkel, (1995), 143, slightly modified).⁷⁶

Even though Aquinas' account avoids circularity, his picture entails a metaphysical puzzle that can be reduced to this core question: if all mind-independent beings are either God, or created beings which fall under the ten categories, why should we subscribe to the view that change has a mind-independent reality?⁷⁷ For it seems that change is neither a substance, nor a quality, or a quantity, or any of the other accidents, since none of essences of these beings includes any reference to change.

Prima facie, all the available evidence seems to suggest that change cannot be identified with any of the ten categories, and we might be tempted to conclude that change is a merely mental notion. As we will see in the last chapter of this book, Aquinas maintains however that time has mind-independent existence. If time is real, how can it be grounded upon a mind-dependent entity, such as change? Should we instead conclude that change has mind-independent existence as well? But if no mind is actually thinking of the relation of the order of an intermediate stage to its preceding and following stages, is it still possible to speak of change? The order among stages is certainly mind independent, but the relation of the only existing thing, i.e., the changing thing located in the present instant in time, to its (non-existing) previous and following stages seems to be a mental relation. In fact, mind-independent relations connect an existing thing to an existing *terminus ad quem*. In the case of change, however, the *terminus ad quem* of the relation, i.e., the previous or following stages of the changing thing, seem not to exist, at least according to a presentist reading of Aquinas' ontology of change. Does this further consideration imply that change must have some mind-independent existence -otherwise time would also be mind-dependent, and this is at odds

76 *In Phys. Lib. III, lect. I, n. 281, 141*: "Circa primum considerandum est quod, cum motus, sicut infra patebit, sit actus imperfectus; omne autem quod est imperfectum, sub eodem genere cadit cum perfecto, non quidem sicut species, sed per reductionem (sicut materia prima est in genere substantiae); necesse est quod motus non sit praeter genera rerum in quibus contingit esse motum. Et hoc est quod dicit, quod motus non est praeter res, idest praeter genera rerum in quibus est motus, ita quod sit aliquid extraneum, vel aliquid commune ad haec genera. [...] Unde etiam manifestum est quod neque motus neque mutatio sunt extra praedicta genera; cum nihil sit extra ea, sed sufficienter dividant ens."

77 I do not consider the possibility of identifying change with God, which is meaningless from Aquinas' point of view, since he maintains that God does not change in any respect, cf. *Summa theol. I*^a, qu. 10, a. 2, c.

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with Aquinas' text- and, consequently, that Aquinas endorsed an eternalist view of temporal parts?

In Aquinas' system, the basic issue raised by the definition of change involves all these other questions. For the sake of clarity, I shall list the interpretative claims which I endorse, and I shall subsequently argue in favor of them by referring to the available textual evidence:

1. Change has mind-independent existence.
2. There is no common notion of change, but rather several kinds of change, which are identical with the items falling in the categories of substance, quantity, quality, and place (according to a more "Aristotelian" understanding of change) or also to items belonging to any of the categories, according to Aquinas' analogical rephrasing of the notion of change.
3. Aquinas was a consistent presentist, even though his presentism has many distinctive features that distinguish it from contemporary versions thereof. Aquinas undoubtedly rejected the claim that substances endure through temporal parts.
4. The relation that a changing thing establishes with its previous and following stages is not a real relation, which falls under the category "relation." Hence, no truly existing *terminus ad quem* is needed to account for such a relation. This relation is grounded upon the disposition of a changing thing to be understood in an ordered series that includes its previous and following stages by an intellect whatsoever. The disposition is mind-independent and is *in re* identical with the changing thing.

I shall argue for these claims in the following section of this chapter.

2.4 *Aquinas on the Mind-Independent Existence of Change*

In this section, I propose two closely related claims: change has mind-independent existence and is *in re* identical with the changing thing. Most philosophers assume that change is real, but they struggle to show how change can have mind independent existence. Aquinas' solution to this puzzle consists in identifying change with the extra-mental changing thing. Change and the changing thing are identical *in re*, even though they can be distinguished from a conceptual viewpoint. The argument for this identification runs as follows. It has been shown above that change is identical with the intermediate stage of a change process, i.e., with first actuality. In Aquinas' view, the "first actuality" is a being,⁷⁸ so that change is nothing but an extra-mental being. Specifically, this being is understood as the result of a previous

78 Cf. *in Met.* Lib. IX, lect. III, n. 1806, 432.

potentiality to become something else.⁷⁹ Its being a “first actuality” confers to the changing thing the dynamic character that is proper to change, but an actuality is an extra-mental being that belongs to one of the categories in which change is said to take place.⁸⁰ Since whatever belongs to category *X*, is nothing but an instance of *X*, change should also be identical with either a substance, or a quality, or a quantity, or a place that are located in the present, since only present things exist *in actuality*.

The above claims need to be grounded upon clear evidence. After having stated that change (*motus*) should be expounded by means of notions that are prior to it, Aquinas observes that the only two notions prior to change are potentiality and actuality. These two notions can be found in all genera of being.

For it has been said that each genus is divided by potentiality and actuality. Now since potentiality and actuality pertain to the first differences in being, they are naturally prior to change. And the Philosopher uses these to define change. It must be noted, therefore, that to be only in actuality is one thing, to be only in potentiality is another thing, and to be a mean between potentiality and actuality is a third thing (Blackwell-Spath- Thirlkel, 1995, 146, slightly modified).⁸¹

In the above passage, Aquinas is explicitly stating that pure potentiality, first actuality and last actuality are *aliquid*. The choice of the English translators to label as “thing” each of these steps of the process of change can be defended also based on other texts where similar expressions occur. By stating that the intermediate step is *aliquid*, Aquinas undoubtedly identifies it with an extra-mental being.

Thomas grants that there is a difference between the consideration of a thing, *qua* such, and the consideration of the same thing, *qua* changing. In his opinion, however, the difference is merely conceptual. Thomas makes this claim in his remarks on Aristotle’s example of a bronze that is potentially a statue. In his commentary on Aristotle’s *Metaphysics*, Aquinas observes that we can grasp a changing something in two ways: (a) in itself, and (b) as it is potentially something else. Even though we are talking about the same thing (i.e., about something that identical with itself *in subiecto*), we can grasp this same thing according to two distinct *rationes*:

79 Cf. *in Phys.* Lib. III, lect. II, n. 288, 145–146.

80 Cf. *in Phys.* Lib. III, lect. II, n. 286, 145.

81 *In Phys.* Lib. III, lect. II, n. 285, 144–145: “Dictum est enim quod unumquodque genus dividitur per potentiam et actum. Potentia autem et actus, cum sint de primis differentiis entis, naturaliter priora sunt motu: et his utitur philosophus ad definiendum motum. Considerandum est igitur quod aliquid est in actu tantum, aliquid vero in potentia tantum, aliquid vero medio modo se habens inter potentiam et actum.”

2. The Definition of Change

With a view to making this clear he says that bronze is in potentiality to being a statue, and thus the subject bronze and bronze in potentiality to being a statue are the same, although they are not the same in their meaning [*ratione*]; for the concept [*ratio*] of bronze as bronze and that of bronze insofar as it has some potentiality are different (Rowan (1961), v. II, 821).⁸²

Aquinas is saying that the bronze, *qua* bronze, is distinct *ratione* from the bronze, *qua* potentially a statue. Were the two ways of considering bronze not conceptually distinct, it would follow that the actuality of bronze, *qua* bronze would be identical with bronze, *qua* potentially a statue – and it would follow that all bronze would potentially be a statue.

If Aquinas thinks that the changing thing may be grasped according to two *rationes*, that are identical *in subiecto*, it seems to follow that the only mind-independent thing is an item that an intellect could grasp according to the *ratio* of a “changing thing,” i.e., according to the item’s potentiality to become something else. Aquinas’ argument to show the mind-independent existence of change is as follows:

- (a) For every *x*, for every *y*, if *x* has mind-independent existence, and *y* is really (i.e., not merely conceptually) identical with *x*, *y* has mind-independent existence as well.
- (b) Change is identical *in re* with things that do have mind-independent existence.
- (c) Therefore, change has mind-independent existence.

The first premise is straightforward. According to Aquinas, identity is said in many ways.⁸³ The mind-independent thing and the mind-dependent concept thereof are said to be identical in their content, but not *in subiecto*. By “really identical,” I refer to the identity *in subiecto*. It is worth noting that Aquinas does not have a univocal understanding of “identity.” According to both Aristotle and Aquinas, “*x*” and “*y*” are said to be identical in four basic senses: (1) in number, (2) in species, (3) in genus, and (4) by analogy. In Aristotle’s world, there is no such a thing as an “individual species:” whenever I do know something, I grasp (something of) the essence of said item so that the extra-mental entity and its mental representation are identical (2) in species, but not (1) in number. According to Aristotle, there are also things that do share the same subject but have different definitions:

82 *In Met.* Lib. XI, lect. IX, n. 2296, 545: “Ad cuius expositionem dicit quod aes est in potentia ad statuam. Et sic idem est subiectum aes, et aes in potentia ad statuam. Tamen non est idem ratione. Sed alia est ratio aeris in quantum aes, et alia est ratio aeris in quantum habet aliquam potentiam.”

83 On the many senses of identity according to Aquinas see *in Met.* Lib. V, lect. XI, nn. 906–911, 244–245. An analogous concept of identity is defended in Geach (1967).

his standard examples refer to the case of accidental composites. If Theophrastus is both well-educated and pale, “pale” and “well-educated” are said of the same subject (“Theophrastus”) but have different definitions. The two attributes “pale” and “well-educated” are thus identical with each other *in subiecto*, even though they do differ in definition, and, hence, in species and in genus.

According to Aquinas, two things may be identical in their definition, and still be different in their subject. This is certainly the case of all apprehended forms: the knowing mind and the known thing are identical in their form, but still do differ, because they are different subjects. This distinction cannot be reduced to the mere distinction in number. The distinction in number is typically provided by matter.

Moreover, change and its corresponding changing thing are said to be identical in their subject in a more radical sense than the case of accidental compounds, in which “pale” and “well-educated” are said to be identical in their subject, but different in their definition. In fact, “pale” and “well-educated” are two distinct accidents of the same underlying substance (e.g., “Theophrastus”). Within Aquinas’ metaphysical scheme, “pale” and “well-educated” have thus two distinct, albeit incomplete, essences, and two distinct, albeit mediated, acts of being, and one single subject, i.e., the substance they inhere in (“Theophrastus”). Change, however, is not an accident, and is thus completely reduced to its corresponding changing thing, as far as its act of being is concerned. When we distinguish “change” from its corresponding “changing thing,” we can say that the two have the same act of being, the same subject, but different *rationes*, i.e., two different ways in which they can be conceptualized by a knowing mind. In this sense, “change” is *in re* identical with the extra-mental reality that undergoes change. But since whatever is *in re* identical with a mind-independent being, has extra-mental existence, change is undoubtedly a mind-independent being as well.

To understand which kind of mind-independent being change is identical with, we should look for the genera of reality that can undergo change. Aquinas maintains that change may be understood as the passage from an imperfect stage to a perfect stage. Perfection and imperfection in being can be found, says Aquinas, in all genera of created being. In this sense, all created things are changeable things, and, *qua* changing, they are *in re* identical with change:

It is clear that in each genus a thing can be in two ways, either as perfect or as imperfect. The reason [*ratio*] for this is that privation and possession are the first contraries, as is said in *Metaphysics*, X. Therefore, since all the genera are divided by differentiating contraries, there must be in every genus a perfect and an imperfect. Thus in substance, something is as the form, and something as the privation; in quality, something is as the white which is perfect, another is as the black which is, as it were, imperfect; in quantity, something is a perfect quantity, another imperfect; and in place, something is above which is, as it

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were, perfect, another below which is, as it were, imperfect, or else something is light and heavy, which are placed in the category “where” by reason [*ratio*] of their inclination. Hence it is clear that change is divided in as many ways as being is divided. For the species of change differ according to the different genera of being. Thus growth, which is change in quantity, differs from generation, which is change in substance. And the species of change differ within the same genus according to the perfect and the imperfect. For generation is change in substance toward form, whereas corruption is change toward privation. And in quantity, growth is toward perfect quantity, and decrease is toward imperfect quantity (Blackwell-Spath-Thirlkel (1995), 143–144, slightly modified).⁸⁴

All genera of being are divided into species by “contrary differences.” This implies that some species may be said to be “more perfect” than others. “Perfection” and “imperfection,” Aquinas concedes, are to be understood as analogous notions. In the case of substance, Aquinas speaks of “privation (of a form)” and of “form” as the opposite determinations that may be considered as “imperfect” and as “perfect substance” respectively. The idea in the background is that substantial generation involves the passage from the privation of a certain substantial form to the presence of a certain substantial form. In the case of the generation of a human being, Aquinas thinks, there is an early stage of pregnancy in which the future newborn is a living being with a vegetative soul. In this early stage, the embryo is deprived of the successive form in the process of generation, i.e., of a sensitive form. In the middle stage of pregnancy, the embryo has a sensitive soul, but not a rational soul yet. The instants in which the future newborn has a “vegetative soul,” or a “sensitive soul” correspond to the “imperfect stages” where there is the “privation” of the final substantial form. Therefore, the imperfection and the perfection are merely metaphors to refer to different stages of the process of generation. In themselves, the embryo with a vegetative soul and the adult human being with a rational soul

84 *In Phys. Lib. III, lect. I, n. 282, 141.* “Manifestum est enim quod in omnibus generibus contingit aliquid esse dupliciter, vel sicut perfectum, vel sicut imperfectum. Cuius ratio est, quia privatio et habitus est prima contrarietas, quae in omnibus contrariis salvatur, ut in *X Metaphys.* dicitur. Unde, cum omnia genera dividantur contrariis differentiis, oportet in omnibus generibus esse perfectum et imperfectum: sicut in substantia aliquid est ut forma, et aliquid ut privatio; et in qualitate aliquid est ut album quod est perfectum, et aliquid ut nigrum, quod est quasi imperfectum; et in quantitate, aliquid est quantitas perfecta et aliquid imperfecta; et in loco aliquid est sursum, quod est quasi perfectum, et aliquid deorsum, quod est quasi imperfectum; vel leve et grave, quae ponuntur in ubi, ratione inclinationis. Unde manifestum est quod quot modis dividitur ens, tot modis dividitur motus. Differunt enim species motus secundum diversa genera entium; ut augmentum, quod est motus in quantitate, a generatione, quae est motus in substantia. Differunt etiam species motus secundum perfectum et imperfectum in eodem genere: nam generatio est motus in substantia ad formam, corruptio vero ad privationem; et in quantitate augmentum ad quantitatem perfectam, diminutio ad imperfectam.”

are substances to the same degree, because the notion of “substance” is univocally predicated of both.

Since “imperfection” and “perfection” may be found in all genera of being, in all genera there can be processes with a starting stage and an ending stage. To sum up, change has mind-independent existence and is identical with the (mind-independent) changing thing. There are as many changes as there are changing things. Since all genera of created beings have imperfect and perfect species, there are changing things in all genera of being.⁸⁵

This amounts to saying that all created beings are changing. Created beings, however, do not share any univocal definition, because “being is said in many ways.” Change will also be said in many ways and will turn out to be an analogous term like “being” and all the terms included in its account, i.e., “actuality” and “potentiality.”

85 This point appears to be at odds with the *littera* of Aristotle’s text. According to Aristotle, only substance, quantity, quality, and place undergo change: “There is no such thing as motion over and above the things. It is always with respect to substance or to quantity or to quality or to place that what changes changes. But it is impossible, as we assert, to find anything common to these which is neither ‘this’ nor quantity nor quality nor any of the other predicates. Hence neither will motion and change have reference to something over and above the things mentioned; for there is nothing over and above them” (Aristotle, *Physics*, III, 1, 200b33–201a3).

3. Aquinas between Presentism and Adverbialism

There are conflicting interpretations of Thomas Aquinas' views on the ontological status of past and future entities. Some scholars claimed that Aquinas was an eternalist who maintained that past, present, and future entities may be said to exist to some degree (Craig 1985, Costa 2012, Costa 2019, Costa 2020). Most scholars, however, maintained that Aquinas was a presentist, who believed that the only entities located in the present exist (Leftow 1990, Shanley 1997, Frost 2010, Gili 2020, Gili-Pezzini 2023). In this chapter, I maintain that Aquinas' position is rather sophisticated and can only be understood if we pay attention to the distinction between his semantics and his metaphysics. Even though contemporary philosophy of time can fruitfully engage with Aquinas' considerations on past, present, and future entities, the medieval conceptual framework adopted by Thomas is rather different from that of contemporary philosophers.

Semantics tells us how we talk about the world, while metaphysics is our theory of the world. In contemporary discussions, the labels "presentism" and "eternalism" are used to refer to either semantic or metaphysical theories. This might generate confusion,¹ and it is vital to distinguish the two levels while dealing with Aquinas. In my opinion, Aquinas' semantics was consistently adverbialist, while his metaphysics was thoroughly presentist. In what follows, I will argue first for Aquinas' semantic adverbialism (section 3.1), second for his metaphysical presentism (section 3.2). Such a hybrid position is certainly unheard of in contemporary literature and some remarks on the rationale behind Aquinas' philosophical synthesis are in order (section 3.3).

3.1 *Semantics: Aquinas' Adverbialism*

Contemporary metaphysicians subscribe to opposite views about time, but it is possible to distinguish the many theories on the market by either looking at semantics or at metaphysics.

- (a) Semantic theories of time
 - (a.1) Presentism: only present tense sentences have a truth-value. Past and future tense sentences do not have a truth-value.

¹ Lowe (1988) warns about the risk of not distinguishing the level of the semantic analysis from the metaphysical theory that corresponds to it.

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- (a.2) Temporal realism: all tensed sentences have a truth-value.
 - (a.2.1) Eternalism: from (a.2), it follows that the subjects of the sentences that has a truth-value exist at the time indicated by the tense of the sentence.
 - (a.2.2) Adverbialism: (from a.2), it follows that a time-index should be added to the copula of a sentence, but not to the predicate or the subject of the sentence.

(b) Metaphysical theories of time

- (b.1) Presentism: only entities located in the present exist.
- (b.2) Eternalism: past, present, and future entities exist in the same way.

As is clear from the above scheme, semantic and metaphysical eternalism state the same claim. This is a consequence of the eternalist's understanding of existence. Most eternalists would endorse an ontological commitment to the existence of all items that are quantified over in their theory.² Consequently, semantic eternalism (a.2.1) entails metaphysical eternalism (b.2), because for any true sentences of the structure " $@x P(x)$ " (where "@" designates a quantifier), the object designated by "x", that exemplifies the property "P", *exists*.

Adverbialism, however, does not necessarily entail any of the two metaphysical theories outlined above. Many philosophers have criticized adverbialism precisely because it can be taken to be a mere semantic theory, with no clear metaphysical counterpart implied by it.³ In what follows, I claim that adverbialism is compatible

2 WV.O. Quine expounded his concepts of "ontological commitment" in Quine (1948), 33: "[a] theory is committed to those and only those entities to which the bound variables of the theory must be capable of referring in order that the affirmations made in the theory be true."

3 Critics of adverbialism include Hawley (2001), Lewis (2002) and Sattig (2006). Sattig (2006), 91–96 maintains that adverbialism is not distinguishable from its competitors and should necessarily be taken to be identical to either presentism or eternalism. Sattig can defend this claim because he subscribes to Quine's ontological commitment and to the Fregean orthodoxy concerning the syntax of propositions. According to this syntax, a proposition includes only an unsaturated predicate term (a "concept" in Frege's terminology) and an argument that saturates the predicate. There is no copula in the logical language proposed by Frege. Within Fregean orthodoxy it is possible to reject the adverbialist's main claim, according to which the copula is time-indexed but the subject and the predicate are not. Sattig, however, seems not to question this orthodoxy. In my opinion, Sattig is right in maintaining that adverbialism and the rejection of Fregean orthodoxy about the syntax of sentences *aut simul stabunt aut simul cadent*, but he might be wrong in taking for granted the Fregean orthodoxy. Sattig maintains that his criticism of adverbialism is different from Lewis', but it seems to me that D. Lewis was anticipating Sattig's move. Lewis' main concern is that the copula of an English sentence does not seem to express any relation. This criticism seems to presuppose that "relations" should be properties designated by unsaturated polyadic predicates. Hence, Fregean orthodoxy appears to ground Lewis' criticism of adverbialism too. Lewis states that adverbialism, i.e., "tensing the copula," can be defined as follows: "Having was originally thought to be a dyadic relation of things to properties; now it will instead be a triadic relation of things to properties and times. If you have

with metaphysical presentism, if the notion of “existence” is not understood as Willard Van Orman Quine suggested in his famous essay *On What There Is*.⁴ I believe that Aquinas subscribes to semantic adverbialism, but is a presentist in metaphysics since he states that the participation of a creature in the *actus essendi* entails that the creature *exists* in the present. The present instant in time is defined as the instant in which all creatures are said to be actualized by the *actus essendi*, thereby avoiding any indexical definition of the present à la David Kellogg Lewis.

In this section, I shall distinguish the different semantic theories of time to introduce Aquinas' adverbialism.

In many natural languages like English, there are several tenses that express different relations between a subject and a predicate. We can correctly say that “my room's walls were white,” “my room's wall are green,” and that “my room's walls will be yellow,” supposing that the walls that were white have been painted green and that I am about to paint them yellow. Tensed statements allow us to ascribe different qualities to the same subject. Incompatible qualities, such as different colors, may be predicated of the same subject, if the copula has different tenses in each predication. In short, natural languages allow us to talk about qualitative change. Presentists typically maintain that only present-tensed sentences are susceptible to being true. Since there is neither past nor future, the presentist argues, there is no reason to make statements on past or future objects. For the presentist it is not problematic to explain statements like “what was wood is now ash,” because the only true statement is “this something is now ash.” The presentist rejects the claim that it is possible to make sense of the statement “this something, that is now ash, was wood.” As I shall make clear in what follows, Aquinas does not subscribe to this version of presentism. For Aquinas, both past and future-tensed statements are capable of being true. There is an obvious theological aspect of this metaphysical statement. As a Christian theologian, Aquinas had to affirm the truth of sentences like “God will judge the living and the dead” or “the Virgin Mary conceived of the Holy Spirit,” for such sentences are part of the Nicene creed

at *t* the property bent, the property bent is unscathed: it is still the same old monadic intrinsic property we always thought it was. It is not replaced either by a relation or by a relational property” (Lewis (2002), 5). After having presented adverbialism in these terms, Lewis goes on to say that “having,” i.e., the copula, does not refer to anything, because it is not a relation: “But I do not think these relations can explain having simpliciter. Having simpliciter is not a relation, whatever grammar may suggest. What is it, then? I don't know what more can be said. It is all very well to say that the copula is a ‘non-relational tie’ or that properties are ‘unsaturated’ and await completion by their bearers” (Lewis (2002), 6).

⁴ See Quine (1948). Quine's definition is highly influential in contemporary philosophy and most philosophers do not question the accuracy of Quine's claims. I believe that Aquinas' philosophy should be interpreted as entailing a radically different concept of existence. To avoid any confusion, I stress that the current understanding of “existence,” that is mostly inspired by Quine (1948), and Aquinas' concept of *esse* are entirely different.

and Aquinas maintains that these sentences may be regarded as the propositional principles of sacred doctrine.⁵ The version of presentism outlined above is thus unavailable to Thomas Aquinas. Moreover, Aquinas shares Aristotle's claim that bearers of truth and falsity are sentences, which include a noun and a verb, and the verb is always tensed.⁶ Aquinas does not consider utterances that express wishes, prayer, or order as truth-bearers, but all other declarative utterances that include a noun and a tensed verb are truth-bearers. Aquinas' philosophy of language is thus incompatible with the view that present-tense sentences are the only truth-bearers. It is reasonable to expect that Aquinas would not subscribe to the rigorous presentism that some philosophers currently favor.

Other philosophers, however, maintain that it is possible to evaluate the truth-value of past and future tense statements as well. These philosophers may be called "temporal realists."⁷ Aquinas was certainly a temporal realist – he maintained that past or future tense statements may be truth-bearers. In particular, he favored the version of temporal realism in which the tensed element of the statement is the copula, although he maintains that being and existence are properties that belong to their subjects only in the present instant of time.

Temporal realists are in a better position than presentists in explaining the truth of the sentence "what is now ash was wood." This sentence is intuitively true, if the ash is indeed the remains of a certain chunk of wood being burned. Presentists cannot offer a proper explanation of quality change because they reject the claim that the same subject may persist while it undergoes property change, as the subject for them exists only in the the present. Temporal realists, on the other hand, maintain that the same subject may have opposite properties at different times. They do not agree among themselves on what is modified by time index embedded in a tensed statement in a natural language. Consider, for example, the sentences (i) "my room's wall was green" and (ii) "my room's wall is white." Each sentence includes a subject, a predicate, and a copula. Temporal realists divide themselves among those who would add a time-index to the predicate, those who would do so with the subject, and those who would rather have a time-indexed copula.

Suppose that my room's wall is uniformly colored, so that it cannot have the mutually exclusive properties of being white and green at the same time. By time indexing any of the three constituents of the sentences (i) and (ii), one can say that the wall of my room is green and white, but at different times. By time-indexing the predicate, it is possible to say that "my room's wall is green-at- t_1 and white-at- t_2 ." Unlike "green" and "white," that are not compatible at the same

5 Cf. *Summa theol.* II^a-II^{ae}, q. 1, a. 7 co. and a. 8 co.

6 Cf. Aristotle, *De Interpretatione*, III, 16 b6–7.

7 For this label see Lowe (2002), 43–47.

time, “green-at- t_1 ” and “white-at- t_2 ” are compatible. The difficulty of this position is that objects end up having relational properties only, like “green-yesterday” and “white-now.” Many philosophers, including Aquinas, maintain however that objects have intrinsic properties too.

For this reason, other temporal realists introduce time-indexed subjects. Accordingly, “my room’s wall-at- t_1 is green” and “my room’s wall-at- t_2 is white.” It has become customary to talk about objects that persist and that are composed by several temporal parts. Supporters of the temporal parts theory usually invoke spatial comparisons to make their theory clearer. As the Danube River flows through several countries, and has a German, an Austrian, and a Hungarian section, a persisting object has as many parts as the instants of time in which something is truly predicated of it. I could not be the great-grandchild of my great-grandfather, if my (dead) great-grandfather were not to exist in some sense. In other words, relational properties like “being the great-grandchild of” could not be truly predicated of their subjects if we were not to allow for the existence of past (or future) temporal parts of beings like my (dead) great-grandfather. Presentists find these claims bizarre and try to solve the above puzzles without endorsing the existence of any time but the present. The temporal parts theorist is indeed in a difficult position for two reasons. First, it is not clear what temporal parts truly are. Any attempt at clarifying their nature employs metaphors, like the spatial similitude. Second, it is possible to quantify over temporal parts because temporal parts are introduced to speak about transient properties of certain objects. Accordingly, these objects have a transient property, i.e., a non-permanent one, if and only if there is at least a temporal part of the object of which the property is truly said, and a different temporal part of the same object of which the property is not said. Such a description, if formalized, entails the necessity of quantifying over temporal parts. Since most philosophers think that if it is possible to quantify over “ x ,” then “ x ” exists, they conclude that all temporal parts must exist. This conclusion is unavoidable for philosophers who maintain that existence is identical to being quantified over. In fact, it is unavoidable to think of temporal parts as objects that may be quantified over. The difficulty of this position is that it is counterintuitive to speak of the past and of the future as existing as the present. Some temporal realists have thus argued in favor of a third perspective. They maintain that neither the subject nor the predicate is time-indexed – it is rather, the copula that is time-indexed. E. J. Lowe is often associated with this metaphysical theory, which has been labeled “adverbialism.” While apparently displaying the advantages of temporal realism without the oddities involved by the association of the time-index with either the subject or the predicate, adverbialism is nevertheless a theory that did not gain many supporters, probably because it is

not clear what are the implications of this analysis of tense for our understanding of the temporal phenomena.

3.2 *Metaphysics: only the Present Exists*

There is evidence that Aquinas does not think of the past and the future as “parts” of time, nor that he subscribes to the view that they exist. He certainly maintains, however, that past- and future-tense statements may be either true or false. In this sense, he is an atypical presentist.

There is a scholarly debate about Aquinas’ claims about the ontological status of past and future states of affairs. The debate may be said to be starting with John Duns Scotus, according to whom Aquinas’ solution to the problem of future contingents fails for the following reason. (1) According to Aquinas, God knows future contingent events, because they are present to him. But (2) only what actually exists may be present to God. Therefore (3), Aquinas’ view entails that future events exist as present events do. This conclusion, Scotus notes, is absurd, and Aquinas’ solution should be rejected.⁸ If we were to reformulate Scotus’ criticism in contemporary jargon, we could state that Aquinas’ position entails eternalism, but eternalism, Scotus contends, is absurd, therefore Aquinas’ solution to the puzzle of future contingent events should be abandoned.

More recently, William L. Craig has observed that Aquinas’ treatment of future contingents and of God’s foreknowledge entails that Thomas was a B-theorist.⁹ In Craig’s simplified reconstruction, McTaggart’s lesson implies that there are two radically different theories of time: the A-theory and the B-theory.¹⁰ The B-theory presents time as a B-series, i.e., as a series of instants that are reciprocally ordered by the relations “earlier than” and “later than.” In a B-series, the present has not a privileged position with respect to the past and the future, because tenses are not considered within a B-theory. The A-series grounds the A-theory of time. An A-series has a privileged point, i.e., the present, from which it is possible to consider some of the points on the series as future, and others as past. According to Craig, Aquinas would have never explicitly subscribed to the B-theory, because he seems to assign a privileged position to the present, but his claim that God sees all instants – past, present and future – as if they are present to Him entails

8 See Scotus’s *Lectura*, Book I, dist. 39, n. 23, 486, ll. 1–16. On Scotus’ criticism of Aquinas’ position see Craig (1988) 129–133.

9 Cf. Craig (1988), 116–118.

10 McTaggart introduces the concepts of the A-series and of the B-series (together with the less well-known C-series) in McTaggart (1908). His aim was to demonstrate the unreality of time, but the distinction that he introduced to present his argument for the unreality of time was certainly more influential than his controversial conclusion that time is not real.

that Thomas' understanding of time is ultimately B-theoretic. Craig (1985) adds a further claim to the above: if Aquinas is a B-theorist, he must also be an eternalist. After a careful analysis of all relevant texts, Craig concludes:

Therefore, what Aquinas' doctrine of God's eternity and knowledge of future contingents was seen to imply seems to be positively affirmed by Aquinas, namely, that the past, present, and future are all ontologically on a par with each other. Accordingly, Thomas held to a B-theory of time.¹¹

Craig seems to maintain that stating that "past, present and future are all ontologically on a par with each other" is equivalent to stating that time is described by the B-theory. It is easy to prove that this statement is inaccurate. The concept of a B-series does not have any ontological consequence for the instants of time that are ordered in the series. Regardless of Craig's conflation of arguments, it is worth asking whether Aquinas was an eternalist, as Craig seems to imply. Craig's claim has been defended by Costa (2012) and (2019) with excellent arguments, but most scholars would still refuse to consider Aquinas an eternalist. In *Summa theol.* I^a, q. 14, a. 10, Thomas explicitly states that God knows non-existing things, including past and future events. In addition, in *De ver.* q. 1, a. 5, ad 11, Aquinas states that things do not exist eternally, even though God eternally knows them. Consequently, Leftow (1990), Shanley (1997), Staley (2006) and Frost (2010) have defended the opposite view, according to which Aquinas is a presentist. Their interpretations differ in the explanation of Aquinas' reconciliation of the claim that past and future entities do not exist with the idea that God know them as if they were present. B. Shanley claims that God knows future events as if they were present to Him, because He ultimately causes them.¹² Other scholars believe that God's knows future events both in their causes and *in themselves*, but God's knowledge of future entities in themselves does not entail eternalism, although it is not ultimately reducible to God's causal knowledge.¹³

Aquinas explicitly states that God knows future entities both *in themselves* and in their causes in *Summa theol.* I^a, q. 14, a. 13c., but I believe that Shanley is right in stating that the knowledge of future things "in themselves" is ultimately reducible to God's causal knowledge of the universe.

For the present purpose, I stress that these scholars seem to share a common viewpoint: in their view, Aquinas is a consistent presentist. This opinion, however, is at odds with some textual evidence considered by W. L. Craig and D. Costa in their works,¹⁴ and even though I do not think that the texts are compatible

¹¹ Craig (1985), 482–483.

¹² On God's causal knowledge of the future see also Shanley (1998).

¹³ This point is developed by Staley (2006).

¹⁴ See again Craig (1985), Costa (2012) and especially Costa (2019).

with pure eternalism (*pace* Craig and Costa), Aquinas' claim that past and future tense statements can have a truth-value entails that Aquinas is not a standard presentist.¹⁵ In order to appreciate the peculiarities of Aquinas' presentism, it is useful to recall his arguments for the non-existence of the past and the future. This will help us to understand what Aquinas takes "existence" to be, when he denies this property to past and future entities. Aquinas' claim that past and future things do not exist may be regarded as one of the implicit premises of an argument that Thomas employs while he is dialectically testing the thesis that time has mind-independent existence.¹⁶ As a conclusion of the dialectical analysis, Aquinas maintains that time has mind-independent existence,¹⁷ and that it is distinct from change.¹⁸ Past and future, however, do not exist. The dialectical

15 Classical presentism tries to dispose of the truth-value of past and future tense sentences by rephrasing them. For example, when we say in conversation that "Cesar crossed the Rubicon," we actually mean that "it is true now that Cesar crossed the Rubicon." Arthur N. Prior adopted this strategy in Prior (1967), especially 8–10 and 14–15. Bourne (2006), 41–46 offers an excellent presentation of "Priorian presentism." There are other strategies that a presentist can adopt to explain why we often maintain that it is possible to utter true statements about the past. Standard presentism is expounded in these terms in Meyer (2005).

16 Cf. *in Phys.* Lib. IV, lect. XV, n. 559, 274: "Dicit ergo primo quod ex his duabus rationibus potest aliquis concipere, quod tempus vel omnino non sit, vel sit aliquid quod vix et obscure percipi possit. Prima ergo ratio talis est. Omne compositum ex his quae non sunt, impossibile est esse, vel habere aliquam substantiam. Sed tempus componitur ex his quae non sunt; quia temporis est aliquid praeteritum, et iam non est, aliud est futurum, et nondum est, et ex his duobus componitur totum tempus, infinitum et perpetuum positum. Ergo impossibile est tempus aliquid esse."

17 Cf. *in Phys.* Lib. IV, lect. XVII, n. 572, 282: "Unde dicit quod quia inquirimus quid sit tempus, hinc incipiendum est, ut accipiamus quid motus sit tempus. Et quod tempus sit aliquid motus, per hoc manifestum est, quod simul sentimus motum et tempus. Contingit enim quandoque quod percipimus fluxum temporis, quamvis nullum motum particularem sensibilem sentiamus; utpote si simus in tenebris, et sic visu non sentimus motum alicuius corporis exterioris. Et si nos non patiamur aliquam alterationem in corporibus nostris ab aliquo exteriori agente, nullum motum corporis sensibilis sentiemus; et tamen si fiat aliquis motus in anima nostra, puta secundum successionem cogitationum et imaginationum, subito videtur nobis quod fiat aliquod tempus. Et sic percipiendo quemcumque motum, percipimus tempus: et similiter e converso, cum percipimus tempus, simul percipimus motum. Unde cum non sit ipse motus, ut probatum est, relinquatur quod sit aliquid motus."

18 Cf. *in Phys.* Lib. IV, lect. XVI, n. 568–569, 278: "Circa primum ponit duas rationes ad ostendendum quod tempus non sit motus aut mutatio, quod posset maxime videri.

Quia omnis mutatio et motus vere est solum in ipso transmutato, vel etiam in loco ubi est transmutatum et transmutans. Quorum primum dicitur propter motum in substantia et quantitate et qualitate; secundum autem dicitur propter motum in ubi, qui dicitur motus in loco. Sed tempus est ubique et apud omnia: ergo tempus non est motus. Secundam rationem ponit ibi: amplius autem mutatio etc.: quae talis est. Omnis mutatio et motus est velox aut tardus: sed tempus non est huiusmodi: ergo tempus non est motus vel mutatio. Mediam sic probat. Tardum et velox determinantur ex tempore: quia velox dicitur quod movetur per multum spatium in paucis tempore; tardum autem quod e converso per paucum spatium in multo tempore. Sed tempus non determinatur tempore, neque secundum suam quantitatem,

discussion in which these claims are made precedes the scientific exposition of the nature of time.¹⁹ This procedure is a stylistic trademark of Aquinas' way of philosophizing, because he thinks that a dialectical inquiry usually precedes the demonstrative exposition of the doctrine in Aristotle's works.²⁰ This idea might have been suggested by Averroes' interpretation of Aristotle's treatises, because Averroes claims that dialectic is useful in all sciences, either because it tests the consistency of a given science's axioms, or because it grounds the principles of some fundamental sciences like metaphysics.²¹ Aquinas believes that metaphysics is a science (*scientia*) that proceeds syllogistically from a set of principles,²² but adds that dialectical tests are useful to clarify concepts and to establish which reputable opinion is worth being considered.

A dialectical analysis of a tenet is often a consistency test. A proposition p is assumed, and the dialectician examines whether p is consistent with the set of propositions Γ . Γ may include both true and false, but probable propositions. If p is shown to be inconsistent with Γ , p is likely to be false or is true but contradicts one of the false, but probable propositions included in Γ . Dialectical tests are useful within the context of sciences, because if they show an inconsistency, we are sure that at least one proposition of the set $\{\Gamma, p\}$ is false.

Aquinas' inquiry into the existence of time has a slightly different structure. In his reconstruction of Aristotle's argument, the hypothesis is that,

(i) Time has mind-independent existence.

This proposition is proven to be inconsistent with two sets of reputable opinions. Hence, at least one proposition belonging to each of these two sets is false, if (i) is true.

The first set of propositions (Σ) include the following:

(ii) If a compound entity includes only parts that do not have extra-mental existence, the compound entity does not have extra-mental existence.

neque secundum suam qualitatem; quia idem non est mensura sui ipsius. Ergo tempus non est neque velox neque tardum. Et quia proposuerat quod mutatio est velox aut tarda, non facta mentione de motu, subiungit quod quantum ad praesens, non differt dicere motum aut mutationem: in quinto enim ostendetur eorum differentia."

19 Cf. *in Phys.* Lib. IV, lect. XVII, nn. 571–581, 281–283.

20 Aristotle often begins the discussion of a topic with an examination of endoxa. Reinhardt (2015) notes that endoxa are premises of dialectical arguments that are aimed at testing the consistency of a set of propositions. Similarly, Aquinas considers the opinions of his predecessors before expounding the conclusions he subscribes to (see Gili 2012a on this aspect of Aquinas' style).

21 See Galluzzo (2013), 146–150.

22 On Aquinas' notion of metaphysics as a *scientia* see Wippell (2000), 4–10.

- (iii) Time is a compound, whose parts are the past and the future. (The present instant of time is not a part of time).
- (iv) The past does not have extra-mental existence.
- (v) The future does not have extra-mental existence.

From propositions (ii) to (v) it is possible to conclude that

- (i*) Time does not have extra-mental existence.

Consequently, proposition (i) is inconsistent with the set of propositions Σ from which we inferred its contradictory (i*). Aquinas maintains that (i) is true and (ii) appears to be intuitively true. In order to maintain that time exists, one has either to exclude that past and future are “parts” of time, or that either past or future, or both, exist in the extra-mental world.

Anything that is composed of things which do not exist cannot itself exist or have any substance. But time is composed of things which do not exist. For one part of time is the past which does not now exist, and the other part is the future which does not yet exist. And from these two things the whole of time, given as infinite and perpetual, is composed. Therefore, it is impossible that time is something (Blackwell-Spath-Thirklkel (1995), 273).²³

The second argument put forward by Aquinas has a similar structure. It argues that the “now” is not a part of time, while past and future are. But they do not exist. Therefore, time is not *something* concrete (*tempus non est aliquid*).²⁴ On the basis of these two dialectical arguments, we cannot infer conclusively that past and future times do not exist in the extra-mental world – we are simply arguing that the mind-independent existence of time is incompatible with the hypothesis that time includes past and future (and nothing else) as its parts and that past and future do not exist. One might maintain that time has mind-independent existence, as Aquinas claims, and that past and future are existing parts of time, thereby rejecting propositions (iv) and (v) and accepting proposition (iii). Aquinas

23 *In Phys.* Lib. IV, lect. XV, n. 559, 274: “Omne compositum ex his quae non sunt, impossibile est esse, vel habere aliquam substantiam. Sed tempus componitur ex his quae non sunt; quia temporis est aliquid praeteritum, et iam non est, aliud est futurum, et nondum est, et ex his duobus componitur totum tempus, infinitum et perpetuum positum. Ergo impossibile est tempus aliquid esse.”

24 See *in Phys.* Lib. IV, lect. XV, n. 560, 274: “Cuiuslibet divisibilis existentis necesse est esse, dum est, aliquam partem eius, aut aliquas. Sed tempus non est huiusmodi; quia quaedam partes temporis sunt iam praeteritae, aliae vero sunt futurae, et nihil temporis quod sit divisibile est in actu. Ipsum vero nunc, quod est in actu, non est pars temporis: quia pars est quae mensurat totum, ut binarius senarium; vel saltem ex qua componitur totum, sicut quaternarius est pars senarii, non mensurans ipsum, sed quia ex ipso et binario componitur senarius; tempus autem non componitur ex ipsis nunc, ut infra probabitur. Tempus igitur non est aliquid.”

nas' solution consists, however, in maintaining that past and future do not exist. The "now," Aquinas adds, is not a constituent part of time either, since the "now" is what allows us to measure time.²⁵ Time is rather the measured measure of change, the changing "now" being its limit. There is a clear text that suggests that premise (iii) is the only one that needs being rejected. In *Summa Theologiae*, I^a, q. 14, a. 9, Aquinas maintains that God knows non-existing things too. By listing non-existing things, Thomas mentions past and future entities.

God knows all things whatsoever that in any way are. Now it is possible that things that are not absolutely, should be in a certain sense. For things absolutely are which are actual; whereas things which are not actual, are in the power either of God Himself or of a creature, whether in active power, or passive; whether in power of thought or of imagination, or of any other manner of meaning whatsoever. Whatever therefore can be made, or thought, or said by the creature, as also whatever He Himself can do, all are known to God, although they are not actual. And in so far it can be said that He has knowledge even of things that are not. Now a certain difference is to be noted in the consideration of those things that are not actual. For though some of them may not be in act now, still they were, or they will be; and God is said to know all these with the knowledge of vision: for since God's act of understanding, which is His being, is measured by eternity; and since eternity is without succession, comprehending all time, the present glance of God extends over all time, and to all things which exist in any time, as to objects present to Him. But there are other things in God's power, or the creature's, which nevertheless are not, nor will be, nor were; and as regards these He is said to have knowledge, not of vision, but of simple intelligence. This is so called because the things we see around us have distinct being outside the seer (translation of the English Dominicans).²⁶

25 See in *Phys.* IV, 18, n. 591, 288–289.

26 *Summa Theol.* I^a, q. 14, a. 9c: "Respondeo dicendum quod Deus scit omnia quaecumque sunt quocumque modo. Nihil autem prohibet ea quae non sunt simpliciter, aliquo modo esse. Simpliciter enim sunt, quae actu sunt. Ea vero quae non sunt actu, sunt in potentia vel ipsius Dei, vel creaturae; sive in potentia activa, sive in passiva, sive in potentia opinandi, vel imaginandi, vel quocumque modo significandi. Quaecumque igitur possunt per creaturam fieri vel cogitari vel dici, et etiam quaecumque ipse facere potest, omnia cognoscit Deus, etiam si actu non sint. Et pro tanto dici potest quod habet etiam non entium scientiam. Sed horum quae actu non sunt, est attendenda quaedam diversitas. Quaedam enim, licet non sint nunc in actu, tamen vel fuerunt vel erunt, et omnia ista dicitur Deus scire scientia visionis. Quia, cum intelligere Dei, quod est eius esse, aeternitate mensuretur, quae sine successione existens totum tempus comprehendit, praesens intuitus Dei fertur in totum tempus, et in omnia quae sunt in quocumque tempore, sicut in subiecta sibi praesentialiter. Quaedam vero sunt, quae sunt in potentia Dei vel creaturae, quae tamen nec sunt nec erunt neque fuerunt. Et respectu horum non dicitur habere scientiam visionis, sed simplicis intelligentiae. Quod ideo dicitur, quia ea quae videntur apud nos, habent esse distinctum extra videntem."

In this passage, Aquinas maintains that there are two sets of things (*res*): things that exist *actu*, and things that potentially exist or may be thought or imagined. Only the first *res* are real beings, while non-existing things include both past and future entities. Despite this metaphysical take, Aquinas does not endorse any semantic presentism in the above text either, since he explicitly states that God knows all future or past events and this knowledge arguably has a propositional structure.²⁷ If events are nothing but subjects displaying certain properties, the knowledge of an event occurring is equivalent to the grasp of the truth-value of the sentence stating that a certain property belongs to a certain subject. Consequently, there are true tensed sentences that describe future or past events, and God knows their truth.²⁸

The subjects and the properties of past or future events do not exist either. If my room's wall is now white and was green, the green wall of my room does not exist. Therefore, one might infer from Aquinas' passage that there is neither the wall, which was green, nor the green, truly said of the wall. Aquinas is thus close to the "adverbialist" solution, since he maintains that the time-indexed element in a standard sentence ("S-is-P") is the copula. This should not come as a surprise. Despite its being a minority view among contemporary metaphysicians,²⁹ adverbialism enjoyed more popularity in the past. It has been claimed that both Aristotle and Leibniz were adverbialists.³⁰ Aristotle first analyzed the enunciative sentence as composed of a noun, a copula, and a predicate and Peter T. Geach famously called this analysis the "original sin" of logic.³¹ In Aristotle's logic, both the subject and the predicate belong to the same semantic type and are connected by a third item, the copula. Admittedly, it has been argued that in Aristotle's modal logic the mode expressed by the modal operator qualifies the copula.³² Similarly, the copula might be said to be the element that is affected by the tense expressed by the verb of the sentence.³³ Aquinas' syntax for the copula is not different from Aristotle's,³⁴ and it is reasonable to expect that Thomas could have accepted the

27 This claim is a consequence of God's omniscience. See especially *Summa theol.* I^a, q. 14, a. 9c. On God's omniscience see Stump (2003), 159–187.

28 Aquinas explicitly states that God knows *enuntiabilia* in *Summa theol.* I^a, q. 14, a. 14c.

29 Lowe (1988), Haslanger (1989), Lowe (2002) have defended adverbialism.

30 On Aristotle's adverbialism see Charles (2000), appendix 2, 379–387. On Leibniz's adverbialism see Di Bella (2007), 83–121, especially 117.

31 Cf. Geach (1972), 44–61. According to Geach, Plato "put forward the view that the simplest form of *propositio* is composed of two heterogeneous elements, a noun (*onoma*) and a verb (*rhema*)" (Geach (1972), 45) and "thanks to Russell and Frege, most of the logical insights that were lost by Aristotle's Fall have been recovered" (Geach (1972), 61). For a different reconstruction of Aristotle's account of the phrase, I take the liberty to refer to Gili (2021).

32 This claim has been defended by Patterson (1995).

33 Charles (2000), 379–387 proposes this interpretation for Aristotle's treatment of tense.

34 On Aquinas' syntactic considerations on the copula see Klima (2002).

idea that the tense of the verb affects the copula, once a given sentence in the natural language were to be translated in the "S-is-P" form. To appreciate these aspects of Aquinas' position, it is useful to recall some essential elements of his understanding of (linguistic) truth-bearers.

3.3 *The Rationale behind Aquinas' Eclectic Theory of Time*

While Aquinas' semantics for tensed statements implies that only the copula is affected by a time index, not the subject nor the predicate, Thomas' metaphysical theory entails that only present beings exist. This mixture of semantic adverbialism and metaphysical presentism may appear eclectic, and I will unpack it in the following pages in order to flesh out the consistency of Aquinas' philosophy of time.

According to Aquinas' correspondence theory of truth, our mental concepts mirror extra-mental realities, conceptual connections are *true* if they correspond to extra-mental connections of substances and properties and sentences are *true* if they mirror these mental connections. Based on these well-known assumptions, one could infer that no true sentence can be formed about any entity that does not exist in the extra-mental world. I have argued, however, that Aquinas believes that past and future tense sentences may have a truth-value. This apparent discrepancy between Aquinas' semantics and his metaphysics can be explained away if we look at his notion of being (*esse*). According to the handbook version of Quine's ontological commitment, we are committed to the existence of all items that are quantified over in the language of a logical reconstruction of a scientific theory. Accordingly, a statement like:

(i) the Greeks defeated the Persians at the battle of Salamis

would have no truth-value or would be false if we are not committed to the existence of past entities. Aquinas maintains that sentences like (i) have a truth-value. According to Thomas, a sentence includes (at least) some parts that have their own reference.³⁵ These parts must be both a noun and a verb, because two verbs

35 Cf. *in de Int.* Lib. I, lect. 6, n. 76, 31–32: "Secundo autem ponit id, in quo oratio differt a nomine et verbo, cum dicit: cuius partium aliquid significativum est separatim. Supra enim dictum est quod pars nominis non significat aliquid per se separatim, sed solum quod est coniunctum ex duabus partibus. Signanter autem non dicit: cuius pars est significativa aliquid separata, sed cuius aliquid partium est significativum, propter negationes et alia syncategoremata, quae secundum se non significant aliquid absolutum, sed solum habitudinem unius ad alterum. Sed quia duplex est significatio vocis, una quae refertur ad intellectum compositum, alia quae refertur ad intellectum simplicem; prima significatio competit orationi, secunda non competit orationi, sed parti orationis. Unde subdit: ut dictio, non ut affirmatio. Quasi

alone are syntactically meaningless – “runs drives” and the like do not provide any intelligible meaning. Every verb always entails the at least implicit presence of a subject expressed by a noun or a pronoun. Similarly, two or more nouns do not constitute a full-fledged enuntiative sentence, because they do not offer enough information about a connection between two elements – truth and falsity can only be found in the connection or separation of subjects and predicates at the linguistic level.

Having made this point, however, it must be noted that there are five species of perfect speech that are complete in meaning: enunciative, deprecativa, imperativa, interrogativa, and vocativa. (Apropos of the latter it should be noted that a name alone in the vocative case is not vocative speech, for some of the parts must signify something separately, as was said above. So, although the mind of the hearer is provoked or aroused to attention by a name in the vocative case, there is not vocative speech, unless many words are joined together, as in “O good Peter!”) Of these species of speech the enunciative is the only one in which there is truth or falsity, for it alone signifies the conception of the intellect absolutely and it is in this that there is truth or falsity (Oestherle (1962), 61).³⁶

The above passage suggests that the minimal unit that constitutes a perfect speech has more than one part, and each of these parts has a meaning and is associated to a concept. The two parts cannot be both verbs, because two verbs with no subject have no meaning, nor can they be two nouns, because two nouns may be found in vocative speeches alone (e.g.: “O dear Peter!”), not in declarative sentences. Aquinas concludes that the minimal declarative sentence, that is suitable of being true or false (*oratio enunciativa*), includes at least a verb and a noun, even though the latter might be implicit. Aquinas’ correspondence theory of truth becomes problematic since he maintains that past and future tense enunciative sentences can be true (or false) as present tense enunciative sentences can be. Aquinas, however, must commit to this claim, especially because many dogmas of the Christian faith

dicat: pars orationis est significativa, sicut dictio significat, puta ut nomen et verbum, non sicut affirmatio, quae componitur ex nomine et verbo. Facit autem mentionem solum de affirmatione et non de negatione, quia negatio secundum vocem superaddit affirmationi; unde si pars orationis propter sui simplicitatem non significat aliquid, ut affirmatio, multo minus ut negatio.”

36 *In de Int. Lib. I, lect. VI, n. 85, 36.* “His igitur praetermissis, sciendum est quod perfectae orationis, quae complet sententiam, quinque sunt species, videlicet enunciativa, deprecativa, imperativa, interrogativa et vocativa. (Non tamen intelligendum est quod solum nomen vocativi casus sit vocativa oratio: quia oportet aliquid partium orationis significare aliquid separatim, sicut supra dictum est; sed per vocativum provocatur, sive excitatur animus audientis ad attendendum; non autem est vocativa oratio nisi plura coniungantur; ut cum dico, o bone Petre). Harum autem orationum sola enunciativa est, in qua invenitur verum vel falsum, quia ipsa sola absolute significat conceptum intellectus, in quo est verum vel falsum.”

are about facts that took place in the past or will take place in the future, and these facts are expounded in past and future tense sentences that a Christian takes to be *true*. But if there is no corresponding extra-mental entity for either the subject or the predicate of a past or future tense sentence, how can the sentence be true, given that truth is understood as correspondence?

Aquinas' solution to this conundrum consists in advancing two theses. First, he maintains that past and future tense sentences constitute a special set of enunciative speech on grammatical grounds. Second, Aquinas states that the truth-conditions for the sentences belonging to this set are different from the truth-conditions of present tense sentences.

1) Thomas maintains that past and future tense verbal forms are not "verbs" in the strictest sense. Hence, one might argue, if an *oratio enuntiativa* consists of nouns and verbs taken in their strictest sense, the presence of a past tense or future tense form in the verb position in a sentence could turn the *oratio* into a linguistic item not suitable of being true or false. This solution would be identical to the presentist claim that past and future tense sentences are not truth-bearers and Thomists like Girolamo Savonarola appear to have upheld this view.³⁷ Aquinas, instead, stresses that past and future tense sentences constitute a special set of enunciative sentences. The presence of a present-tensed verbal form is the grammatical marker of a standard linguistic truth-bearer. While speaking about the verbal form that occurs in a sentence (*oratio*), Aquinas remarks,

[Aristotle] excludes verbs of past and future time from the definition [of 'verb']. For just as infinite verbs are not verbs absolutely, so "will mature," which is of future time, and "has matured," of past time, are not verbs. They are cases of the verb and differ from the verb – which signifies with present time – by signifying time before and after the present. Aristotle expressly says "present time" and not just "present" because he does not mean here the indivisible present which is the instant; for in the instant there is neither movement, nor action, nor passion. Present time is to be taken as the time that measures action which has begun and has not yet been terminated in act. Accordingly, verbs that signify with past or future time are not verbs in the proper sense of the term, for the verb is that which signifies to act or to be acted upon and therefore strictly speaking signifies to act or to be acted upon in act, which is to act or to be acted upon simply, whereas to act or to be acted upon in past or future time is relative (Oestherle (1962), 49).³⁸

37 Cf. Gili (2019).

38 *In de Int.* Lib. I, lect. IV, n. 63, 27. "Excludit a verbo verba praeteriti et futuri temporis; et dicit quod sicut verba infinita non sunt simpliciter verba, ita etiam curret, quod est futuri temporis, vel currebat, quod est praeteriti temporis, non sunt verba, sed sunt casus verbi. Et differunt in hoc a verbo, quia verbum consignificat praesens tempus, illa vero significant tempus hinc

In this passage, Thomas maintains that past and future tense verbal forms are “cases” (*casus*) of verbs rather than verbs, because verbs signify actions or passions that take place in the present. It is possible to be active or passive only in the present because the substances that are affected by activity and passivity only exist in the present. Consequently, only present tensed verbal forms signify actions and passions in a standard way.

2) Aquinas’ second step consists in fleshing out the truth-conditions for past and future tense sentences. Present tense sentences are true if the predicate refers to a property that holds of the substance that is referred to by the subject of the sentence. Past and future tense sentences are true if there is a time, different from the present, in which there is a property, referred to by the predicate, that holds of the substance, referred to by the subject. Aquinas observes,

It is with reason that verbs of past or future time are called cases of the verb signifying with present time, for past and future are said with respect to the present, the past being that which was present, the future, that which will be present (Oesterle (1962), 49).³⁹

There is no referent for either the subject or the predicate in the sentence

(i) Julius Caesar’s cat Fuffi was drinking milk.

The sentence, however, is a truth-bearer. One might ask which extra-mental existing entities can ground the truth-value of sentences like (i). Aquinas is not explicit on this point and many speculative hypotheses can be put forward. If linguistic expressions mirror mental conceptualizations, which in turn mirror extra-mental realities, a past tense sentence can mirror a present conceptualization of a past event. One might suggest that the truth of (i) lies in the fact that somebody remembers Caesar’s cat drinking milk. This example, however, is not universally applicable, because there are many historical facts that nobody remembers, and most future events are unknown to human beings. It could be possible to invoke God’s thinking of past and future events as the truth-maker of past and future

et inde circumstans. Dicit autem signanter praesens tempus, et non simpliciter praesens, ne intelligatur praesens indivisibile, quod est instans: quia in instanti non est motus, nec actio aut passio; sed oportet accipere praesens tempus quod mensurat actionem, quae inceptit, et nondum est determinata per actum. Recte autem ea quae consignant tempus praeteritum vel futurum, non sunt verba proprie dicta: cum enim verbum proprie sit quod significat agere vel pati, hoc est proprie verbum quod significat agere vel pati in actu, quod est agere vel pati simpliciter: sed agere vel pati in praeterito vel futuro est secundum quid.”

39 *In de Int.* Lib. I, lect. IV, n. 64, 27: “Dicuntur etiam verba praeteriti vel futuri temporis rationabiliter casus verbi, quod consignant praesens tempus; quia praeteritum vel futurum dicitur per respectum ad praesens. Est enim praeteritum quod fuit praesens, futurum autem quod erit praesens.”

tense sentences, but this *Deus ex machina* solution is also unsatisfactory, because it does not yet explain what God's thought corresponds to. If past and future substances and properties do not exist, what is God thinking about, when He considers the truth of a past or future tense statement? A possible solution can probably be derived from Aquinas' distinction between essence and being (*esse*). According to Aquinas, all creatures are composed of an essence (*essentia*) and of an act of being (*actus essendi*) that is united to, but not identical with the essence. What exists, the *quod est* or *suppositum*, is qualified by two principles: the essence provides the *suppositum* with a formal determination, whereas the act of being (*actus essendi*) brings into existence the essentially qualified *suppositum*. Past and future tense sentences could refer to past or future *supposita*, that are defined as being such-and-such, even though they presently lack the act of being. In the above example, (i) "Julius Caesar's cat Fuffi was drinking milk" is true, if there is an item belonging to the natural kind of cats, and that cat is called Fuffi and belongs to Julius Cesar, and if this cat has the property of drinking milk at some past time, even though it does not have the property of existing at the present instant in time.

If we were to attribute to Aquinas this tentative explanation, his correspondence account of truth would be saved, because the subjects and predicates of past and future tense sentences would refer to substances and properties that are qualified by an essence, even though they do not presently have the act of being. The peculiar ontological status of the referents explains why such sentences are a special case of enunciative speech: they are truth-bearers, like all enunciative speeches, but, at their minimal degree of complexity, they do not include a name and a verb, but rather a name and a verbal *case*. This grammatical feature signals that special truth-conditions apply to this type of sentences.

This succinct exposition of Aquinas' possible understanding of the truth-conditions for past and future tense sentences allows us to better grasp Aquinas' adverbialism. According to Aquinas, the act of being is a property that is shared by all existing things, and this includes God and things that exist in the present instant of time, but nothing else.

The adverbialist solves the puzzle of opposite qualities belonging to a changing subject by indexing the copula. Sentences like

- (i) The walls of my room were white
- (ii) The walls of my room are green

can be true at the same time, and the adverbialist maintains that the walls of my room are-at- t^1 white and are-at- t^2 green. Unlike temporal part theorists, an adverbialist can claim that it is the same walls that are both white and green, but

these properties are intrinsic and there is no need to turn them into relational properties.

Aquinas' version of adverbialism consists in considering existence an intrinsic property, like "being white" and "being green" are intrinsic properties of the walls of my room. According to Aquinas, all animals except human beings cease to exist after their death. Therefore, a sentence like

(iii) Caesar's cat is dead

means that

(iii*) Caesar's cat is-at- t^k ($k < p$) existing & is-at- t^p not existing
(t^p refers to the present instant in time).

Aquinas maintains, together with the presentists, that things exist only in the present, but he seems to make room for truth-makers for past- and future-tensed sentences too.

Now, our cognition falls under the order of time, either per se or accidentally; whence the soul in composing and dividing necessarily includes time, as is said in III *De anima*. Consequently, things are subject to our cognition under the aspect of present, past and future. Hence the soul knows present things as existing in act and perceptible by sense in some way; past things it knows as remembered; future things are not known in themselves because they do not exist yet, but can be known in their causes – with certitude if they are totally determined that they cannot be impeded, as in the case of those things that are for the most part; in no way if in their causes they are wholly in potency, i.e., not more determined to one than to another, as in the case of those that are indeterminate to either of two (Oestherle (1962), 117–118).⁴⁰

In the above passage, Aquinas maintains that our grasp of the world is essentially tensed. Aquinas is not stating that there are "tensed facts" in the world, as Kit Fine would claim.⁴¹ His minimalistic point is rather that humans remember, experience, and expect events. Without analyzing the tensedness or the tenselessness of

40 *In de Int.* Lib. I, lect. XIV, n. 194, 73: "Quia igitur cognitio nostra cadit sub ordine temporis, vel per se vel per accidens (unde et anima in componendo et dividendo necesse habet adiungere tempus, ut dicitur in III de anima), consequens est quod sub eius cognitione cadant res sub ratione praesentis, praeteriti et futuri. Et ideo praesentia cognoscit tanquam actu existentia et sensu aequaliter perceptibilia; praeterita autem cognoscit ut memorata; futura autem non cognoscit in seipsis, quia nondum sunt, sed cognoscere ea potest in causis suis: per certitudinem quidem, si totaliter in causis suis sint determinata, ut ex quibus de necessitate evenient; per coniecturam autem, si non sint sic determinata quin impediri possint, sicut quae sunt ut in pluribus; nullo autem modo, si in suis causis sunt omnino in potentia non magis determinata ad unum quam ad aliud, sicut quae sunt ad utrumlibet."

41 See Fine (2006).

the events, Aquinas believes that our knowledge of them is essentially tensed and that our intellect reasons by forming sentences,⁴² where the copula is tensed, while subjects and predicate are not.

3.4 Appendix. Thomas Aquinas on Predication and Future Contingents. A Reply to Costa

In his paper “Aquinas, Geach, and Existence”,⁴³ Damiano Costa argues that Peter Geach’s notion of being as “present actuality” does not capture Aquinas’ *actus essendi*. According to Thomas Aquinas, God knows future contingents *in themselves*. In Costa’s interpretation, the clause “in themselves” implies that future contingent beings *exist in themselves* already in the present (at least from God’s perspective), whereas Geach’s “present actuality” only applies to things that exist in the present but not to future or past things. In other words, Costa interprets Aquinas’ *actus essendi* as a timeless property of existence of things (at least from God’s perspective), thereby concluding that Geach’s notion of “present actuality” does not correspond to Aquinas’ *actus essendi*. Instead, Costa inquires whether the medieval philosopher may be regarded as “an eternalist *ante litteram*” (192). Eternalism is the view that past, present, and future tenselessly exist. In Costa’s reconstruction,

[W]hile Aquinas does not explicitly say that his individual existence extends to past entities – and while his arguments do not allow us to draw such a conclusion – one might reasonably expect him to hold this view as well, for one might expect him to hold that God knows past, present, and future entities in the same way, namely also in themselves (192).

Costa acknowledges that some of Aquinas’ texts might be construed as supporting the presentist position, i.e., the claim that only present entities *exist* but leaves the discussion open to future research on the topic. *Prima facie*, presentism and eternalism might look like exhaustive alternatives, but I would suggest that they are both inadequate to represent Aquinas’ ideas on temporal existence. Aquinas believes that (i) God is an a-temporal entity, thereby rejecting the presentist claim that only presently located entities exist, and at the same time (ii) denies that created beings *exist* outside of the present. Costa and I probably disagree on the second claim and I intend to show that Aquinas’ texts support a *sui generis* presentist concept of existence rather than the notion of tenseless existence outlined by

42 Cf. *Summa theol.* I^a, q. 14, a. 14c.

43 Costa (2019).

Costa. In what follows I will first review the textual evidence discussed by Costa. Later, I will present other texts that make an alternative reading more compelling.

3.4.1 The case for Aquinas' eternalism

Costa focuses on three texts taken from Aquinas' discussion of the problem of future contingents.

- (i) Hence, I say that the divine intellect has an intuitive cognition of each single contingent from eternity, not only in as much as it is in its causes, but also in as much as it is in its own being in a determinate way.⁴⁴
- (ii) [God] sees all things that take place in the unfolding of time, and each thing as it is existent in Himself.⁴⁵
- (iii) Now God knows all contingent things not only as they are in their causes, but also as each one of them is in act in itself.⁴⁶

Costa maintains that Aquinas is "attributing existence in act to future entities" (188) because he specifies that God knows future contingent events not only in their causes (i.e., ultimately, in Himself) but rather *in their own being*, which is present to Him.

Costa maintains that Aquinas is consistently referring to the actual existence of future contingent events while stating that future contingents *are*. I maintain, instead, that the verb *esse* is ambiguous in Aquinas' jargon and it does not straightforwardly refer to actual existence.

44 "Dico igitur, quod intellectus divinus intuetur ab aeterno unumquodque contingentium non solum prout est in causis suis, sed prout est in esse suo determinate" (*Sent.*, Lib. 1, d. 38, q. 1, a. 5), my translation.

45 "[Deus] videt omnia quae aguntur secundum temporis decursum, et unumquodque secundum quod est in seipso existens" (Aquinas, *Expositio libri Peryermeneias*, lib. 1, l. 14, n. 20), my translation. Interestingly, here Aquinas uses not only the verb "to be" ("*est*"), but also the participle of "existere." In this case, however, the clause "in seipso" does not seem to refer to "unumquodque", i.e., to the known thing ("in itself", as Costa translates) but rather to the participle "existens" that I chose to translate with "being." In support of Costa's reading, J. T. Oesterle (1962) translates the phrase "unumquodque secundum quod est in seipso existens" as follows: "each thing as it is in itself." Cf. Gili-Pezzini 2023 for a detailed analysis of this passage.

46 "Deus autem cognoscit omnia contingentia, non solum prout sunt in suis causis, sed etiam prout unumquodque eorum est actu in seipso" (Aquinas, *Summa Theol.* I^a, q. 14, a. 13c), my translation.

Aquinas distinguishes several meanings of the verb “esse” in his commentary on Aristotle’s *Metaphysics*, book VI. Aristotle had distinguished four senses of the Greek verb εἶναι:⁴⁷

- (a) “is” that indicates accidental predication;
- (b) “is” that indicates *per se* predication:
 - (b.1) “is” that indicates “truth;”
 - (b.2) “is” that indicates “categorical” predication;
 - (b.3) “is” that indicates potentiality or actuality.

In his commentary, Aquinas endorses Aristotle’s distinction.⁴⁸ Although the medieval philosopher often speaks of the participle “ens”, following in this Aristotle’s text, it would probably be disingenuous to maintain that Aquinas is talking of an actually existent entity.⁴⁹ Martin (1984) maintains that *esse ut verum* refers to second-order existence and it the analogous of G. Frege’s *Esgibtexistenz*, whereas the *esse* that express “categorical predication” refers to first order existence.⁵⁰ Like Martin, I too believe that that the “esse ut verum” entails the existence of something, but not of the subjects or the predicates joined to form a proposition by the “is” of truth.

According to Costa (cf. 189), Aquinas distinguishes a tenseless usage of the verb “to be” and a tensed one. The first is used while referring to God’s perspective, the latter occurs while describing the human perspective. Costa’s conclusion is that there are two ways of approaching the existence of future (or past) beings: (i) an absolute perspective that is proper to God, according to which *all beings* – past, present and future – exist *praesentialiter*, i.e. in the eternal present that is God; (ii) our limited perspective that make us think that some things are no longer and others are not yet. In other words, the non-existence of past or future beings is a mere *façon de parler* that reflects the limits of created intellects. Costa does not expand on this remark, but it seems straightforward to further infer that, if God exists, He must know things better than we do.⁵¹ The very

47 I maintain that Aristotle is primarily concerned with the meanings of the verb εἶναι and especially with the meanings of ἐστίν (3rd person singular of the present indicative of εἶναι) in *Met. VI* (see Gili 2021). In ancient Greek, the verb εἶναι has indeed several meanings. Kahn (2003) argues that the verb εἶναι has primarily a predicative function and that it derivatively indicates existence and truth.

48 Cf. Llano 2001 on this.

49 Cf. *in Met. VI*, lect. IV, n. 1223, 309 (ed. Marietti, Turin-Rome, 1964). In this passage, Aquinas clearly uses the participle “ens” as having a verbal value (thereby standing for its indicative use) and not as having a nominal meaning (thereby designating an “entity”).

50 Martin (1984), 119–124 lists the passages where Aquinas presents the notion of the *esse ut verum*.

51 Along these lines, G. Barzaghi proposes an eternalist reading of Aquinas’ theology and philosophy. See especially Barzaghi (2000).

same entity *e* cannot both be existent (in God's perspective) and not-existent (in our perspective) unless the predicates "existent" and "not-existent" are relational ones.⁵² However, if these predicates are not relational, they are contradictory and cannot be attributed to the same subject under the same respect. Since God's perspective is likely to be more accurate than ours, if we say that *e* does not exist *for us* but exists *for God*, we are saying that *e* truly exists, even though it appears to us as non-existing.⁵³

3.4.2 *Contra Costa*

The main exegetical issue raised by Costa is the interpretation of Aquinas' statement that God knows each future event "in itself" (*in seipso*). If one were to hold that Aquinas is a presentist, what is the "being" of future things that are known by God before their temporal existence?

I suggest that in the above passages, expressions such as "in its own being" (*in esse suo*) or "in itself" (*in seipso*) do not refer to the being of actual existence, i.e. to the actual participation of the "act of being" (*actus essendi*) that brings to existence whatever exists in the created world. I maintain instead that Aquinas is merely referring to the "being" (*esse*) indicating the truth of a predication, i.e. to the *esse ut verum*.⁵⁴ In Aquinas' view, God does not merely know that (i) "S will be

52 It goes without saying that the very same entity *e* can be at the same time *existent-according-to-God's-perspective* and *not-existent-according-to-our-perspective*. But neither Costa nor Aquinas argue in favour of a relational understanding of existence and such a conception seems to be at odds with our grasp of what it is, for a thing, "to exist."

53 We could liken the two perspectives to the sight of people with normal vision and the sight of color-blind people. The same image may look like an image of, say, number "74" in green on a red background to people with normal vision, but it does not look like the image of any number to color-blind people. If we were to say that the same image both represents and does not represent the same number (barring relative predicates), we would be rejecting the principle of non-contradiction. The concept of "representing a number" appears to be non-perspectival as much as the concept of "existing" is.

54 This interpretation seems to be more likely also on the basis of the larger context of the *responsio* of *Sent.*, Lib. 1, d. 38, q. 1, a. 5c: "Sciendum est igitur, quod antequam res sit non habet esse nisi in causis suis. Sed causae quaedam sunt ex quibus necessario sequitur effectus, quae impediri non possunt, et in istis causis habet causatum esse certum et determinatum, adeo quod potest ibi demonstrative sciri, sicut est ortus solis, et eclipsis, et hujusmodi. Quaedam autem sunt causae ex quibus consequuntur effectus ut in majori parte, sed tamen deficient in minori parte; unde in istis causis effectus futuri non habent certitudinem absolutam, sed quamdam, in quantum sunt magis determinatae causae ad unum quam ad aliud; et ideo per istas causas potest accipi scientia conjecturalis de futuris, quae tanto magis erit certa, quanto causae sunt magis determinatae ad unum; sicut est cognitio medici de sanitate et morte futura, et iudicium astrologi de ventis et pluviis futuris. Sed quaedam causae sunt quae se habent ad utrumque: et in istis causis effectus de futuro nullam habent certitudinem vel deter-

P at t_k ” because He sees how causes $[c_1, c_2, \dots, c_n]$ will bring about (i). He also sees that P is linked to S at t_k from all eternity. This, however, does not entail that “P” or “S” or their reciprocal relations actually “exist” in order to make it possible for God to know them. He does not know the way we know. While we know x iff x is an object of knowledge, i.e. iff x exists and has an actual content, God knows x from eternity and, by knowing x , creates it *at the time He wills*. In what follows, I will present some philosophical and textual arguments in favor of this reading.

minationem; et ideo contingentia ad utrumlibet in causis suis nullo modo cognosci possunt. Sed quando jam efficiuntur in rerum natura, tunc habent in seipsis esse determinatum; et ideo quando sunt in actu, certitudinaliter cognoscuntur, ut patet in eo qui videt Socratem currere, quia Socratem currere dum currit, necessarium est; et certam cognitionem habere potest. Dico igitur, quod intellectus divinus intuetur ab aeterno unumquodque contingentium non solum prout est in causis suis, sed prout est in esse suo determinato. Cum enim re existente ipsam rem videat prout in esse suo determinato est, aliter cognosceret rem postquam est quam antequam fiat; et sic ex eventibus rerum aliquid ejus accresceret cognitioni. Patet etiam quod Deus ab aeterno non solum vidit ordinem sui ad rem, ex cujus potestate res erat futura, sed ipsum esse rei intuebatur. Quod qualiter sit, evidenter docet Boetius in fine de Consol. Omnis enim cognitio est secundum modum cognoscentis, ut dictum est. Cum igitur Deus sit aeternus, oportet quod cognitio ejus modum aeternitatis habeat, qui est esse totum simul sine successione.” Costa’s interpretation is certainly reasonable, because expressions like “esse” or “in esse suo determinato” seem to refer to the very timeless *existence* of the future contingent entities. However, the passage begins with a consideration on the fact that “before a thing is, it does not have a being but in its causes” (“antequam res sit non habet esse nisi in causis suis”). According to Aquinas, then, it is possible to “have a being” without existing or before existing. In my opinion, the “being” cannot but be the “is” that connects the predicates to their suppositum. This “is” has an indeterminate truth-value according to our perspective, but a determinate one in God’s perspective. After Aquinas, other medieval philosophers will speak of an “esse essentiae”, i.e., the “being of the essence” that connects all properties in a bundle that does not necessarily exist (unless God provides the act of existing). Aquinas seems to be using a similar language in the context of *Sent.*, Lib. 1, d. 38, q. 1, a. 5c. God knows these contents inasmuch as they are possible participations to His Divine Essence and He knows His own Will to bring them to actual existence at time t_k (where “k” refers to a future instant of time). For this reason, God’s knowledge of future contingent events is infallible, even though they do not *exist* yet. They merely *exist* in a timeless way according to their “esse essentiae”, i.e., according to the being connecting in a bundle all their properties except existence, not according to their “actus essendi”, i.e. to their actual participation to God’s perfection of existence. Henry of Ghent is commonly credited as the philosopher who introduced the concept of “esse essentiae” in the medieval debate (on Henry’s treatment of the “esse essentiae” see, e.g., Porro 2002). Aquinas already uses the expression with the same meaning in the context of Trinitarian theology (see, e.g., *Summa theol.* I^a, q. 28, a. 2c; *De Pot.* q. 9, a. 5, ad 19).

The main text suggesting that Aquinas does not maintain that future contingents *exist* is the following:⁵⁵

I answer that, God knows all things whatsoever that in any way are. Now it is possible that things that are not absolutely, should be in a certain sense. For things absolutely are which are actual; whereas things which are not actual, are in the power either of God Himself or of a creature, whether in active power, or passive; whether in power of thought or of imagination, or of any other manner of meaning whatsoever. Whatever therefore can be made, or thought, or said by the creature, as also whatever He Himself can do, all are known to God, although they are not actual. And in so far it can be said that He has knowledge even of things that are not. Now a certain difference is to be noted in the consideration of those things that are not actual. For though some of them may not be in act now, still they were, or they will be; and God is said to know all these with the knowledge of vision: for since God's act of understanding, which is His being, is measured by eternity; and since eternity is without succession, comprehending all time, the present glance of God extends over all time, and to all things which exist in any time, as to objects present to Him. But there are other things in God's power, or the creature's, which nevertheless are not, nor will be, nor were; and as regards these He is said to have knowledge, not of vision, but of simple intelligence. This is so called because the things we see around us have distinct being outside the seer.⁵⁶

Here Aquinas is talking about God's knowledge of non-beings. Future and past events – and the beings involved in them – are explicitly included among non-beings. It is difficult to think that Aquinas is adopting the alleged “human perspective” in describing God's objects of cognitions in a question explicitly devoted to God's knowledge. Aquinas states that God knows non-beings (“non entia”) either as they are merely in His power – as in the case of things that will never exist – or as they are in His power and He decided *ab aeterno* to create them – as is the case for past and future entities.

An external confirmation for this reading comes from the previous articles of the same question of the *Summa theologiae*. In *Summa theol.* I^a, q. 14, a. 8, Aquinas states that God's knowledge is the *cause* for the existence of things, thereby showing that in God the distinction between the knowledge of the cause of the thing *x* and the knowledge of the thing *x* is a mere distinction of reason since God's knowledge is identical to His own Essence (cf. *Summa theol.* I^a, q. 14, a. 4; *Contra Gent.* Lib. I, c. 45) and His Essence is absolutely simple (cf. *Summa theol.*

55 Cf. also *Summa theol.* I^a q. 14, a. 15, ad 2; *Sent.* Lib. I, dist. 38, a. 4, Lib. III, dist. 14, a. 2, q. 2; *Contra Gent.* Lib. I, c. 66; *De Ver.* q. 2, a. 8; q. 3, a. 3.

56 *Summa theol.*, I^a, q. 14, a. 9c, translation by the English Dominicans.

I^a, q. 3, a. 7; *Contra Gent.* Lib. I, c. 16, c. 18). In *Summa theol.* I^a, q. 14, a. 5,⁵⁷ Aquinas describes the way in which God knows other things. Aquinas explicitly states that a knower may know the object *x* either in the knower himself or in another thing. God can only know things other from Him *in Himself*. The passage is worth quoting in full:

Now in order to know how God knows things other than Himself, we must consider that a thing is known in two ways: in itself, and in another. A thing is known in itself when it is known by the proper species adequate to the knowable object; as when the eye sees a man through the image of a man. A thing is seen in another through the image of that which contains it; as when a part is seen in the whole by the image of the whole; or when a man is seen in a mirror by the image in the mirror, or by any other mode by which one thing is seen in another. So we say that God sees Himself in Himself, because He sees Himself through His essence; and He sees other things not in themselves, but in Himself; inasmuch as His Essence contains the similitude of things other than Himself.⁵⁸

Aquinas uses again the expression “in seipso” to refer to God’s mode of cognition, but the context makes it clear that God knows things other than Himself “in Himself.” In this sense, whenever Aquinas talks about God’s knowledge of *x* qua *x* or of *x* in its own being, he means that God knows *x* in His own absolute Essence *qua x* and not *qua* effect of causes [*c*₁, *c*₂, ... *c*_{*n*}]. In other passages, like the ones discussed by Costa, Aquinas omits the qualification according to which God knows whatever He knows *in Himself* and not by any other means, but the above text suggests that such clause is always implicitly present.

3.4.3 God’s knowledge of non-present entities

Aquinas distinguishes the ways in which God may know a future contingent event in the passages discussed by Costa in his paper. God knows it either

- (i) in its own causes;
- (ii) in Himself as something *present* to Him.

Costa implies that for Aquinas God knows the future contingent event “in itself” (“*in seipso*”) and this is tantamount to say that the future contingent entities involved in said event exist timelessly. I suspect that Costa might have understood

57 Cf. also *Sent.* Lib. I, dist. 35, a. 2; *De Ver.* q. 2, a. 3; *Contra Gent.* Lib. I, cc. 48–49.

58 *Summa theol.*, I^a, q. 14, a. 5c, translation by the English Dominicans, slightly modified.

the passages in this way in an effort to explain the distinction between the above two modes of cognition (i and ii). In fact, since the causes of x ultimately include God, who is the cause of everything, if God were to know x in its causes (i.e., in Himself *qua* First Cause) and in Himself *qua* something that is *present* to Him, Aquinas would have not drawn a proper distinction between the two modes of cognition. Aquinas, however, is only drawing a distinction of reason in God's way of knowing things because God's knowledge is absolutely simple. If the texts are understood in this way, (i) refers to God knowledge of x by knowing all the causes of x , whereas (ii) refers to God knowing x without any mediation as x is actual to Him from all eternity.⁵⁹ In conclusion, it seems to me that it is more historically accurate to present Aquinas as a philosopher who in general maintained that only presently located entities actually exist even though he also admitted that one Entity, i.e. God, timelessly exists.

Future contingent events *are true* in the present, they do not *exist* in the present.

One could obviously object that from the truth of the predicative link "S-is-P" it seems reasonable to infer that both S and P exist. Things, however, are not so simple when we deal with future contingents. Suppose that it is true to state that

(i) Louis XIX will be king of France.⁶⁰

This does not entail that the future king Louis XIX is already alive, nor that he *exists now* in in God's sight.⁶¹ It rather means that God *wills now* that at a certain future time t_f there will be a man called Louis XIX and that this man will be king of France. Since God's Will is always fulfilled,⁶² it is enough for God to will that Louis XIX will be at some future time king of France for (i) to have a truth-value at the present instant of time, regardless of the actual existence of its subject or predicate.

59 Aquinas talks about the "being" of non-existent things that God knows (cf. *Sent.*, Lib. 1, d. 38, q. 1, a. 5), but parallel passages demonstrate that this "esse" is nothing but the Being of the Divine Essence (cf. e.g. *Contra Gent.* Lib. I, c. 66: "Et tamen esse quodcumque rei Deus cognoscit per essentiam suam. Nam sua essentia est repraesentabilis per multa quae non sunt nec erunt nec fuerunt. Ipsa etiam est similitudo virtutis cuiuslibet causae, secundum quam praeexistunt effectus in causis. Esse etiam cuiuslibet rei quod habet in seipsa, est ab ea exemplariter deductum").

60 I avoid the traditional example of the sea battle in order to have a sentence with a grammatical subject and a grammatical predicate.

61 C. Martin's account of the relationship between "*esse ut verum*" and actual existence is consistent with my interpretation (cf. Martin, 1984, 116).

62 Cf. *Summa theol.* I^a, q. 19, a. 6.

4. Aquinas on Time

4.1 Aquinas' Definition of Time

Aquinas' philosophy of time is modeled upon the basic notions expounded by Aristotle in his *Physics*. The medieval debate, however, enriched the ongoing discussion by introducing the notions of "eternity" and of "aevum," and by making room to the possibility of a non-continuous time. Aquinas believes that there is one Substance, i.e., God, whose existence is a-temporal, and does not undergo any change. The property of unchangeability coincides with eternity.¹ Such a mode of being, albeit exclusively possessed fully by God, may nevertheless be participated by other entities as well. The substances that do participate in God's eternity are not *per se* unchangeable and are located in the *aevum*.² Even though changeable in their natures, these substances are made God-like and become less subject to changeability and are said to be no longer in the dimension of time. Besides these genuinely "medieval" additions to the Aristotelian debate, Aristotle's definition of time was also puzzling for medieval philosophers. In the context of his confrontation with the Aristotelian account of time, Aquinas maintains that 1) Aristotle's definition is not circular, and adequately expresses the essence of time, 2) time has extra-mental existence and 3) is not reducible to change. Since only presently located entities exist, the identity over time of changing things must appeal to a relation between two items, one of which does not exist any longer or does not exist yet. This conclusion forces us to revise Aristotle's theory of existence, according to which to exist means to belong to a certain natural kind, and to accept Thomas' distinction between an essence (that grounds the identity relation) and an *actus essendi* (that is participated to entities located in the present and enable us to identify the present instant of time). The B-series relations "earlier than" and "later than," which do appear in the definition of time, will turn out not to be accident-relations within Aquinas' ontology. According to Thomas, a relation is monadic property which has directionality towards an external term (*terminus ad quem*). If one were to consider non-existent *termini*, there would be infinite accident-relations, but this cannot be the case, because a) accident-relations have extra-mental existence; b) the number of beings in the universe is finite. Since the

1 Cf. *Sent. I*, dist. xix, qu. 2, a. 1; *Summa theol. I*^a, qu. 10, a. 2, c; *Contra Gent. I*, 15.

2 Cf. *Sent. I*, dist. viii, qu. 2, a. 2; *I*, dist. xix, qu. 2, a. 1; *II*, dist. II, qu. 1, a. 1; *Summa theol. I*^a, qu. 10, a. 5, c; *De Pot.* qu. 3, a. 14, ad 18. On the medieval debate on *aevum* and on Aquinas' understanding thereof see Porro (1996), 139–147.

termini ad quem of “earlier than” or “later than” relations are non-existing instants in time (i.e., past or future instants), these relations are relations of reason, not accident-relations. Time is an independent category within Aquinas’ ontology, since it is not a supervenient property of change, nor does it have a mere conceptual existence. Since it cannot be an accident-relation, it is necessary to postulate an additional fundamental genus of being to classify time. As we shall see, this will be Aquinas’ move.

Despite its originality, Aquinas’ philosophical account of time is framed within the traditional set of questions of the medieval debate, so that Thomas does not tackle any of the above issue directly, but rather dwells on questions that were customarily raised in the XIII century, e.g., he asks whether time is unique, how can we account for the uniqueness of time, etc. From the answers to these questions, however, it is possible to reconstruct his general ontology of time.

4.1.1 Aristotle’s Definition of Time is not Circular

Many scholars maintained that Aristotle’s definition of time is circular, although Coope (2005) and Stark (2011) have convincingly argued against the alleged circularity of the formula. Thomas Aquinas was aware that any circularity in defining time had to be avoided and grounded the notion of time on that of local movement, and this latter is expounded by making appeal to spatial (continuous) dimensions. I shall show why and to which extent this perspective is philosophically appealing.

Before dwelling on Aquinas’ assessment of Aristotle’s definition, it is worth inspecting the problem raised by the text of the Stagirite. According to Aristotle, time is the measure of change/motion with respect to “before” and “after” (cf. Arist., *Phys.* IV, 11, 219 b1–2).³ This definition is controversial because it appears to be circular. Time is defined in virtue of change, but it is difficult to grasp change without any reference to time. In addition, the notions of “before” (πρότερον) and “after” (ὑστερον) seem to presuppose a temporal relation of order. In all likelihood, Aristotle was aware of this problem, because we already find in his texts a reasonable attempt to avoid circularity. Unlike what we saw in the case of change, we cannot assume that Aristotle is not *defining* time at this juncture, because the context makes clear that he is looking for a definition.⁴ And if the

3 τοῦτο γὰρ ἐστὶν ὁ χρόνος, ἀριθμὸς κινήσεως κατὰ τὸ πρότερον καὶ ὕστερον.

4 ληπτέον δέ, ἐπεὶ ζητοῦμεν τί ἐστὶν ὁ χρόνος, ἐντεῦθεν ἀρχομένοις, τί τῆς κινήσεως ἐστὶν (Arist. *Phys.* IV, 10, 219 a2–3). “We must take this as our starting-point and try to discover—since we wish to know what time is—what exactly it has to do with movement” (Barnes’ translation).

account of time is a definition, it cannot be circular.⁵ It could be objected that Aristotle asks for a definition of time (τί ἐστὶν ὁ χρόνος, *Phys.* IV, 11, 219 a2) in the context of a dialectical disputation,⁶ but *Phys.* IV, 10 does not follow any standard dialectical pattern. Aristotle seems rather interested in describing the psychological phenomenon that takes place when we realize that time is elapsing. Within this descriptive framework, the ending lines at *Phys.* IV, 11, 219 b1–2 are in all likelihood a standard definition. Evidence of this is that Aristotle never questions the correctness of the definition later in his text, but rather assumes its adequacy to derive several properties of time in the remainder of his discussion.

In order to avoid the charge of circularity, Aristotle develops the following argument.

1. the account of change does not involve any reference to time.
2. change involves the passage from a state S_1 to a state S_2 .
3. S_1 and S_2 are reciprocally ordered ($\langle S_1, S_2 \rangle$),
4. the order between S_1 and S_2 is similar to that of points on a line, that are reciprocally ordered regardless of any temporal consideration.
5. We have time when a human soul counts the different steps of change.⁷ Put differently, when we perceive the reciprocal order of S_1 and S_2 , we are faced with time.

The philosophical consistency of these steps calls for a deeper analysis. U. Coope has suggested that the notions of “before” and “after” figure as stages of change as well, and their relations of priority and posteriority are accounted for by counterfactuals of this type: P is before Q in a change, just in case, when O is the beginning of the change, the change-part OP can occur without the change-part OQ but not vice versa.⁸ Against Coope’s appealing proposal, T. Roark has observed

5 Cf. Arist. *Top.* Z, 4, 142 a34–142 b6.

6 C.C. Harry has suggested to take the whole of *Physics* IV, 10 as an introductory dialectical discussion of the *endoxa* concerning time, but she also maintains that the definition proposed in IV, 11, 219 b1–2 belongs to Aristotle’s positive account of time (see Harry 2015, 37–40).

7 Aristotle maintains that time is not change, but rather something of change. The proof goes as follow. A) Whenever we perceive change, we do experience time. Hence, B) time is either identical with change, or something related to change. But C) time is not identical with change. Therefore, D) time is something related to change, but not identical with it, cf. Arist. *Phys.* IV, 10, 219 a4–9: “Now we perceive movement and time together; for even when it is dark and we are not being affected through the body, if any movement takes place in the mind we at once suppose that some time has indeed elapsed; and not only that but also, when some time is thought to have passed, some movement also along with it seems to have taken place. Hence time is either movement or something that belongs to movement. Since then it is not movement, it must be the other.” The proof presupposes that when two items are perceived at once, they are either identical or concomitant. If this were not to be granted, it would be impossible to infer step B from step A.

8 Coope (2005), 73.

that Aristotle does not seem to develop counterfactual analyses in his treatment of time, and, more importantly, Coope does not seem to maintain that “before” and “after” are not change stages, but rather “cuts within a change.”⁹ I am inclined to think that Coope’s analysis in terms of segments presupposes that the three points O, P, and Q are already reciprocally ordered. She states that “O” is supposed to mark the “beginning” of change, but the very idea that change has a starting moment seems to be grounded on the fact that the instants of change are already reciprocally ordered by the dual relations “earlier than” and “later than.” Coope’s analysis may be said to avoid this difficulty by stressing the fact that time exists when there is a soul that counts the instants of change. According to her,

time is, by definition, something that is counted by counting nows in this way. As such, it inherits its order from the order of the nows that are counted.¹⁰

Coope observes that numbers are always essentially ordered, as Aristotle points out in several passages of his *corpus*.¹¹ Aristotle is aware that, by counting, we put the instants of time in a relation of priority and posteriority. A difficulty, however, arises at this point. Is it the counting mind that attributes an order to the counted “nows,” or are the countable “nows” suitable of being counted because of their being essentially order among each other? Coope’s essay does not solve this question and merely advances arguments in favor of each of the alternatives. She observes that

[Aristotle] holds that the various series of before and afters in changes are explanatorily prior to the before and after in time. It is natural to understand this as the claim that if a certain stage P is before another stage Q in a change, then, because of this, P is temporarily before Q.¹²

The mind-independent order among the stages of changes seems to be clearly accounted for. However, Coope notes, Aristotle’s insistence on the fact that we count “nows,” and that we do order things by counting them, seems to suggest that we do attribute an order to the counted things by the act of counting them.

In counting nows [...] order is all-important. It does not matter how many nows we count; what is important is that we count a series of nows in a certain definite order (an order that reflects the different before and after orders within change).¹³

9 Roark (2009), 461.

10 Coope (2005), 91.

11 Cf. Coope 2005, 91, n. 14.

12 Coope (2005), 66.

13 Coope (2005), 91.

Tony Roark seems to explore more closely this second “subjectivist” line of thought in his “hylomorphic” interpretation of time. Contrary to Coope, Roark contends that time may be regarded as a compound in which change plays the role of matter, whereas our perception of change plays the role of the form.¹⁴ According to Roark, change is infinitely divisible into “kinetic points,” that are taken to be “cuts” within the flow of change, as points are cuts in a line. If C is a point in the segment AB, it marks the end of segment AC and the beginning of segment CB. Analogously, Roark suggests, the “nows” are cuts in the flow of time that correspond to “kinetic points,” i.e., to cuts in the flow of motion. By saying that the “now” is “measurable/numerable” (cf. *Physics* 219 b25), Aristotle is saying, in Roark’s view, that “numerable/measurable” means “individuable,” not “countable.”¹⁵ By individuating the kinetic cut, our perception “enforms motion” – time is thus our perception individuating a kinetic cut in the process of change. Roark’s interpretation stresses the subjective side of time more than Coope’s interpretation does. Some medieval theories of time present striking similarities to Roark’s “hylomorphic” interpretation of Aristotle’s text.¹⁶ Thomas Aquinas, however, develops an interpretation of Aristotle’s text in which time is taken to be straightforwardly mind independent. Aquinas’ remarks go in the direction of Coope’s interpretation since they both aim at solving the apparent circularity of Aristotle’s definition of time by explaining the “before” and “after” in terms of priority and posteriority in change, and by further reducing these notions to spatial priority and posteriority of points in a line.

4.1.2 Aquinas on the Alleged Circularity of Aristotle’s Definition

Aquinas accepts Aristotle’s definition of time as *numerus motus secundum prius et posterius*. In doing so, Thomas stresses that this definition has two parts. In the first part, Aristotle states that time is something of change (*aliquid motus*), despite being ontologically and conceptually distinct from change. In the second part of the definition, Aristotle maintains that time flows from change along the notions of “before and after.” This part of the definition is the most puzzling one. Aquinas’ solution to the puzzle of the alleged circularity of Aristotle’s definition may be summarized as follows.

14 Cf. Roark (2011).

15 Cf. Roark 2011, 115–116.

16 See for example Avicenna, *The Physics of the Healing*, II.10 – 13. The point was raised by J. McGinnis (2012).

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- (a) “before” and “after” are notions that establish an order in a set of two or more elements.
- (b) Properly speaking, “before” and “after” are to be found primarily in place, i.e., in extended dimensions.
- (c) Extended dimensions are continuous.
- (d) From (b) and (c), it follows that the two (dual) relations “being-before ...” and “being-after ...” generate an order among the infinite items that belong to the continuum.
- (e) Time is said primarily of local motion.
- (f) Local motion is the passage from a place to another place.
- (g) Local motion has a “before and after” because of (b).
- (h) Time is ordered by the “being-before ...” and “being-after ...” relations because it refers primarily to local motion (e, g).
- (i) From (d) and (h) it follows that the instants of time are infinite, and that time is continuous.

Aquinas makes the following remark:

[Aristotle] says, therefore, first that everything which is moved is moved from something to something (Blackwell-Spath-Thirlkel 2007, 280).¹⁷

By stating that every change includes a starting point and an ending point, Aquinas maintains that the very notion of change entails the existence of at least two different stages. These different stages are distinct by the fact of being two different macro-objects. Their reciprocal difference may be said to consist in their being either two different substances, i.e., two substances that are defined by different essences, or two different compounds of a substance and a set of accidents. Change is said to have a starting point and an ending point because these two stages cannot be the case at the same time. By not being the case at the same time, these two stages may serve the purpose of being the starting point and the ending point of a process of change. Two different substances cannot be at the same time, in the same physical location and under the same respect, nor can two different compounds to be the case at the same time and under the same respect since that would violate Aristotle’s formulation of the principle of non-contradiction.¹⁸

17 *In Phys.*, Lib. IV, lect. XVII, n. 576, 282: “Dicit ergo primo quod omne quod movetur, movetur ex quodam in quiddam.”

18 Thomas Aquinas devotes a lengthy discussion to the principle of non-contradiction in his commentary on Aristotle, *Metaphysics*, IV, 4–6. Thomas says that the principle is grounded upon the reciprocal exclusion of “being” and “not being.” Accordingly, the principle may be stated as saying that it is impossible that the same thing is and is not (at the same time and under the same respect). Cf. Thomas Aquinas, *in Met.*, Lib. IV, lect. VI, n. 608, 168.

In order to include both substantial and accidental change, both substances and compounds of substance and accidents can be regarded as the entity that cannot be and not be at the same time and under the same respect. Substantial change consists in the change of the substantial form of a given chunk of matter. The two substances at the extremes of the change process have different essences and they cannot be the essences of a given chunk of matter at the same time, since this contradicts the principle of non-contradiction (PNC). The case of accidental compounds is even easier to grasp: I cannot be seated and standing at the same time, since that would again violate PNC. The formula of PNC, however, involves the notion of time, hence PNC cannot be invoked to distinguish two different stages in a change process, otherwise change would implicitly be accounted for by means of the notion of time.

This puzzle may be solved only if we consider the reciprocal exclusion of two contradictory predicates inhering in the same subject as a primitive notion. "Simultaneity" or "being in the same instant of time" is thus understood as "the impossible state for two contradictory predicates being said of the same subject." Aquinas is indeed working with basic interdependent notions. Change always consists of (at least) two distinct, incompatible, and reciprocally ordered stages. Since these stages may always be analyzed in terms of an underlying subject S and two properties ("p₁" and "p₂" respectively), two different times will be defined as the times in which stages "S+p₁" and "S+p₂" are respectively the case. These times are said to be reciprocally ordered as the two stages $\langle S+p_1, S+p_2 \rangle$ are reciprocally ordered. The principle of non-contradiction states that, supposing that "p₁" is "not p₂," there is no instant in time in which the subject "S" has both the property "p₁" and the property "p₂." In order to rephrase PNC without any reference to time, we could say that PNC states that, supposing that "p₁" is "not p₂," "S+ p₁+p₂" is primitively impossible. Alternatively, one might formulate the principle as implying that, supposing that "p₁" is "not p₂" and that both "S+p₁" and "S+p₂" are the case, then necessarily either "S+p₁" is prior to "S+p₂" or is posterior to it, but never simultaneous.¹⁹

After having stated that whatever moves, moves from something to something else (*ex quodam in quiddam*), Aquinas states that locomotion is the first among all types of change.

19 In this context I employ "simultaneous" as meaning "occurring at the same stage in the process of change," i.e., neither prior nor posterior in the succession of the stages of change. Temporal simultaneity is conceptually derived from this more basic simultaneity in the process of change.

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But the first of all motions is local motion, which is motion from place to place in respect to some magnitude (Blackwell- Spath-Thirlkel 1995, 280).²⁰

This statement is difficult to explain because locomotion is change in the accident of place. If any hierarchy is to be established among the various kinds of change, one would expect it to correspond to the order among the categories in which change takes place. Accordingly, generation and corruption would constitute the first kind of change, because they occur in the category of substance that is prior to all other categories in many respects. Nevertheless, Aristotle claims in *Physics* VIII, 7 that the first type of change is local motion and Aquinas undoubtedly accepts this view, as is clear also from his autonomous treatises.²¹ According to Thomas, local motion is prior among all types of change for the following reasons.

Now, in regard to all other change, the first is the motion of the heavens; first of all, of course, because local motion is first among all changes. This is so in regard to time, for it alone can be perpetual, as is proved in the *Physics* VIII [7: 260b 29]. It is also so in regard to nature, for without it there cannot be any other kind of change. In fact, a thing is not increased unless there be a preceding alteration by which what was formerly unlike is changed and becomes like; nor can alteration be accomplished unless there be a preceding local change, since for alteration to be achieved the agent of alteration must now be brought closer to the thing altered than it was before. It is also prior in perfection, because local motion does not change the thing in regard to any inherent factor but only according to something extrinsic; for this reason, it belongs to an already perfected thing (*Contra Gentiles*, Lib. III, c. 82, n. 6, translation by V. J. Bourke, slightly modified).²²

This passage states that the motion of the sky is the first among all types of change. The sky's motion is a local motion and Aquinas maintains that local motion is

20 *In Phys.*, Lib. IV, lect. XVII, n. 576, 282: "Sed inter alios motus, primus est motus localis, qui est a loco in locum secundum aliquam magnitudinem."

21 See *Sent.*, Lib. I, dist. xv, q. 4, a. 2, ad 2; *Sent.*, Lib. IV, dist. xlix, q. 1, a. 4, qa. 3 co; *Summa theol.* I^a, q. 18 a. 1 arg. 2; *Summa theol.* I^a, q. 78, a. 3 co. On Aristotle's claim that locomotion is the first kind of motion see Odzuck (2014). Odzuck states that the arguments listed by Aristotle in *Physics* VIII, 7 show that locomotion has an ontological priority over the other kinds of change.

22 "Inter omnes autem alios motus, primus est motus caeli. Primo quidem, quia motus localis est primus inter omnes motus. Et tempore: quia solus potest esse perpetuus, ut probatur in VIII Phys. Et naturaliter: quia sine eo non potest esse aliquis aliorum; non enim augmentatur aliquid nisi praeexistente alteratione, per quam quod prius erat dissimile, convertatur et fiat simile; neque alteratio potest esse nisi praeexistente loci mutatione, quia ad hoc quod fiat alteratio, oportet quod alterans magis sit propinquum alterato nunc quam prius. Est etiam perfectione prior: quia motus localis non variat rem secundum aliquid ei inhaerens, sed solum secundum aliquid extrinsecum; et propter hoc est rei iam perfectae."

prior to the other kinds of motion both in the order of nature and according to time. Local motion is more noble according to time because it is the only kind of change that can be perpetual – all other changes, Aquinas states together with Aristotle, must come to an end. More importantly, other changes presuppose locomotion, whereas locomotion does not presuppose any other change. In fact, change in quantity (*augmentatio*) happens thanks to the assimilation of food and water, or, more generally, of nutrient elements. One may say that, by filling a bucket, water grows in volume, but this growth in quantity is mere local motion of water. Growth and diminution in quantity, properly speaking, may be found only in living beings. These beings grow thanks to their metabolism and metabolic activity is in turn understood as qualitative change, because the food is made similar to the structure of the body. This process of assimilation, Aquinas reminds us, presupposes locomotion, inasmuch as food and water need to be eaten, drunk and digested to be assimilated.²³ Aquinas does not discuss substantial change, but one might think that substantial change requires qualitative change for the formation of the seeds, of sperm and eggs. Similarly, qualitative change also presupposes local motion, that is thus ontologically prior to other kinds of change, inasmuch as it can exist without them, whereas they cannot exist without it.²⁴ And unlike other changes, local motion does not alter the inner composition of the moved things. Accordingly, things moved by locomotion are already perfect, unlike things that undergo other kinds of change. Change as passage from an imperfect to a perfect stage is said primarily of substantial change, of alteration and augmentation. Different places are not related to each other as the more perfect to the less perfect. Consequently, local motion is more perfect because locally moved things are already perfect in their being.

Locomotion, in turn, presupposes spatial dimensions (*magnitudines*), because by moving from *a* to *b*, a body that moves locally occupies at every stage a different spatial dimension and must go through that what connects *b* to *a* in the space, and spatial dimensions are continuous, because there is no void in Aquinas' universe.

23 The argument is spelled out in full in *in Phys.* I. VIII, lect. 14, n. 3: "Augmentum enim esse non potest nisi alteratio praeexistat; quia illud quo aliquid augmentatur, est quodammodo dissimile et quodammodo simile. Quod enim sit dissimile, patet; quia illud quo aliquid augmentatur est alimentum, quod est in principio contrarium ei quod nutritur, propter diversitatem dispositionis. Sed quando iam additur ut augmentum faciat, necesse est quod sit simile. De dissimilitudine autem non transitur ad similitudinem, nisi per alterationem. Necesse est ergo quod ante augmentum praecedat alteratio, per quam alimentum de una contraria dispositione mutetur in aliam."

24 Aquinas makes this point in his commentary in *Phys.* Lib. VIII, lect. XIV, n. 1091, 576: "Sic igitur motus localis potest esse sine aliis, sed non e converso. Est ergo primus, primo modo prioritatis."

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Hence since motion in respect to place is motion from something to something in respect to magnitude, and since every magnitude is continuous, then it is necessary that motion is consequent upon magnitude in continuity, that is, since magnitude is continuous, motion is continuous. And consequently, time is also continuous. For there seems to be the same amount of time as there is of first motion (Blackwell-Spath-Thirlkel 1995, 280).²⁵

Continuity is defined as follows. A segment AB is continuous iff, given any two points C and D belonging to AB , there is always a third point E between C and D . Spatial dimensions are continuous in this sense. Similarly, a change process is said to be continuous iff, given any two ordered stages a and b belonging to the process, there is always an intermediate stage c that follows a and precedes b .

Local motion is one of these processes. Suppose that at the starting stage a the body moving locally is at point A (along the segment AB) and at the ending stage b it is at point B (belonging to the segment AB). Since there must be a third point C between A and B in virtue of the continuity of spatial dimensions, the moving body will occupy C before occupying B and after having occupied A . While it occupies C , the body is in a certain stage c of its process of motion, and this stage follows a and precedes b . If time is something of change (“aliquid motus”), time will be continuous too, because there are as many instants in time as stages in a process of change.

Prima facie, however, instants of time and stages of change are reciprocally ordered, while points on a spatial line are not. This problem might find an easy solution, if one were to attribute the reciprocal order of the stages of change to the fact that they are in potency to one another. Aquinas, however, seems to follow a different path. According to him, the points on a spatial line are ordered too, because they are quantities that occupy space and have a position. By having a position, they enter in a relation of order to each other.

Next where he says, “The distinction of...”, he shows that the same order is found in before and after. He says that before and after are first in place or in magnitude. This is so because magnitude is quantity which has position. But before and after belong to the nature [*ratio*] of position. Hence, place has a before and after from its very position (Blackwell-Spath-Thirlkel 1995, 280).²⁶

25 *In Phys.*, Lib. IV, lect. XVII, n. 576, 282–283: “Quia ergo motus secundum locum, est secundum magnitudinem ex quodam in quiddam et omnis magnitudo est continua; oportet quod motus consequatur magnitudinem in continuitate, ut, quia magnitudo continua est, et motus continuus sit. Et per consequens etiam tempus continuum est: quia quantum est motus primus, tantum videtur fieri tempus.”

26 *In Phys.*, Lib. IV, lect. XVII, n. 577, 282: “Deinde cum dicit: prius autem et posterius etc., ostendit etiam, quod idem ordo consideratur in priori et posteriori: et dicit quod prius et posterius sunt prius in loco sive in magnitudine. Et hoc ideo, quia magnitudo est quantitas

The relation of order introduced by the position of points on a line is relative to the observer and says nothing about the inner structure of the spatial dimensions. I can say that my copy of Aristotle's *Physics* is *next to* my copy of Aquinas' commentary on it. I may add that the *Physics* is *on the left of* Aquinas' commentary – but this is clearly true only for an observer who looks at the two books from my angle. By arbitrarily stipulating that what is on the left is “before” what is on the right, one might state that, from my perspective, the *Physics* is *before* Aquinas' commentary. In this hypothetical scenario, the relations “being before ...” and “being after ...” would be arbitrary and mind dependent. But how can mind dependent relations ground the mind independent priority and posteriority of stages in a change process or of instants in the time series? Despite this philosophical puzzle, Aquinas may still want to ground the order of “before and after” on the spatial relation of “position” for two possible reasons. 1) On the one hand, he may simply be expounding Aristotle's text, without subscribing to the view proposed by Aristotle. It is true that when Aquinas happens to disagree with Aristotle in his commentaries, he makes these disagreements explicit. One cannot exclude, however, that sometimes Aquinas endorse a different opinion from Aristotle without explicitly rejecting the latter's views.²⁷ 2) On the other hand, one might think of a philosophical rationale for Aquinas' argument. Potentiality and actuality are reciprocally ordered because they involve the passage from an imperfect to a perfect stage in the process of change. Imperfect and perfect stages are to be found only in changes occurring in the categories of substance, quantity, and quality, but time is modeled after local motion, so that also the priority and posteriority in time must correspond to the priority and posteriority that can be found in local motions. To introduce priority and posteriority in local motion, however, it does not seem necessary to posit that points in a line according to a direction that were to be arbitrarily introduced by an observer. Spatial dimensions are nevertheless contiguous and include parts that are successive to one another, thereby being suitable to be in a reciprocal relation of order to one another. Aquinas states that it is necessary that change stages are ordered according to the relations of priority and posteriority, since these relations already create an order among parts of spatial dimensions. This, however, does not explain why Aquinas needs to refer to spatial dimensions to explain the relation of priority and posteriority. One might

positionem habens: de ratione autem positionis est prius et posterius: unde ex ipsa positione, locus habet prius et posterius.”

27 Were Aquinas not to endorse the view that spatial parts are reciprocally ordered by relations of priority and posteriority, he could be arguing for the priority and posteriority of the stages of locomotion in virtue of the priority and posteriority that one finds in the other kinds of change. Analogously, priority and posteriority would have to be found in local motion as well. This explanation, however, seems less satisfactory than what is advanced in the body of the text.

wonder why priority and posteriority are not explained in virtue of the relations between potentiality and actuality. The contiguity of spatial parts is the key factor here. In virtue of their contiguity, spatial parts have no gaps among each other so that we can always cut ideal segments into two contiguous parts, and this explains why spatial parts are continuous. This element is crucial to understand why Aquinas talks about local motion as the first type of change and of spatial dimensions as the grounding element of the relations of priority and posteriority in any process of motion.

And since there is before and after in magnitude, it is necessary that in motion there is a before and after in proportion to the things which are in magnitude and in place. And consequently, there is also a before and after in time. For motion and time are so related that one of them always follows upon the other (Blackwell-Spath-Thirikel 1995, 280).²⁸

Aquinas adds that change is identical to the “before” and “after” *in subiecto*, even though “before” and “after” are different from the notion of change *secundum rationem*. This claim requires some elucidations. As we argued for in the second chapter, change is identical to the changing thing (*in subiecto*), since it is the first actuality of something that is potentially the case. If the expression “before” and “after” were to be referring not to relations, but to reciprocally ordered stages of a process of change, they would be referring to the changing thing at two different instants of its history. Therefore, “before” and “after” are identical with change (*in subiecto*), because all three terms ultimately refer to the same changing thing over its history, even though they signify it in different ways. “Before” and “after” denote the relation of order that each stage the changing thing establishes with other stages of the process, whereas the term “change” (*motus*) does not directly denote this relation of order. In this sense, “before” and “after” are different from “change” *secundum rationem*.²⁹

28 *In Phys.*, Lib. IV, lect. XVII, n. 577, 282: “Et quia in magnitudine est prius et posterius, necesse est quod in motu sit prius et posterius proportionaliter his quae sunt ibi, scilicet in magnitudine et in loco. Et per consequens etiam in tempore est prius et posterius; quia motus et tempus ita se habent, quod semper alterum eorum sequitur ad alterum.”

29 Cf. *in Phys.*, Lib. IV, lect. XVII, n. 578, 282–283: “Deinde cum dicit: est autem prius et posterius ipsorum etc., ostendit quomodo prius et posterius se habeant ad motum. Et dicit quod prius et posterius ipsorum, scilicet temporis et motus, quantum ad id quod est, motus est: tamen secundum rationem est alterum a motu, et non est motus. De ratione enim motus est, quod sit actus existentis in potentia: sed quod in motu sit prius et posterius, hoc contingit motui ex ordine partium magnitudinis. Sic igitur prius et posterius sunt idem subiecto cum motu, sed differunt ratione. Unde restat inquirendum, cum tempus sequatur motum, sicut supra ostensum est, utrum sequatur ipsum in quantum est motus, an in quantum habet prius et posterius.”

Time is in turn defined as the measure (*numerus*) of change according to “before” and “after.” Aquinas can avoid any circularity in the definition of time, by defining time through change, and the relation of order among the stages of change through local motion, and by assigning the relations “before” and “after” in virtue of the relation of order existing in spatial dimensions.

Despite the subtlety of the solution, some problems remain. Aristotle appears to think that change is something more fundamental than place or time, and it seems reasonable that one should avoid making appeal to place to define change. What is more, different places seem to be ordered among each other by making appeal to temporal relations. If one grants that change is more fundamental than time, it follows that change is more fundamental than place too, because the order among regions of place appears to be ultimately grounded upon temporal considerations. Consider the following example. If one were to travel by train from London to Paris, one would say that Lille is “before” Paris (since they are coming from London). It is difficult to grasp this fact without any reference to time (it goes without saying that if one travels from London to Paris, they reach Lille first and Paris later, unless they are travelling around the globe in the opposite direction).

A possible solution could be to point to the fact that the segment London-Lille is a proper part of the segment London-Paris within the Franco-British railways network. Under this assumption, spatial relations of order do not include any reference to time and can ground the order of stages in a change process without any circularity.

There is an additional problem. Within Aquinas' ontology, separate substances undergo change, without being in a place (they are said to be in a place only accidentally in virtue of the effects of their actions). Therefore, for both Aristotle and Aquinas it would be puzzling to define change by stating that change should involve a reference to extended dimensions. Aquinas insists that the relation of “priority” and “posteriority” in change is ultimately grounded upon the spatial order of parts of extended dimensions. I think that he does so simply because he is dealing with the time in which human beings live and perceive changes. All of Aquinas' observations on Aristotle's definition of time are meant to expound the continuous time of human experience. Aquinas, however, maintains that time, *qua* such, is neither continuous, nor discrete. If one were to define time, *qua* time, one would still define it as the measure (*numerus*) of change according to “before” and “after.” This definition, however, would include the time that measures the *discrete* changes of separate substances. Accordingly, the reference to local motion and to spatial dimensions is not meant to unequivocally single out the relations of priority and posteriority that we find among stages in a change process and, correspondingly, among instants of a time series. On the contrary, while commenting on Aristotle's *Physics*, Aquinas mentions local motion because he

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intends to explain the continuity among the stages and, correspondingly, among the instants of time. By accepting Aristotle's reference to locomotion within the limited framework of the definition of the time we experience, Aquinas radically modifies Aristotle's concept of time. For Aristotle there is but one time, that follows the local motion of the outer sky. Aquinas, like Aristotle, understands time as the measure of change, but, unlike his predecessor, does not posit the spatial motion of the outer sky to be the ultimate motion against which all other motions are measured. Aquinas agrees with Aristotle that there can be but one time for our experience, and in order to explain the uniqueness of this time, Aquinas states that there is but one continuous time because time measures but one motion, but there are other times as well. Each separate substance lived in a discrete time.³⁰ Since there is but one time for each change, one might suppose that, for Aquinas, there were as many (discrete) times as there are separate substances.³¹ Accordingly, locomotion is not needed to explain the notion of time, *qua* such. Aquinas refers to local motion simply to show why the time we live in is continuous.

4.2 The Extra-Mental Existence of Time

Aristotle states that humans do perceive time, when they perceive change, so that time is something of change, even though it is not reducible to change.³² Aquinas shares this view. According to him, "time" is the measure of change but cannot be reduced to any mental entity. Against this claim, however, a possible objection may be raised.

However, there is a difficulty that arises here concerning the perception of time and motion. If time is consequent upon a sensible motion outside the soul, it follows that he who does not sense that motion will not sense time. However,

30 According to Aquinas, some separate substances do share in God's eternity and live in the "aevum," but, before accepting God's grace, they were acting in time, without sharing in eternity. The time they were living in, however, was discrete because their changes are not continuous. Evil separate substances, who did not accept God's salvific grace, keep living in time, because they do not share in God's eternity.

31 Aquinas maintains that the human intellect is "above time." Cf. *Summa theol.* I^a q. 85 a. 4 ad 1: "Ad primum ergo dicendum quod intellectus est supra tempus quod est numerus motus corporalium rerum. Sed ipsa pluralitas specierum intelligibilium causat vicissitudinem quandam intelligibilium operationum, secundum quam una operatio est prior altera. Et hanc vicissitudinem Augustinus nominat tempus, cum dicit, VIII super Gen. ad Litt., quod Deus movet creaturam spiritualem per tempus."

32 Roark (2011) argues that Plato's theory of time, as is laid out in the *Timaeus*, might be seen as the theory against which Aristotle is arguing, when he underlines that time is not reducible to change. According to Roark, Plato thought of time as reducible to the notion of change.

the contrary of this is held here. But if time is consequent upon a motion of the soul, it would follow that things are not related to time except by the mediation of the soul. And thus time will not be a thing of nature but an intention of the soul, by way of an intention of genus and species (Blackwell-Spath-Thirlkel 1995, 279).³³

If time is mind independent, it seems that it must be perceivable. Were time to be perceivable, those who lack the sense that is supposed to perceive time would have no experience of time. Aquinas, however, objects that people who lack any of the senses still realize that time is elapsing. One might conclude that time is not perceivable through any of the senses, and we can experience its reality through the soul. But if time is experienced by the soul, one might be tempted to think that, were there no soul sensing it, there would be no time. The very fact that time appears to be not perceivable through any of the senses seemingly entails that time is mind dependent. Aquinas' solution of this difficulty relies on two core claims. On the one side, Aquinas maintains that humans grasp time through the senses and through inner experience. On the other hand, he maintains that (human) time follows only the first local motion – all other changes are in time, because they are ultimately caused by the first motion.

First, Thomas maintains that humans realize that time elapses when they are aware of the presence of any change (*motus*). Since every change happens because of the local motion of the outer sky, whenever human beings perceive change, they either see the local motion of the outer sky, or they perceive an effect of this movement. Aquinas maintains that change (*motus*) is a common sensible, so that any of the senses may attest that a change is occurring.³⁴ Unlike proper sensibles, common sensibles may be perceived *per se* by more than one sense. Touch and sight perceive all common sensibles (change, rest, number, shape, and dimension). The remaining three senses perceive change, rest, and number *per se*. Only a human being without any of the five senses would be unable to realize that change is occurring in the external world. Such an unfortunate human being, however,

33 *In Phys.*, Lib. IV, lect. XVII, n. 573, 282: “Habet autem dubitationem quod hic dicitur de perceptione temporis et motus. Si enim tempus consequatur aliquem motum sensibile extra animam existentem, sequitur quod qui non sentit illud motum, non sentiat tempus; cuius contrarium hic dicitur. Si autem tempus consequatur motum animae, sequeretur quod res non comparentur ad tempus nisi mediante anima; et sic tempus erit non res naturae, sed intentio animae, ad modum intentionis generis et speciei.”

34 Cf. *Sententia De anima*, lib. 2 l. 13 n. 4 “Secundo ibi communia autem exponit secundum membrum divisionis; dicens, quod communia sensibilia sunt ista quinque: motus, quies, numerus, figura et magnitudo. Haec enim nullius sensus unius sunt propria, sed sunt communia omnibus. Quod non est sic intelligendum, quasi omnia ista sint omnibus communia; sed quaedam horum, scilicet numerus, motus et quies, sunt communia omnibus sensibus. Tactus vero et visus percipiunt omnia quinque. Sic igitur manifestum est, quae sint sensibilia per se.”

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would still have access to temporality, because he or she would still be able to order the acts of his or her own intellect.³⁵ By knowing that a change is occurring, human beings order stages of a change process in a series. This series *is* time. According to Aquinas, human beings realize that time is elapsing both through the senses and through their inner experience.

Hence whatever is mutable in existence is such because of that first motion, which is the motion of the first mobile object. Moreover, whoever perceives any motion, either existing in sensible things or in the soul, perceives a mutable existence, and consequently he perceives the first motion from which time follows. Hence, whoever perceives any motion perceives time, although time is consequent upon only the one first motion by which all other motions are caused and measured. And thus there remains only one time (Blackwell-Spath-Thirlkel 1995, 279).³⁶

This passage includes a second claim. Aquinas follows Averroes' interpretation and maintains that the uniqueness of time is granted by the fact that time follows the first local motion: all other changes are in time but are not the subjects of time. This second statement of Aquinas is problematic because it does not consider the existence of non-corporeal times. As we have seen, Aquinas explicitly maintains that there are other times apart from the time that measures corporeal changes. One of these further temporal dimensions may be experienced by human beings as well, since we are aware of the inner succession of acts of our intellect (a succession that does not properly occur in corporeal time).³⁷ For this reason, Aquinas' position is not a mere repetition of Averroes's solution concerning the problem of the uniqueness of time: Aquinas certainly maintains that philosophers have to account for the uniqueness of corporeal time, because we experience that there are not many corporeal times, but only the one in which all corporeal changes take place. The uniqueness of corporeal time is granted by the fact that all corporeal changes are measured by the time that measures the first local motion. This leaves room for the claim that there are also non-corporeal changes, that are measured by other times.

I think it is important to stress that the first local motion is the only one to be measured by time simply because it is first among all types of change according

35 Cf. *Summa theol.* I^a q. 85 a. 4 ad 1.

36 *In Phys.*, Lib. IV, lect. XVII, n. 574, 282: Unde quaecumque sunt in esse transmutabili, habent hoc ex illo primo motu, qui est motus primi mobilis. Quicumque autem percipit quemcumque motum, sive in rebus sensibilibus existentem, sive in anima, percipit esse transmutabile, et per consequens percipit primum motum quem sequitur tempus. Unde quicumque percipit quemcumque motum, percipit tempus: licet tempus non consequatur nisi unum primum motum, a quo omnes alii causantur et mensurantur: et sic remanet tantum unum tempus.

37 See *Summa theol.* I^a, q. 85 a. 4 ad 1.

to the ontological hierarchy outlined above and not because this first local motion is the cause of all other corporeal changes. Were it necessary to postulate that the local motion of the outer sky is the cause of all other changes to grant its status as the only motion measured by corporeal time, one could not account for corporeal changes that are immediately produced by spiritual causes. Aquinas does not only think that God or separate substances may intervene in the corporeal realm and cause changes in it: he also maintains that any act of the human will may be the cause of a corporeal change, which cannot be reduced to the causal influence of the local motion of the skies. In conclusion, there are corporeal changes that take place in the same temporal dimension of any other corporeal change but are not ultimately caused by the local motion of the outer sky.

So far, Aquinas has argued for the uniqueness of corporeal time and for the fact that we have access to this corporeal time through our senses. The inner experience of the succession of the acts of the intellect allows us to access the spiritual time that measures these acts, not the corporeal time in which corporeal changes take place. Were one to accept Aquinas' (arguably controversial) demonstration of the uniqueness of time, one would still be wondering which is the exact ontological status of time. The Dominican Master has shown that time is mind independent because it is sensed and cannot be reduced to a construction of the mind, but he still needs to show that time is really distinct from change. In fact, the proof that states that time is mind independent relies on the fact that we experience time whenever we sense that a change is occurring. This, however, may lead us to state that change and time are *de facto* identical, although conceptually distinguishable. Contrary to that, Aquinas is rather explicit in maintaining that time is distinct from change and is an accident belonging to a separate category. Since change is identical with the changing thing, i.e., ultimately, with a substance (since all other changes that happen in other categories always affect substances), if time were to belong to a category other than substance, it would naturally be a thing other than change.

The discussion about the ontological status of time became popular in the decades that followed Aquinas' activity, but Thomas does not devote any page to the direct solution of this problem, even though his opinions about the topic may easily be gathered from other related remarks. While discussing the difference between time and eternity, Aquinas stresses that eternity is *tota simul*, whereas in time there is a *prius et posterius*, i.e., a "before and after."³⁸ Despite the different definitions, both time and eternity are said to be *measures*, of "change" and of "unchangeable being" respectively. Aquinas remarks that, by being a measure, eternity might be conceived of as distinct from the subject it measures, i.e., from God. This

38 Cf. *Summa theol.* I^a, qu. 10, art. 4.

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distinction, however, is a mere distinction of reason, and has to do only with our way of understanding things: eternity cannot be really distinct from God, who is absolutely Simple.

Eternity is nothing else but God Himself. Hence God is not called eternal, as if He were in any way measured; but the idea of measurement is there taken according to the apprehension of our mind alone.³⁹

If Aquinas needs to stress that eternity, even though it is a *mensura*, is not distinct from its subject, this seems to imply that measures are usually distinct from the measured things. More particularly, Aquinas appears to be stressing that eternity is distinct from its subject by a distinction of reason, because time is distinct *in re* from its subject, i.e., from measured change. In his commentary on Aristotle's *Physics*, Aquinas develops two arguments to show that time is different from change. The first argument consists in noting that change happens in several different categories, whereas time is unique.

Every motion and mutation is only in that which is changed, or else in the place where that which is changed and that which changes are. The first of these applies to substantial, quantitative, and qualitative motion; the second applies to motion in a "where," which is called local motion. But time is everywhere and among all things. Therefore, time is not motion (Blackwell-Spath-Thirlkel 1995, 276).⁴⁰

Aquinas' argument may be reconstructed as follows.

- (1) Change is identical with the changing thing.
 - (2) The changing thing happens to be a substance, or a quality, or a quantity, or a place.
 - (3) The same thing cannot belong to two different categories.
 - (4) There is but one time.
- Therefore, (5) time is not change.

It is important to stress that Aquinas may infer his conclusion only because he assumes that (3) the same entity cannot belong to two different categories. A corollary of this assumption is that "change" does not designate a unified essence

39 *Summa theol.*, I^a, q. 10, art. 2, ad 3: "aeternitas non est aliud quam ipse Deus. Unde non dicitur Deus aeternus, quasi sit aliquo modo mensuratus, sed accipitur ibi ratio mensurae secundum apprehensionem nostram tantum."

40 *In Phys.* Lib. IV, lect. XVI, n. 568, 278 "Quia omnis mutatio et motus vere est solum in ipso transmutato, vel etiam in loco ubi est transmutatum et transmutans. Quorum primum dicitur propter motum in substantia et quantitate et qualitate; secundum autem dicitur propter motum in ubi, qui dicitur motus in loco. Sed tempus est ubique et apud omnia: ergo tempus non est motus."

but is an equivocal term, that stands for beings belonging to (at least) four different categories. “Time,” on the contrary, appears to be a univocal term, that designates one single reality. Consequently, the two terms “time” and “change” cannot refer to the same reality.

The above argument is not a metaphysical demonstration of the distinction between change and time but shows that the terms “time” and “change” have different references (a unified reality and a cluster of beings, respectively).

Aquinas’ second argument to distinguish time from change draws on metaphysical considerations.

Every mutation and motion is either fast or slow. But time is neither fast or slow. Therefore, time is neither motion nor mutation. He proves the middle as follows. Fast and slow are determined by time. For that is called fast which is moved through much space in a short time. Conversely, that is called slow which is moved through a short space in much time. But time is not determined by time, either in its quantity or in its quality. For nothing is the measure of itself. Therefore, time is neither fast nor slow (Blackwell-Spath-Thirlkel, 1995, 276–277).⁴¹

The above argument relies on metaphysical assumptions. Aquinas proves that time and change are distinct because change is receptive of the contraries “fast” and “slow,” whereas time is not. “Change” is an equivocal term that refers to (at least) four different beings: changing substances, changing qualities, changing quantities, and changing places in the process of local motion (“changing where”). Each of these categorically different realities may be said to be fast or slow. Time, however, cannot. Aquinas’ argument presupposes this metaphysical assumption:

- (a) For every (individual being) *X*, for every (individual being) *Y*, if *X* is receptive of the contraries ‘a’ and ‘b’ and *Y* is not, *X* and *Y* do not belong to the same class of beings.

Since there is no such a thing as a “universal change,” but many changing things, one must ask whether each of these changing things is identical to time. For it has been assumed that the term “time” refers univocally to one single reality. The remainder of Aquinas’ argument aims to show that “fast” and “slow” are properties of each changing thing. Aquinas assumes that all changes can be said to be fast or

41 *In Phys.* Lib. IV, lect. XVI, n. 569, 278: “Omnis mutatio et motus est velox aut tardus: sed tempus non est huiusmodi: ergo tempus non est motus vel mutatio. Mediam sic probat. Tardum et velox determinantur ex tempore: quia velox dicitur quod movetur per multum spatium in pauco tempore; tardum autem quod e converso per paucum spatium in multo tempore. Sed tempus non determinatur tempore, neque secundum suam quantitatem, neque secundum suam qualitatem; quia idem non est mensura sui ipsius. Ergo tempus non est neque velox neque tardum.”

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slow with respect to a certain time. If a change typically lasts for n time-units, the same change will be said to be fast if it lasts considerably less than n , and slow if it lasts considerably more than n . Aquinas does not state whether “fast” and “slow” are real properties of changing things. It is possible to maintain that something is said to be fast or slow with respect to the consideration of a mind that considers the duration of the process, so that “fast” and “slow” would turn out to be mind dependent properties of changes. According to this perspective, the changing thing could not be said to be fast or slow, if there is no mind that compares the speed of the change with a certain amount of time, that is assumed to be the normal or average duration of that change. Alternatively, it might be suggested that a change is said to be either fast or slow, depending on some inherent extra-mental property of the changing thing. It is important to stress that Aquinas does not specify whether “fast” and “slow” denote extra-mental realities, because it is not necessary to make this additional step for the argument to be sound. Aquinas’ argument is proven to be sound if utterances like (i) “change X is slow” or (ii) “change Y is fast” have a truth-value. This is enough to conclude that “X is not time,” because a sentence like “time is slow” or “time is fast” is meaningless.

With the help of these two arguments, Aquinas can conclude that change and time are ontologically different. Within the framework of Aquinas’ category ontology, this means that time and change are either two instances of items belonging to the same category of being, or they belong to different categories. Since change does not belong to a single category, time must either be a different item belonging to one of the categories to which change belongs, or it must belong to an entirely different category. It seems safe to say that time is neither a substance, nor a quantity, nor a place. If time were to be a quality, it remains to be decided whether it always inheres in the substance, or whether it directly inheres in the changing thing, indirectly in the substance, if the changing thing is not a substance. Aquinas’ category ontology makes it difficult to have a clear picture of the ontological status of time if time is to be taken to be a quality. The conclusion is that time must belong to a different category. Despite being a quasi-quality, the category “time” differs from qualities in many respects.

- (1) Each quality is individuated by being the quality of a numerically distinct substance. For example, “this patch of red” is numerically distinct from “that patch of red,” because the first inheres in substance S_1 , whilst the latter inheres in substance S_2 .
- (2) All corporeal substances are in time.⁴²

⁴² For the sake of precision, it should be noted that there are corporeal substances that are located in an extra-temporal dimension. Aquinas believes that the glorious bodies of the blessed in heaven do not belong to time, but to the *aevum*. The only two humans who are

- (3) All substances share the same time (for 2).
 - (4) There is no numerically distinct quality that is shared by more than one substance (for 1).
- Therefore, (5) time is not a quality (3, 4).

One might still think that time belongs to a different category. The changing thing is not found in the category of relations. Hence, relations are distinct from change as time is. One might suggest that time must be identified with a relation. There are additional reasons to make this claim. In a proposition like

- (1) Yesterday it was sunny

I imply that it was sunny in an instant earlier than the present, and later than, say, one year ago. The very fact that time is the measure “according to before and after” seems to imply that any time reference refers to earlier and later instants, which are thus connected by a relative term. Contrary to this, however, Aquinas did not think of relations as polyadic predicates.⁴³ He thought of relations as having mind independent existence, not as supervenient properties. Relations have a *sui generis* status, in as much as they have the property of directionality. Because of its directionality, the relation may only exist if both the subject and the *terminus ad quem* of the relation exist. If this were not the case, we would be faced with an infinite number of relations, because I am as tall as my non-existent twin brother, I am older than my non-existent younger cousin, the moon is brighter than the second obscure satellite of the earth, etc. All these properties that involve a comparison between the properties of two subject would involve the presence of a real relation if both the existence of the subject of a relation is a necessary and sufficient condition for the relation to exist. However, if one adds that a relation does not exist, unless its *terminus ad quem* exists too, one could easily avoid postulating an infinite number of relations in our universe. One might certainly wonder whether the existence of both the subject and of the *terminus ad quem* of a relation is a sufficient condition for the extra-mental existence of the relation itself. For the present purpose, it is enough to maintain that the above condition is a necessary one. If the *terminus ad quem* does not exist, the relation cannot be said to be a real one. The above digression should clarify why time is not a relation if it has mind-independent existence. If time were a relation, it would be conceived as inhering in the presently existing substances and would have as *terminus ad quem*

already in this dimension are Jesus Christ and his Mother the blessed Virgin Mary. We can leave this theological consideration aside, since it does not affect the structure of the argument and Thomas only has only to postulate that at least some corporeal substances are in time for the validity of his reasoning.

43 On this point, cf. the description of Albert the Great’s theory of relatives in Brower (2001), that captures ideas defended also by Aquinas.

either a past or a future instant in time, thereby turning out to be a relation of reason. Since this is against our hypothesis, one must conclude that time is not a relation.

To sum up, time is a single mind-independent reality, but cannot be grouped with substances, qualities, quantities, places, or relations. The most likely conclusion is that time constitutes a being that belongs to a distinct category. Aquinas endorses this perspective in his deduction of the ten categories, that may be found in his commentary on Aristotle's *Metaphysics* V, 7, 1017 a22–30, where the Stagirite states that extra-mental beings are divided into ten categories. Aristotle does not provide any reason for the list of his categories and the Aristotelian *corpus* includes several passages in which fewer categories are listed. One may reasonably wonder whether Aristotle consistently thought that there are only ten highest and exhaustive categories of being. Furthermore, Aristotle never explained why being should be divided according to these categories and not others. Aquinas, on the contrary, consistently maintains that there are only ten highest genera of being and states that it may be shown why there are these genera and not others. Aquinas' remarks on Aristotle's list may be regarded as a "deduction of the ten categories" and deserve being quoted in full.

First, he divides the kind of being which lies outside the mind, which is complete being, by the ten predicaments. (...) For it should be noted that a predicate can be referred to a subject in three ways. This occurs in one way when the predicate states what the subject is, as when I say that Socrates is an animal; for Socrates is the thing which is an animal. And this predicate is said to signify first substance, i.e., a particular substance, of which all attributes are predicated. A predicate is referred to a substance in a second way when the predicate is taken as being in the subject, and this predicate is in the subject either essentially and absolutely and as something flowing from its matter, and then it is quantity; or as something flowing from its form, and then it is quality; or it is not present in the subject absolutely but with reference to something else, and then it is relation. A predicate is referred to a subject in a third way when the predicate is taken from something extrinsic to the subject, and this occurs in two ways. In one way, that from which the predicate is taken is totally extrinsic to the subject; and if this is not a measure of the subject, it is predicated after the manner of attire, as when it is said that Socrates is shod or clothed. But if it is a measure of the subject, then, since an extrinsic measure is either time or place, the predicament is taken either in reference to time, and so it will be when; or if it is taken in reference to place and the order of parts in place is not considered, it will be where; but if this order is considered, it will be position. In another way, that from which the predicate is taken, though outside the subject, is nevertheless from a certain point of view in the subject of which it is predicated.

And if it is from the viewpoint of the principle, then it is predicated as an action: for the principle of action is in the subject. But if it is from the viewpoint of its terminus, then it will be predicated as a passion; for a passion is terminated in the subject which is being acted upon (Rowan 1961, I, 345–346).⁴⁴

It is worth noting that Aquinas relies on language as the device that enables us to divide reality into the ten categories. It is well known that there was a debate among late antique commentators as to whether Aristotle understood the categories as “beings” or as “words,” and Aristotle himself seems to be alluding to either option: in *Cat. 2*, 1a16 he seems to be referring to “things that are spoken of” (τῶν λεγομένων), but a few lines later in *Cat. 2*, 1a20 he appears to be referring to “beings” (τῶν ὄντων). Aquinas certainly maintains that the categories are the highest genera of extra-mental being,⁴⁵ while also agreeing with the Aristotelian tradition in taking language as the mirror of the extra-mental reality. Accordingly, the ten categories (*praedicamenta*) may also be regarded as terms that stand for extra-mental realities. If the language mirrors reality, one might expect that the ways in which language classifies predicates mirrors the ways in which realities may be grouped into kinds. Aquinas’ discussion has this tacit assumption as its starting point. According to Thomas, a predicate can be referred to a subject ultimately in ten ways. Each of these ways corresponds to an accidental category. Each of these categories is distinguished from all other categories based on linguistic

44 *In Met. Lib. V, lect. IX, n. 889, 891–892, 238–239*: “Primo distinguit ens, quod est extra animam, per decem praedicamenta, quod est ens perfectum. [...] Sciendum enim est quod praedicatum ad subiectum tripliciter se potest habere. Uno modo cum est id quod est subiectum, ut cum dico, Socrates est animal. Nam Socrates est id quod est animal. Et hoc praedicatum dicitur significare substantiam primam, quae est substantia particularis, de qua omnia praedicantur. Secundo modo ut praedicatum sumatur secundum quod inest subiecto: quod quidem praedicatum, vel inest ei per se et absolute, ut consequens materiam, et sic est quantitas: vel ut consequens formam, et sic est qualitas: vel inest ei non absolute, sed in respectu ad aliud, et sic est ad aliquid. Tertio modo ut praedicatum sumatur ab eo quod est extra subiectum: et hoc dupliciter. Uno modo ut sit omnino extra subiectum: quod quidem si non sit mensura subiecti, praedicatur per modum habitus, ut cum dicitur, Socrates est calceatus vel vestitus. Si autem sit mensura eius, cum mensura extrinseca sit vel tempus vel locus, sumitur praedicamentum vel ex parte temporis, et sic erit quando: vel ex loco, et sic erit ubi, non considerato ordine partium in loco, quo considerato erit situs. Alio modo ut id a quo sumitur praedicamentum, secundum aliquid sit in subiecto, de quo praedicatur. Et si quidem secundum principium, sic praedicatur ut agere. Nam actionis principium in subiecto est. Si vero secundum terminum, sic praedicabitur ut in pati. Nam passio in subiectum patiens terminatur.”

45 See *Contra Gentiles*, Lib. III, c. 8, n. 13: “Ens enim dupliciter dicitur, ut philosophus in metaphysica docet. Uno modo, secundum quod significat essentiam rei, et dividitur per decem praedicamenta: et sic nulla privatio potest dici ens. Alio modo, secundum quod significat veritatem compositionis: et sic malum et privatio dicitur ens, in quantum privatione dicitur aliquid esse privatum.” Cf. also *Summa Theol.* I^o, q. 48 a. 2 ad 2.

4. Aquinas on Time

considerations. No other procedure was available to Aquinas because if he had distinguished the categories in virtue of real characteristics that they display, he would have assumed that these real aspects are already distinguished among each other, thereby falling into a *petitio principii*. As a result of the deduction of the ten categories, time is shown to be an extra-mental reality that belongs to neither quality nor relation. Time is an independent reality, that has its own essence and definition.

5. Conclusion

In this short book, I reconstructed Aquinas' understanding of change as it emerges from his commentary on *Physics* III and IV. I began by observing that "change" (*motus*) is a term that refers to both spiritual and material changes. The same phenomenon of change has common traits, even though spiritual and material changes differ in many respects. Therefore, "*motus*" is not a merely equivocal term and is predicated according to analogy. Even though Aquinas is not explicitly stating that "*motus*" is an analogous term, his philosophy of change entails that it is neither purely equivocal, nor univocal, because it does not describe phenomena that belong to one single genus. All kinds of change can be explained as imperfect actualities, i.e., as the intermediate step between pure potentiality and full actuality. This elucidation of "change" is a definitional account, but not a definition *stricto sensu*. Aquinas notes that change describes an imperfect actuality in (some of) the categories.¹ Consequently, there is not a genus of "change," and the term cannot be considered univocal, but the realities designated by "*motus*" share some common traits. In the chapter devoted to the definition of change, I argued that the most convenient account of change consists in considering it as an imperfect actuality. Contrary to Brower (2014), I do not maintain that the hylomorphic account is Aquinas' preferred scheme to explain change. The main objection to Brower's analysis consists in pointing out that there are spiritual changes too, and Aquinas also refers to them as "*motus*." The account in terms of potentiality and actuality, on the other hand, can describe both spiritual and material changes. According to this account, there is a relation of order among pure potentiality, imperfect actuality, and perfect actuality. Change is identical to imperfect actuality, because pure potentiality does not change yet, while perfect actuality does not change any more.² This intermediate step is not a process, but

1 See in *Phys.* Lib. III, lect. I, n. 281, 141: "considerandum est quod, cum motus, sicut infra patebit, sit actus imperfectus; omne autem quod est imperfectum, sub eodem genere cadit cum perfecto, non quidem sicut species, sed per reductionem (sicut materia prima est in genere substantiae); necesse est quod motus non sit praeter genera rerum in quibus contingit esse motum."

2 See in *Phys.* Lib. III, lect. II, n. 285, 144–145: "Dictum est enim quod unumquodque genus dividitur per potentiam et actum. Potentia autem et actus, cum sint de primis differentiis entis, naturaliter priora sunt motu: et his utitur philosophus ad definiendum motum. Considerandum est igitur quod aliquid est in actu tantum, aliquid vero in potentia tantum, aliquid vero medio modo se habens inter potentiam et actum. Quod igitur est in potentia tantum, nondum movetur: quod autem iam est in actu perfecto, non movetur, sed iam motum est: illud igitur movetur, quod medio modo se habet inter puram potentiam et actum, quod quidem partim est in potentia et partim in actu."

5. Conclusion

a state. Aquinas explicitly identifies the imperfect actuality with an extra-mental being that belongs to one of the categories.³ Therefore, change is nothing but the changing thing. By stating that change is identical with the extra-mental being that is changing, Aquinas clearly rejects the so-called “process view,” according to which change **in** nothing but the potentiality to change to a certain state. Löwe (2015) has maintained that Aquinas endorsed the “process view” and that the account of change avoids circularity, because it refers to the mind that is considering that a change is taking place. Contrary to Löwe, I argued that Aquinas is explicitly rejecting the “process interpretation,” because he states that change cannot be expounded in terms of an “*exitus*,” that is definitionally posterior to change (“*motus*”). In conclusion, change is nothing but an extra-mental being. This being belongs to an ordered series of steps in a process. The order of the series is grounded upon the relation of priority between potentiality and actuality, not on other derivative senses of priority, like temporal priority.

In chapter 3, I focused on the ontological status of the items belonging to the ordered series that include the changing thing among its elements. In that chapter, I argued that Aquinas is neither an eternalist nor a presentist in his semantics. The two metaphysical theories of eternalism and presentism may be regarded as mutually exclusive, but this account would be inaccurate. The eternalist maintains that temporal parts exist in the same way. The presentist, on the other hand, maintains that only present tense statements have a truth-value. According to the presentist view, past and future tense statements do not have a truth-value, because their truth cannot be assessed. In my reconstruction, Aquinas’ view cannot be reduced to either of these two metaphysical pictures. Aquinas maintains that past and future tense statements have a truth-value, but he also says that the past and the future do not exist. His position is a peculiar version of adverbialism. Like

3 See *in Phys. Lib. III, lect. I, n. 282, 141*: “Manifestum est enim quod in omnibus generibus contingit aliquid esse dupliciter, vel sicut perfectum, vel sicut imperfectum. Cuius ratio est, quia privatio et habitus est prima contrarietas, quae in omnibus contrariis salvatur, ut in X Metaphys. dicitur. Unde, cum omnia genera dividantur contrariis differentiis, oportet in omnibus generibus esse perfectum et imperfectum: sicut in substantia aliquid est ut forma, et aliquid ut privatio; et in qualitate aliquid est ut album quod est perfectum, et aliquid ut nigrum, quod est quasi imperfectum; et in quantitate, aliquid est quantitas perfecta et aliquid imperfecta; et in loco aliquid est sursum, quod est quasi perfectum, et aliquid deorsum, quod est quasi imperfectum; vel leve et grave, quae ponuntur in ubi, ratione inclinationis. Unde manifestum est quod quot modis dividitur ens, tot modis dividitur motus. Differunt enim species motus secundum diversa genera entium; ut augmentum, quod est motus in quantitate, a generatione, quae est motus in substantia.” In this passage, Aquinas states that in each category there something that is perfect and something that is imperfect. A few lines earlier, Aquinas had identified “*motus*” with what is imperfect in each of the genera of being. Consequently, change is identical to the imperfect state of something that belongs to one of the categories. However, everything that falls under each of the categories is an extra-mental being. Therefore, change is identical with an extramental being, that has not yet reached its fullest perfection.

contemporary adverbialists, Aquinas states that the time index expressed by the tense of the sentence modifies the copula, not the subject or the predicate of a sentence. Aquinas maintains that only present events exist according to the proper sense of the verb “to exist.” Past and future events do not exist *actu*. Future events exist only in potentiality.

In the last chapter, I dealt with time. I suggested that time is *in re* distinct from change. If change is an extra-mental entity, time can be really distinct from change only if time is conceived as an extra-mental entity as well. I argued that Aquinas’ definition of time is not circular, because the definiens of time includes change, but the definitional account of change does not include any reference to time. Aquinas can achieve this result by grounding time on the “primary” change, i.e., on local motion. The “before” and “after” in the local motion are determined thanks to a relation to spatial dimensions, not on the basis of a relation to time. Accordingly, there is a relation of order among the many steps of a local motion, but this relation of order is not grounded upon temporal succession. Consequently, it is possible to ground the relation of order among instants of time on the ordered series of steps in the process of local motion.

In conclusion, Aquinas’ theory of change has a lasting philosophical appeal. There are certainly outdated elements in Thomas’ fresco. His claim that local motion grounds the unity of time can hardly be defended today. But the consistency of Aquinas’ overall doctrine is intriguing and can be an inspiration for philosophers thinking about change and time today. Aquinas’ philosophy can offer a metaphysical background for many contemporary adverbialist theories that have been proposed as mere semantic explanations of sentences expressing change. This book has the ambition to offer a philosophical analysis of some texts of a prominent author of the Western tradition, but I am convinced that historical analysis may be fruitful also for the advancement of philosophy today.

6. Bibliography

6.1 Primary Sources

6.1.1 Aristotle

Met. = *Aristotelis Metaphysica*. Recognovit brevique adnotatione critica instruxit W. Jaeger, Oxford Classical Texts, Oxford: Clarendon, 1957.

Phys. = *Aristotle's Physics*. A Revised Text with Introduction and Commentary by W. D. Ross, Oxford: Clarendon Press, 1936.

6.1.2 Averroes

Averroes *in Phys.* = *Aristotelis De Physico Auditu libri octo cum Averrois Cordubensis variis in eosdem Commentariis*, Venetiis: apud Iunctas, 1562.

Averroes *in Met.* = *Aristotelis Metaphysicorum libri XIV cum Averrois Cordubensis in eosdem Commentariis, et epitome Theophrasti Metaphysicorum Liber*, Venetiis: apud Iunctas, 1542.

6.1.3 Albert the Great

Alberti Magni *De Praed.* = *Alberti Magni Ordinis Fratrum Praedicatorum, De Praedicamentis*, ediderunt M. Santos-Noya, C. Steel, S. Donati, Monasterii Westfolorum: in aedibus Aschendorff, 2013.

Alberti Magni *Met.* VI-XIII = *Alberti Magni Ordinis Fratrum Praedicatorum, Metaphysica*. Libros VI-XIII, edidit B. Geyer, Monasterium Westfolorum: in aedibus Aschendorff, 1964.

Alberti Magni *Phys.* I-IV = *Alberti Magni Ordinis Fratrum Praedicatorum, Physica*. Pars I. Libri I-IV, edidit P. Hossfeld, Monasterii Westfolorum: in aedibus Aschendorff, 1987.

6.1.4 Thomas Aquinas

Sentencia de anima = *Sancti Thomae de Aquino Opera Omnia*, iussu Leonis XIII P. M. edita. Tomus XLV, 1. *Sentencia libri de anima*, cura et studio Fratrum Praedicatorum, Roma-Paris: Commissio Leonina-Vrin, 1984.

In De Anima (ed. Marietti) = *S. Thomae Aquinatis, In Aristotelis Librum De anima Commentarium*, cura et studio A. M. Pirotta, Marietti: Torino, 1959.

6. Bibliography

- In Post. An.* = Sancti Thomae de Aquino Opera Omnia, iussu Leonis XIII P. M. edita. Tomus I* 2. Expositio Libri Posteriorum, editio altera retractata (ed. R.-A. Gauthier), cura et studio Fratrum Praedicatorum, Roma-Paris: Commissio Leonina-Vrin, 1989.
- Expositio Peryermeneias* = Sancti Thomae de Aquino, Opera omnia iussu Leonis XIII P. M. edita, t. 1*/1: Expositio libri Peryermeneias, Editio altera retractata, Roma-Paris: Commissio Leonina-Vrin, 1989.
- In de Int.* = S. Thomae Aquinatis Doctoris Angelici, In Aristotelis Libros Peri Hermeneias et Posteriorum Analyticorum Expositio, cura et studio R. Spiazzi, Torino: Marietti, 1964: In Libros Peri Hermeneias Expositio, 5–144.
- in Phys.* = S. Thomae Aquinatis Doctoris Angelici, In Octo Libros Physicorum Aristotelis Expositio, cura et studio M. Maggiolo, Roma-Torino: Marietti, 1965.
- in Met.* = S. Thomae Aquinatis Doctoris Angelici, In Duodecim Libros Metaphysicorum Aristotelis Expositio, editio iam a M.-R. Cathala exarata, retractatur cura et studio R. Spiazzi, Torino-Roma: Marietti, 1964.
- Sent., Lib. I-II* = S. Thomae Aquinatis, Scriptum super libros Sententiarum magistri Petri Lombardi episcopi Parisiensis, t. 1-t. 2, edidit P. Mandonnet, Paris: P. Lethielleux, 1929.
- Sent., Lib. III* = S. Thomae Aquinatis, Scriptum super libros Sententiarum magistri Petri Lombardi episcopi Parisiensis, t. 3, edidit M. F. Moos, Paris: P. Lethielleux, 1956.
- Sent., Lib. IV, dist. i-xxii* = S. Thomae Aquinatis, Scriptum super libros Sententiarum magistri Petri Lombardi episcopi Parisiensis, t. 3, edidit M. F. Moos, Paris: P. Lethielleux, 1947.
- Sent., Lib. IV, dist. xxiii-l* = S. Thomae Aquinatis, Opera omnia, t. 7/2: Commentum in quartum librum Sententiarum magistri Petri Lombardi, Parmae: Typis Petri Fiaccadori, Parmae, 1858.
- Contra Gentiles* = S. Thomae Aquinatis, Liber de veritate catholicae Fidei contra errores infidelium seu Summa contra Gentiles, ediderunt P. Marc, C. Pera, P. Caramello, Torino-Roma: Marietti, 1961.
- Summa theol.* = S. Thomae Aquinatis, Opera omnia iussu impensaue Leonis XIII P. M. edita, t. 4–12, Romae: Ex Typographia Polyglotta S. C. de Propaganda Fide, Romae, 1888–1906.
- De ente et essentia* = Sancti Thomae de Aquino, Opera omnia iussu Leonis XIII P. M. edita, t. 43: De ente et essentia, Roma: Editori di San Tommaso, 1976, 315–381.
- Compendium theol.* = Sancti Thomae de Aquino, Opera omnia iussu Leonis XIII P. M. edita, t. 42: Compendium theologiae seu Brevis compilatio theologiae ad fratrem Raynaldum, Roma: Editori di San Tommaso, 1979, 5–205.
- De Ver.* = Sancti Thomae de Aquino, Opera omnia iussu Leonis XIII P. M. edita, t. 22: Quaestiones disputatae de veritate, Roma: Ad Sanctae Sabinae/Editori di San Tommaso, Roma, 1970–1976.

6.1.5 John Duns Scotus

- Scotus, *Lectura* = Doctoris Subtilis et Mariani Joannis duns Scoti OFM, Opera Omnia, praeside C. Balic, XVII, Lectura in Librum Primum Sententiarum. A Distinctione Octava ad Quadragesima Quintam, Civitas Vaticana: Typis Poliglottis Vaticanis, 1976.

6.2 Translations

6.2.1 Translations of Aristotle's texts¹

Barnes (1984) = *The Complete Works of Aristotle* translated into English, edited by J. Barnes, Princeton: Princeton University Press, 1984.

6.2.2 Translations of Thomas Aquinas' texts

Berquist (2007) = St. Thomas Aquinas, *Commentary on Aristotle's Posterior Analytics. A Translation of Aquinas' Commentary and of the Latin Text of Aristotle*, with introduction and supplementary commentary by R. Berquist, Notre Dame (Indiana): Dumb Ox, 2007.

Blackwell-Spath-Thirlkel (1995) = St. Thomas Aquinas, *Commentary on Aristotle's Physics*, translated by R. J. Blackwell, R. J. Spath, W. E. Thirlkel, Introduction by V.J. Bourke, Foreword by R. McInerny, Notre Dame (Indiana): Dumb Ox, 1995.

Oesterle (1962) = Aristotle. *On Interpretation. Commentary by St. Thomas Aquinas and Cajetan*, translated from the Latin with an Introduction by J. T. Oesterle, Milwaukee (Wisconsin): Marquette University Press, 1962.

Pegis (1975) = St. Thomas Aquinas, *Summa Contra Gentiles*, translated by A. C. Pegis, Notre Dame (Indiana): University of Notre Dame Press, 1975.

Rowan (1961) = St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, volume II, translated by J. P. Rowan, Chicago: Henry Regnery, 1961.

6.3 Secondary sources

Ackrill (1965) = J. L. Ackrill, *Aristotle's Distinction between Energeia and Kinesis*, in R. Bambrough (ed.), *New Essays on Plato and Aristotle*, London: Routledge, 1965: 122–142.

Anagnostopoulos (2010) = A. Anagnostopoulos, *Change in Aristotle's Physics 3*, in: *Oxford Studies in Ancient Philosophy*, (2010) 39: 33–79.

Barzaghi (2000) = G. Barzaghi, *Oltre Dio, ovvero omnia in omnibus. Pensieri su Dio, il divino, la Deità*, Barghigiani editore: Bologna, 2000.

Bourne (2006) = C. Bourne, *A Future for Presentism*, Oxford: Clarendon Press, 2006.

Brower (2001) = J. E. Brower, *Relations without Polyadic Properties: Albert the Great on the Nature and Ontological Status of Relations*, in: *Archiv für Geschichte der Philosophie*, (2001) 83: 225–257.

Brower (2014) = J. E. Brower, *Aquinas' Ontology of the Material World. Change, Hylomorphism, and Material Objects*, Oxford: Oxford University Press, 2014.

Charles (1984) = D. Charles, *Aristotle's Philosophy of Action*, Routledge: London, 1984.

¹ All translations in the body of the text are taken from the revised Oxford translation of Aristotle, edited by J. Barnes (see Barnes 1984).

6. Bibliography

- Charles (2000) = D. Charles, *Aristotle on Meaning and Essence*, Oxford: Clarendon Press, 2000.
- Coope (2005) = U. Coope, *Time for Aristotle. Physics IV. 10–14*, Oxford: Oxford University Press, 2005.
- Costa (2012) = D. Costa, *Eternità del presente contro atto d'essere. Geach interprete di Tommaso d'Aquino?*, in: *Rivista teologica di Lugano*, (2012) 17/3: 331–342.
- Costa (2019) = D. Costa, *Aquinas, Geach, and Existence*, in: *European Journal for the Philosophy of Religion*, 11/3, 2019, 175–195.
- Costa (2020) = D. Costa, *Aquinas on the Existence of the Future: A Response to Gili*, in: *European Journal for Philosophy of Religion* 12/3, 2020, 225–235.
- Craig (1985) = W. L. Craig, *Was Thomas Aquinas a B-Theorist of Time?*, in: *The New Scholasticism*, 1985: 475–483.
- Craig (1988) = W. L. Craig, *The Problem of Divine Foreknowledge and Future Contingents from Aristotle to Suarez*, Leiden-New York-Kobenhavn-Köln: E. J. Brill, 1988.
- Di Bella (2007) = S. Di Bella, *Ontologia del mutamento: mappe leibniziane*, in: A. Bottani, R. Davies (eds.), *Ontologie regionali*, Milano: Franco Angeli, 2007: 83–121.
- Di Giovanni (2017) = M. Di Giovanni, *Averroè*, Roma: Carocci, 2017.
- Di Giovanni-Adamson (2019) = M. Di Giovanni, P. Adamson (eds.), *Interpreting Averroes. Critical Essays*, Cambridge, Cambridge University Press, 2019.
- Elders (2013) = L. Elders, *St. Thomas Aquinas' Commentary on Aristotle's Physics*, in: *The Review of Metaphysics*, (2013) 66/4: 713–748.
- Fine (2006) = K. Fine, *The Reality of Tense*, in: *Synthese*, (2006) 150/3: 339–414.
- Frost (2010) = G. Frost, *Thomas Aquinas on the Perpetual Truth of Essential Propositions*, in: *History of Philosophy Quarterly*, 2010 (27/3): 197–213.
- Galluzzo (2013) = G. Galluzzo, *The Medieval Reception of Book Zeta of Aristotle's Metaphysics. Aristotle's Ontology and the Middle Ages: the Tradition of Metaphysics, Book Zeta*, Volume 1, Leiden: Brill, 2013.
- Geach (1967) = P. T. Geach, *Identity*, in: *The Review of Metaphysics*, (1967) 21/1: 3–12.
- Geach (1972) = P. T. Geach, *Logic Matters*, Berkeley, Los Angeles: University of California Press, 1972.
- Giardina (2012) = G. R. Giardina, *Fisica del movimento e teoria dell'infinito. Analisi critica di Aristotele, Phys. III*, pp. 1–323, Sankt Augustine: Academia Verlag, 2012.
- Gili (2011) = L. Gili, *The Order between Substance and Accidents in Aquinas' Thought*, in: *Studia Neoaristotelica*, (2011) 8: 16–37.
- Gili (2012a) = L. Gili, *Renouantur studia, et homines perueniunt ad opiniones ueras quae prius fuerant. Alcuni aspetti dell'attività filologica di Tommaso d'Aquino*, in: *Appunti Romani di Filologia. Studi e comunicazioni di filologia, linguistica e letteratura greca e latina*, (2012) 14: 15–42.
- Gili (2012b) = L. Gili, *Michail Peramatzis, Priority in Aristotle's Metaphysics*, in: *Bryn Mawr Classical Review* 2012.05.05.
- Gili (2019) = L. Gili, *Thomistic Logic in Renaissance Italy: Girolamo Savonarola, Paolo Barbò, Crisostomo Javelli*, in: *Mediterranea*, 2019, 1–36.

- Gili (2020) = L. Gili, *Aquinas on Predication and Future Contingent. A Reply to Costa*, in: *European Journal for the Philosophy of Religion*, 12/3 (2020), 215–224.
- Gili (2021) = L. Gili, *Tensing the Verbs*, in: L. Gazziero (ed.), *Le langage. Lectures d'Aristote*, Leuven: Peeters («Aristote. Traductions et études»), 2021, 143–171.
- Gili-Pezzini (2023) = L. Gili, G. Pezzini, *In se ipso existens. A Linguistic Analysis of a Much-Misread Passage in Aquinas' Commentary on Aristotle's Perihermeneias*, in: V. A. Buffon, D. Piché (eds.), *Non est excellentior status: Vaquer à la philosophie médiévale. Études offerts en hommage à Claude Lafleur*, Turnhout: Brepols («Studia artistarum»), 2023, 367–377.
- Haslanger (1989) = S. Haslanger, *Endurance and Temporary Intrinsic*, in: *Analysis*, (1989) 49/3: 119–125.
- Hawley (2001) = K. Hawley, *How Things Persist*, Oxford: Clarendon Press, 2001.
- Heinaman (1994) = R. Heinaman, *Is Aristotle's Definition of Change Circular?*, in: *Apeiron* (1994) 27: 25–37.
- Kahn (2003) = C. H. Kahn, *The Verb 'Be' in Ancient Greek*, Hackett: Indianapolis, 2003.
- Klima (2002) = G. Klima, *Aquinas' Theory of the Copula and the Analogy of Being*, in: *Logical Analysis and History of Philosophy*, (2002) 5: 159–176.
- Kosman (1969) = A. Kosman, *Aristotle's Definition of Motion*, in: *Phronesis*, (1969) 14: 40–62.
- Kosman (2013) = A. Kosman, *The Activity of Being: An Essay on Aristotle's Ontology*, Cambridge (Mass.)/London: Harvard UP, 2013.
- Leftow (1990) = B. Leftow, *Aquinas on Time and Eternity*, in: *American Catholic Philosophical Quarterly*, (1990) 64/ 3: 387–399.
- Lewis (2002) = D. Lewis, *Tensing the Copula*, in: *Mind* (2002) 441: 1–14.
- Lizzini (2011) = *Fluxus (fayd). Indagine sui fondamenti della Metafisica e della Fisica di Avicenna*, Bari: Edizioni di Pagina, 2011.
- Llano (2001) = A. Llano, *The different meanings of 'being' according to Aristotle and Aquinas*, in: *Acta Philosophica*, 2001, 10, 29–44.
- Löwe (2015) = C. L. Löwe, *Mind over Matter: Aquinas' Transformation of Aristotle's Definition of "Change"*, in: *Archives d'histoire doctrinale et littéraire du Moyen Age*, (2015) 82: 45–68.
- Lowe (1988) = E. J. Lowe, *The Problem of Intrinsic Change: Rejoinder to Lewis*, in: *Analysis*, (1988) 48: 72–77.
- Lowe (2002) = E. J. Lowe, *A Survey of Metaphysics*. Oxford: Oxford University Press, 2002.
- MacIntosh (1995) = J. MacIntosh, *St. Thomas on Angelic Time and Motion*, in: *The Thomist* 1995 (59): 547–575.
- Martin (1984) = C. Martin, *A Distinction between different Notions of Existence in the Writings of St Thomas Aquinas, and its Use to Distinguish Logic from Metaphysics*, DPhil Dissertation, Oxford University, 1984.
- McGinnis (2010) = J. McGinnis, *Avicenna*, Oxford: Oxford University Press, 2010.
- McTaggart (1908) = J. E. M. McTaggart, *The Unreality of Time*, in: *Mind* (1908) 17: 457–473.
- Meyer (2005) = U. Meyer, *The Presentist's Dilemma*, in: *Philosophical Studies*, (2005) 122: 213–225.
- Odzuck (2014) = S. Odzuck, *The Priority of Locomotion in Aristotle's Physics*, Göttingen: Vandenhoeck & Ruprecht, 2014.

6. Bibliography

- Patterson (1995) = R. Patterson, *Aristotle's Modal Logic. Essence and Entailment in the Organon*, Cambridge: Cambridge University Press, 1995.
- Peramatzis (2011) = M. Peramatzis, *Priority in Aristotle's Metaphysics*, *Oxford Aristotle Studies*, Oxford/New York: Oxford University Press, 2011.
- Pessin (2009) = S. Pessin, *Matter, Form, and the Corporeal World*, in Tamar Rudavsky and Steven Nadler (eds.) *The Cambridge History of Jewish Philosophy: From Antiquity to the Seventeenth Century*, Cambridge: Cambridge University Press, 2009: 269–301.
- Pessin (2010) = S. Pessin, *Solomon Ibn Gabirol [Avicebron]*, in E. Zalta (ed.), *The Stanford Encyclopedia of Philosophy*, 2010. (URL = <http://plato.stanford.edu/entries/ibn-gabirol/>)
- Porro (1996) = P. Porro, *Forme e modelli di durata nel pensiero medievale. L'ævum, il tempo discreto, la categoria "quando"*, Leuven: Leuven University Press, 1996.
- Porro (2002) = P. Porro, *Universaux et esse essentialia: Avicenne, Henri de Gand et le 'Troisième Reich'*, in: *Le réalisme des universaux. Philosophie analytique et philosophie médiévale, Cahiers de Philosophie de l'Université de Caen*, 38–39, 2002, 9–51.
- Porro (2012) = P. Porro, *Tommaso d'Aquino. Un profilo storico-filosofico*, Roma: Carocci, 2012.
- Prior (1967) = A. N. Prior, *Past, Present, and Future*, Oxford: Oxford University Press, 1967.
- Quine (1948) = W.V.O. Quine, *On What There Is*, in: *The Review of Metaphysics*, (1948) 2/1: 21–38.
- Reinhardt (2015) = T. Reinhardt, *Endoxa in Aristotle's Topics*, in: *Rheinisches Museum für Philologie*, (2015) 158: 225–246.
- Roark (2011) = T. Roark, *Aristotle on Time: A Study of the Physics*, Cambridge: Cambridge University Press, 2011.
- Ross (1936) = *Aristotle's Physics. A Revised Text with Introduction and Commentary* by W. D. Ross, Oxford: Clarendon Press, 1936.
- Russell (1992) = B. Russell, *The Principles of Mathematics*, London/New York: Routledge, 1992.
- Sattig (2006) = T. Sattig, *The Language and Reality of Time*, Oxford: Oxford University Press, 2006.
- Shanley (1997) = B. J. Shanley, *Eternal Knowledge of the Temporal*, in: *American Catholic Philosophical Quarterly*, (1997) 71/2: 197–224.
- Shanley (1998) = B. J. Shanley, *Aquinas on God's Causal Knowledge*, in: *American Catholic Philosophical Quarterly*, 1998 72/3: 447–457.
- Staley (2006) = K. Staley, *Omniscience, Time and Eternity: Is Aquinas Inconsistent?*, in: *The Saint Anselm Journal*, 2006 (3/2): 9–16.
- Stump (2003) = E. Stump, *Aquinas*, London-New York: Routledge, 2003.
- Trifogli (2001) = C. Trifogli, *Averroes's Doctrine of Time and Its Reception in the Scholastic Debate*, in: P. Porro (ed.), *The Medieval Concept of Time*, Leiden: Brill, 2001: 57–82.
- Waterlow (1982) = S. Waterlow, *Nature, Change, and Agency in Aristotle's Physics: A Philosophical Study*, Oxford: Clarendon Press, 1982.
- Wippel (2000) = J. F. Wippel, *The Metaphysical Thought of Thomas Aquinas. From Finite Being to Uncreated Being*, Washington DC: The Catholic University of America Press, 2000.

Acknowledgements

When I was in high school, I read for the first time a few pages by Aquinas in the footnotes of my edition of Dante's *Comedy* and I fell in love with his clear way of making philosophical arguments. I started studying Aquinas' texts in a more methodic manner as an undergraduate student at the Scuola Normale Superiore in Pisa, under the guidance of my first *magister*, the late Francesco Del Punta, who often lectured on Thomas' commentary on the *Physics*. The remote ancestor of this book is a PhD dissertation defended at the KU Leuven in May 2016. I thank my PhD supervisor, Russ Friedman, and the members of the committee, Giorgio Pini (Fordham), Andrea Robiglio and Carlos Steel, for their comments and remarks while I was in Leuven and in New York working on the dissertation (2012–2016) and on occasion of its defense. Little is left of that work in the present book, but without the guidance of my Leuven and New York supervisors, I would not have been able to expound my interpretation of Aquinas' ideas on change and time. As my memory goes to my Leuven years, I would like to thank for their generous friendship and the stimulanting conversations Barbara Bartocci, Guy Claessens, Daniel De Haan, Pieter d'Hoine, Lorenzo Ferroni, Mareike Hauer, Alberto Kobec, Can Laurens Löwe, Serena Masolini, Jan Opsomer, Jenny Pelletier, Elsa Giovanna Simonetti, and Philipp Steinkrüger. My dissertation was awarded the "Veritas et amor" prize at Aquino (2018). I thank Tommaso Di Ruzza (Circolo san Tommaso d'Aquino, Aquino) for the warm welcome in Aquino and in Roccasecca on that occasion. After my defense, I have been working in Canada at the Université du Québec à Montréal (2016–2022) and then in Italy at the University of Chieti-Pescara. I thank colleagues and students at both institutions for the enriching conversations that helped me become a better historian of philosophy *κατὰ τὸ δυνατόν*. A special thank goes to Marco Forlivesi, with whom I had many engaging chats on Aquinas' philosophy since I moved to Chieti. Over these past few years, I had a friendly exchange with Damiano Costa (Costa 2019, Gili 2020, Costa 2020, Gili-Pezzini 2023) concerning Aquinas' view about the existence of objects that are not located in the present. I thank Damiano for being a stimulating sparring partner, and Giuseppe Pezzini for helping me argue that Aquinas was not an eternalist. All the remaining mistakes in this volume are only mine. The publication of this book has been made possible thanks to a *PRIN 2022 PNRR* grant (D53D23019940001) awarded to me by the Italian Ministry of University and Research.

Acknowledgements

This book is dedicated with love and gratitude to Ona and to our children Liepa, Mykolas and Veronica.

Urbino, April 2024

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