Philosophers' Imprint

VOLUME 24, NO. 21
NOVEMBER 2024

Aquinas on Change Without Matter or Form—The Problem of Local Motion

Jeffrey Brower

Purdue University

DOI: 10.3998/phimp.3550

A bird flies through the air, an apple falls from a tree, a ball rolls across the room—these are all familiar examples of a type of change Aquinas refers to as *local motion* (*motus localis*).[1] Changes of this type are of particular importance to Aquinas, especially in the context of his broadly Aristotelian physics. This is not perhaps, surprising, given that Aquinas takes local motion to be a type of change that all bodies can undergo, as well as the only type that heavenly bodies can undergo.[2] What is more, because local motion is intimately connected both to spatial location (*ubi*) and to place (*locus*), Aquinas thinks that any complete physics must provide an account of each of these things as well.[3]

Despite the importance of local motion for Aquinas, his precise understanding of its nature has received almost no attention in the scholarly literature. Commentators have had much to say about his understanding of other types of change, especially insofar as they bear on his hylomorphism.[4] And they have also touched on aspects of his

1. For Aquinas's works, I rely on the following abbreviations:

DPN	*De principiis naturae*
In DA	*Sententia super De anima*
In Meta.	*In duodecim libros Metaphysicorum Aristotelis expositio*
In Phys.	*Commentaria in octo libros Physicorum Aristotelis*
In Sent.	*Scriptum super libros Sententiarum*
QDP	*Quaestiones disputatae de potentia*
ST	*Summa theologiae*

   For editions of these works, see the bibliography. All translations are mine, although I have consulted other English translations and, in some cases, adopted their wording without significant changes.

2. See, e.g., *In IV Phys.*, lect. 1, n. 3: "Change (*motus*) is studied by the natural philosopher. But change in respect of place, which we call 'local motion' (*loci mutationem*), is the most common of all types of change. For some things (namely, the heavenly bodies) are changed only respect of this type of change, and nothing is changed by any other types of change unless it is changed in respect of it."

3. See again *In IV Phys.*, lect. 1, n. 3: "Change in respect of place cannot be understood apart from an understanding of place. Hence, place must be studied by the natural philosopher." I shall return to the connection of spatial location (*ubi*) to place (*locus*) in §1.1 below.

4. For an introduction to the literature on Aquinas's views about change and hylomorphism, see Brower 2014 (esp. chs 3–4) and Wippel 2000 (esp. ch 9).

views on local motion in connection with medieval debates about both place and the motion of heavenly bodies.[5] As of yet, however, there exists no systematic treatment of Aquinas's account of local motion as such.[6]

Aquinas himself does not provide a complete account of local motion in any one text and, hence, we must piece together his understanding of this type of change from things he says in different places. As it happens, however, what he says about local motion in his physical and metaphysical writings is hard to square with what he says about change in general. Indeed, as we shall see, in the course of discussing both change and local motion, Aquinas appears to commit himself to a pair of incompatible theses:

> **Two Thomistic Theses About Change**
>
> (T1) All change can be analyzed in terms of the reception of distinct forms by matter.
>
> (T2) Local motion is a type of change that cannot be analyzed in terms of the reception of any distinct forms by matter.

The first thesis represents a standard hylomorphic interpretation of Aquinas's account of change, whereas the second is a straightforward consequence of his own account of local motion. Taken jointly, these two theses give rise to what I shall call *the problem of local motion*.

In this paper, I examine Aquinas's views about change and local motion with the aim of clarifying and resolving the problem just described. It is important to emphasize at the outset that the problem I mean to address is an ontological one. That is, I am concerned with the extent to which Aquinas thinks that change in general, and local motion in particular, can be analyzed in terms of matter and form understood as distinct types of entity — where matter is a substratum and form is a being distinct from and possessed by a substratum.[7] Aquinas does not always speak of matter and form in such ontologically robust terms. On the contrary, in discussions of predication or denomination, he is happy to speak of matter and form in ways that do not require their distinction or even require that form be an entity of any type at all. Thus, as he says at one point:

> The basis for a denomination (*a quo aliquid denominatur*) need not always be a form in extramental reality (*secundum rei naturam*). On the contrary, it suffices for it to be signified in the manner of a form grammatically speaking. (*QDP* q. 7, a. 10 ad 8)

Toward the end of the paper, I shall return to the question of how Aquinas's views about change and local motion relate to his views on denomination in general and on extrinsic denomination in particular. In the meantime, however, I focus only on the question of how they relate to matter and form understood as distinct types of being "in extramental reality."

I divide the remainder of my discussion into three parts. In the first (§1), I present Aquinas's theory of change in some detail, identifying its main principles and their relation to the first Thomistic thesis about change, T1. Here, I cover some familiar territory, as well as highlight aspects of Aquinas's views that often go unmentioned in the secondary literature. In the second part (§2), I turn to Aquinas's theory of

5. For an overview of the literature on medieval debates about place and the motion of heavenly bodies, which tends to focus on the reception of Aristotle, see Trifogli 2002 (esp. ch 3). For discussion of Aristotle's own views, see Algra 1994, Morison 2002, and Odzuck 2014.

6. Aquinas is not unique in this regard. To my knowledge, there is no systematic treatment in the literature of any medieval author's account of local motion. But see Trifogli 2017 for some discussion of Thomas Wylton and Walter Burley's views about the connection between local motion and relational change.

7. It is important to note that Aquinas often uses the term 'matter' in a broad, functional sense to cover any entity that can serve as a substratum for form, whether the form in question is accidental or substantial. See, e.g, *DPN* 1.24–35. Even so, as will become clear in §1.3, when Aquinas introduces the term 'matter' in the context of his views about substantial change, he tends to use it to refer to a distinctive type of substratum — namely, prime matter (and in this same context, he also tends to use 'form' to refer to substantial forms).

local motion in particular. Here, I examine the extent to which local motion is governed by the same principles as change in general, and in the course of doing so, I establish Aquinas's commitment to the second Thomistic thesis about change, T2. In the third and final part of the paper (§3), I address the problem raised by Aquinas's apparent commitment to both T1 and T2. Here, I argue that, despite appearances, Aquinas does not accept the first thesis as stated. Although he often speaks *as if* matter and form were principles of change as such (*principium in fieri*), he in fact regards them as principles only of certain types of change. After explaining the proper interpretation of T1 and its relation to T2, I conclude my discussion by drawing out the implications for Aquinas's understanding of several related issues — including extrinsic denomination, spatial location, potentiality, actuality, and efficient causation.

1. Change in General

Before turning to the details of Aquinas's views about change in general, it will help to say a few words about the broadly Aristotelian framework in which he develops them.

1.1 Change and the Aristotelian Categories.

Aquinas's views on change are closely connected to his understanding of the ten Aristotelian categories. In particular, Aquinas allows for changes in each category, and hence for ten general types of change — one substantial and nine accidental. Like Aristotle himself, moreover, Aquinas often uses examples of qualitative change to illustrate the nature of change in general. Here are two of his favorite examples:

Paradigm Examples of Change

- *Change of shape*: Some bronze goes from being lump-shaped to statue-shaped, as a result of the activity of some artisan.
- *Change of temperature*: Some water goes from being cold to hot, as a result of being placed over a fire.[8]

Aquinas thinks of shape and heat as paradigm examples of qualities, which he takes to be forms (*formae*) of a certain type — namely, accidental forms inhering in substances.[9] Given that Aquinas takes form and matter to be correlative notions, it is not surprising that his reliance on such examples would suggest that change in general can be understood in terms of the reception of form by matter.

Although Aquinas thinks that there can be as many types of change as there are Aristotelian categories, he typically follows Aristotle in focusing on just four types — namely, those associated with the categories of substance, quality, quantity, and spatial location or "where" (*ubi*).[10] Indeed, like Aristotle, Aquinas takes these four to be the only primary or "*per se*" types of change, and he introduces special names for each:

Types of *Per Se* Change

- *Generation and corruption* (= change in substance) } Substantial
- *Alteration* (= change in quality)
- *Augmentation and diminution* (= change in quantity) } Accidental
- *Local motion* (= change in spatial location)

8. Aquinas introduces the first example in *DPN* 1 and the second in *In III Phys.*, lect. 2. Note that, whereas changes of temperature typically involve continuous variation in degree, changes in shape do not. Aquinas sometimes marks this distinction by saying that the former are motions (*motus*) while the latter are mutations (*mutationes*). I shall return briefly to this distinction, and its relation to the English term 'change', in §1.2 below.

9. The identification of qualities with forms makes especially good sense in the case of shapes, because in Latin 'form' (*forma*) is often synonymous with 'shape' (*figura*).

10. The Latin term *ubi* is sometimes translated as 'place', but it would be more accurate to translate it as 'spatial location', and to reserve 'place' for *locus*, which Aristotle puts in the category of quantity (Cat. 6, 4b24–25). I shall have more to say about the relation of spatial location to place shortly.

In describing these four types of change as *per se*, Aquinas means to contrast them with the types of change associated with the other six categories, which he describes as *per accidens*. We can gather what Aquinas has in mind by this distinction from what he says about changes associated with the specific category of relation:

> There is no *per se* change in [the category of] relation, but only change *per accidens*; for a new relation follows on another change (e.g., a change of quantity in the case of [relations of] equality or inequality, and a change of quality in the case of [relations of] similarity or dissimilarity). (*In V Phys*., lect. 3, n. 7)

Here, Aquinas suggests that whether a given type of change qualifies as *per se* or *per accidens* depends on whether it "follows on" (*sequitur*) another change. Judging by the examples he uses to illustrate such "following," he appears to have in mind a distinction between those changes grounded in other changes, and those not so grounded. Thus, changes associated with the category of relation qualify as *per accidens*, rather than *per se*, precisely because they are grounded in changes associated with other categories (e.g., quantity or quality). With this understanding it is easy to see why Aquinas would focus only on *per se* types of change. For they are the metaphysically fundamental ones, in terms of which all other types of change must be understood.

It is important to note that, in addition to describing local motion as a change of spatial location (*ubi*), Aquinas also describes it as a change of place (*locus*). This is because he thinks that spatial location itself "consists in a kind of relation to place" (*consistit in aliquali relatione ad locus*).[11] What is more, Aquinas follows Aristotle in conceiving of individual places as containers (*continentia*) or receptacles (*receptacula*) for bodies located at them.[12] As Aquinas recognizes, on this conception it is natural to think of places as regions of space (*spatium*). But here again he prefers to follow Aristotle in thinking of them as surfaces or boundaries of surrounding bodies. The details of Aquinas's specific conception of place are complicated and difficult to understand. Fortunately, though, none of the conclusions I draw in what follows depends on them. For our purposes, it will be enough to appreciate that Aquinas takes places to be entities of some type or other, which can be filled by different bodies at different times.

One final point: although Aquinas is happy to describe spatial location as "a kind of relation"—namely, one that a body bears to a place—it is also important to note that, strictly speaking, he does not take spatial location to fall within the Aristotelian category of relation (*relatio*, *relative, ad aliud*). The same is true of inherence (*inhaerentia*), which is the relation a form bears to the substratum possessing it. The reason is that, like other medieval philosophers, Aquinas identifies categorial relations only with those that both (a) hold between distinct substances, and (b) are grounded in intrinsic features of their relata. Thus, equality and similarity count as categorial relations because they both hold between equal or similar substances, and are also grounded in quantities or qualities of those same substances (the so-called *fundamenta* of their relations). Neither inherence nor spatial location, by contrast, count as categorial relations; for inherence is not a relation holding between distinct substances, and spatial location is not grounded in intrinsic features of its relata. Although I shall continue to refer to both inherence and spatial location as relations, I wish to emphasize that I do not mean thereby to suggest that they count as relations in Aquinas's categorial sense.[13]

So much for the categorial framework in terms of which Aquinas develops his theory of change. Let us now turn to the details of the theory itself.

11. *In V Meta.*, lect. 17, n. 5.

12. See, e.g., *ST* IIIa, q. 76, a. 5 ad 3 ("being in a place is an accident involving a relation to an extrinsic container") and *In V Phys.*, lect. 1, n. 6 ("place is a type of receptacle distinct from any of the things located at it"). I return to the latter text in §2.1 below. For a discussion of Aristotle's view of place, see Morrison 2002.

13. For an introduction to medieval theories of relations, which includes discussion of Aquinas's own views, see Brower 2018 and Henninger 1989.

1.2 Three General Principles of Change.

In what follows, I present Aquinas's theory of change in terms of six principles. In the remainder of this section, I focus on the first three principles, which connect Aquinas's views about change to potentiality (*potentia*) and actuality (*actus*).[14] In the next section, I turn to three further principles, which connect these same views to matter (*materia*) and form (*forma*).

There is no single word in Latin corresponding to our English word 'change'. When Aquinas wishes to characterize change in general, therefore, he relies on the Latin terms '*mutatio*' and '*motus*'. Aquinas often uses these terms in a narrow sense to mark different species of change, with *motus* corresponding to gradual change and *mutatio* corresponding to instantaneous change.[15] But he also uses both terms in a broad sense to cover any type of change, as in the following passage:

> In every change or motion (*mutatio vel motus*), there must be something that exists in a different state now than it did previously (*aliter se habens nunc et prius*). Indeed, this is implied by the very meaning of 'change' (*mutatio*). (*SCG* II, cap. 17, n. 4)

As this passage suggests, Aquinas conceives of change in the same basic way that philosophers now usually do — that is, in terms of a subject's existing in different states at different times.[16] Thus, if some bronze undergoes a change of shape, it must exist "in a different state now than it did previously" — say, that of being statue-shaped instead of lump-shaped. Likewise, if some water undergoes a change in temperature, it too must exist in different states at different times — say, that of being hot at one time, cold at another. And, of course, the point is not restricted to changes of these two types alone, but applies to "every change or motion."

It is natural to suppose that when a subject comes to exist in new state (i.e., one in which it did not exist previously), it does so in virtue of acquiring some new form or property. That is, it is natural to suppose that states of change can themselves be analyzed in terms of the possession of distinct forms or properties by subjects. We have already seen that Aquinas holds something like this view in the case of changes involving qualitative states. For when a subject comes to be statue-shaped or hot, Aquinas thinks it does so in virtue of acquiring a quality, which he takes to be a form. It is important to emphasize, though, that nothing in Aquinas's characterization of change in general requires this sort of analysis. Indeed, the Latin phrase I have translated as "existing in a different state now than it did previously" (*aliter se habere nunc et prius*) literally means "holding itself differently now than it did previously." But even someone who denies the existence of forms or properties altogether can allow that things undergo change, and hence "hold themselves differently" at different times. As all of this makes clear, talk of "states" in the context of Aquinas's characterization of change is meant to capture our intuitive sense of the different ways that a changing thing exists at different times, and not to take a stand on the precise ontological commitments of these "ways of existing."

For Aquinas, then, all change involves coming-to-be (*fieri*) — or more precisely, a subject's coming to exist in a new state. But we should note here that Aquinas does not think of all coming-to-be as involving change. For he takes creation (*creatio*) to be a type of coming-to-be distinct from change:

> Creation does not qualify as change — unless it is merely according to certain mode of understanding. For it is part

14. Because *potentialitas* exists in Latin, it might seem preferable to translate *potentia* into English as 'power' rather than 'potentiality'. But because the latter translation is entrenched in the literature, and it is more natural to speak of 'power' in connection with agency or *potentia activa*, I shall stick with 'potentiality' as the general term throughout.

15. See again n. 8 above.

16. In English translations of Aquinas's texts, the term 'state' is sometimes used as a technical term for a specific type of Aristotelian quality — namely, what Aristotle calls a *hexis*, and Aquinas calls a *habitus*. As will become clear shortly, this is not how I use the term in my translation.

> of the concept of change (*de ratione mutationis*) that one and the same thing exists in a different state now than it did previously … But in creation, which involves the production of the whole substance of things, it is not possible for one and the same thing to exist in a different state now than it did previously — unless it is merely in our understanding (e.g., if we conceive of something as completely lacking existence at one time, and afterwards possessing it). (*ST* Ia, q. 45, a. 2 ad 2)

As this passage indicates, Aquinas takes change and creation to involve different types of coming-to-be. Change involves what we might call *qualified coming-to-be* — that is, a pre-existing subject that merely comes to exist in a new state. Creation, by contrast, involves what we might call *unqualified coming-to-be* — that is, a subject that comes into existence for the first time as a result of being produced *ex nihilo*. Aquinas recognizes that it might be tempting to think of creation along the lines of change — that is, *as if* it involved a subject going from a state of not existing to existing. But as he suggests, we shouldn't take this way of thinking to have any real basis outside the mind — presumably because there are no non-existent objects.[17]

As Aquinas sees it, the distinction between change and creation carries with it a distinction between different types of potentiality, actuality, and efficient causation. For change to occur, there must not only be a pre-existing subject, but also what Aquinas calls a *passive potentiality* (*potentia passiva*) — a potentiality of some pre-existing subject to undergo the change in question. For the same reason, Aquinas thinks, the actualization of such a potentiality requires an efficient cause or agent to act on the pre-existing subject (or patient), in such a way as to produce in it a new state.[18] Things are very different in

17. Aquinas sometimes speaks *as if* he is prepared to accord a type of being even to non-existent objects — namely, rational being (*ens rationis*). For a brief discussion of relevant texts, as well as the different ways they can be understood, see Brower and Brower-Toland 2008.

18. See, e.g., *DPN* 3.5–7: "A lump of bronze, which is potentially [but not actually] a statue, does not make itself into a statue, but requires an agent to bring the shape (*forma*) of the statue from potentiality to actuality."

creation, of course. Insofar as creation involves *unqualified coming-to-be*, there can be no pre-existing subject, much less a passive potentiality of such a subject to be created. Indeed, it is precisely for this reason that Aquinas describes creation as "the production of the whole substance of things." Aquinas recognizes that it might be tempting to think of creation *as if* it involved the actualization of a passive potentiality. After all, if something is created, it must be "creatable." But here again, Aquinas warns against taking these ways of thinking too literally:

> Something is said to be creatable, not through any passive potentiality, but only through the active power (*per potentiam activam*) of the creator, who is capable of producing something *ex nihilo*. (*ST* Ia, q. 75, a. 6 ad 2)

As Aquinas here suggests, talk of potentiality in the context of creation must be understood in terms of active rather than passive potentiality — that is, in terms of some agent's power to create rather than in terms of some pre-existing subject's passive potentiality to be created.

We are now in a position to articulate the first three principles governing Aquinas's theory of change:

> **Theory of Change I: General Principles**
>
> (P1) *Change and qualified coming-to-be.* For a change to occur just is for a pre-existing subject to come to exist in a new state (i.e., one in which it did not exist previously).
>
> (P2) *Change and the actualization of passive potentiality.* For a pre-existing subject to come to exist in a new state just is for its passive potentiality for existing in that state to be actualized.
>
> (P3) *Change and efficient causation.* A pre-existing subject's passive potentiality for existing in a new state cannot be actualized without some efficient cause acting on it.

I have described P1–P3 as "general principles" in order to emphasize that they are meant to apply to changes of any specific type. P1 and P2 give us an understanding of change itself — P1 analyzes change in terms of a specific type of coming-to-be, whereas P2 further analyzes the relevant type of coming-to-be in terms of actualizing a passive potentiality. P3 then connects this understanding of change to efficient causation.

So much for our first three principles. Let us now turn to three further principles, which connect Aquinas's views about change to his hylomorphism.

1.3 Three Further Principles of Change.

The first three principles governing Aquinas's theory of change are fairly easy to understand and touch on familiar aspects of his views. The same cannot be said for the principles to be articulated in this section. For the same reason, my approach to them will be different. Rather than begin with a discussion of particular texts from which these principles emerge, I instead start with a statement of the principles themselves and then turn to the question of how they relate to Aquinas's texts.

Here, then, is a statement of the principles:

> **Theory of Change II: Further Principles**
>
> (P4) *Change and the ontology of states.* For a pre-existing subject to come to exist in a new state just is for that subject to come to be newly related to a distinct entity — namely, a terminus of change.
>
> (P5) *Change and the reception of distinct forms.* For a pre-existing subject's passive potentiality for existing in a new state to be actualized just is for that subject to receive a new entity — namely, a distinct form that it previously lacked.
>
> (P6) *Change and the production of distinct forms.* A pre-existing subject's passive potentiality for existing in a new state cannot be actualized without some efficient cause producing a new entity in it — namely, a distinct form that it previously lacked.

Although I have stated P4–P6 as perfectly general principles, eventually we shall see that there is a question about whether they really apply to all types of changes. For now, however, I want to emphasize that the key to understanding all three principles lies in an aspect of Aquinas's views that we have not yet addressed but that is explicitly mentioned in P4 — namely, the notion of a *terminus of change*.[19]

Just as Aquinas thinks that every change involves a subject that is *changed*, so too he thinks that every change involves some termini *with respect to which* its subject changes. Consider, for example, the following passage:

> Five things are required for any change (*motum*). First, there must be a primary agent (*primum movens*) — that is, a source from which the change originates. Second, there must be something changeable that is [actually] changed. Third, [there must be] some time in which the change occurs. In addition to these three things, moreover, there must be two termini — one from which the change begins and another towards which it proceeds. For every change is *from* one thing *to* another. (*In V Phys*., lect. 1, n. 4)

Here, Aquinas identifies termini as two of five things required for any change. The other three — an agent, a changeable subject, and time — are all things that we would expect given his commitment to P1–P3. Thus, insofar as change requires efficient causation (P3), we would expect it to require an agent or "source from which the change

19. A referee suggested that it might be better to use 'term' as an English translation for *terminus*. But because 'terminus' is also an English expression, and better indicates that Aquinas is using *terminus* technically, I prefer to use it instead.

originates." Likewise, insofar as change requires the actualization of a passive potentiality (P2), we would also expect it to require "something changeable that is [actually] changed." And finally, insofar as change requires a subject to come to exist in a new state (P1), we would expect it to require "some time in which the change occurs." For evidently a subject cannot exist "in a different state now than it did previously" if it does not persist through some temporal interval.[20]

But what about the termini? How are they related to what we have seen of Aquinas's views about change? Initially, it might be tempting to identify the termini with the different states in which the changing subject exists at different times. For insofar as change requires a subject to come to exist in a new state (P1), it clearly requires a pair of states — indeed, "one from which the change begins and another towards which it proceeds." What's more, it seems perfectly natural to describe change as proceeding "*from* one state *to* another."

Although this identification is initially tempting, for reasons to be explained shortly we must resist it. But if the termini are not states of change, what are they? To answer this question, we must turn to Aquinas's analysis of substantial change. For it is only in the context of explaining this type of change that Aquinas makes his views about termini clear. Indeed, as will become clear, in this context Aquinas not only distinguishes termini from states of change, but also connects them to matter and form — and, along the way, gives strong evidence for his commitment to P4–P6.

Consider, therefore, the following passage, which contains what might be Aquinas's most detailed treatment of the nature of substantial change (for ease of reference, I hereafter refer to it as 'Passage A' and number the lines of its text):

20. It is important to note that saying "there must be some time in which change occurs" is not the same as saying that every change is temporally extended. For even an instantaneous change requires there to be a temporal interval, even if the change itself occurs at just one of the instants within that interval.

Passage A

In the case of sensible substances, [Aristotle] claims that it is necessary to posit matter as if it were a subject and a substance.

For in every change, there must be a subject (*subjectum*) that is common to the termini of change associated with contrary changes. Thus, in change of place there is a common subject that is now here and later somewhere else; in augmentation [and diminution], there is a common subject that is now a certain size and later either smaller (if the change involves decrease) or larger (if the change involves increase); and in alteration, there is some subject that is now [say] healthy and later sick.

Therefore, since there is substantial change — namely, generation and corruption — there must be some common subject, which serves as a subject (*subiciatur*) for the contrary changes associated with generation and corruption. And this subject, whose termini are form and privation, is such that sometimes it has actuality through the form and other times it is a subject for the privation of that form.

Because of this argument of Aristotle's, it is clear that substantial generation and corruption are the source from which we derive our knowledge (*cognitionem*) of prime matter (*materiae primae*) … [I]t is [also] clear from this argument how prime matter must be understood — namely, as something related to all forms and privations in the same way that a subject of alteration is related to contrary qualities. (*In VIII Meta.*, lect. 1, nn. 8–9)

In this passage, Aquinas focuses on explaining the nature of the subject of substantial change, and in particular on presenting what he takes to be Aristotle's argument for identifying that subject with a specific type of matter — namely, "prime matter." But in the course of presenting this argument Aquinas also clarifies the relationship of

substantial change to change in general. Thus, he begins (ll. 1–16) by arguing that substantial change must have both a subject and some termini, precisely because this is required of change as such. He then argues (ll. 16–26) that the subject of substantial change must be identified with matter, precisely because its termini involve form — or rather form and privation.

For the sake of clarity, we can reconstruct the argument of Passage A more precisely as follows:

Argument from Substantial Change

1. There must be both a subject and some termini for any type of change. (ll. 4–5)

2. There are substantial changes. (l. 13)

3. Hence, there must be both a subject and some termini for substantial change. (l. 14–16)

4. The termini for substantial change are form and privation. (ll. 16–17)

5. Hence, the subject for substantial change must be (prime) matter. (ll. 20–26)

The inference from 1 and 2 to 3 is clearly valid. But the inference from 3 and 4 to 5 is enthymematic and specifically depends on Aquinas's views about the correlativity of matter and form. In other words, it is precisely because the termini of substantial change involve some type of form that Aquinas thinks that we are entitled to infer that its subject must qualify as matter in some sense. Aquinas's mention of "prime" matter in his statement of the final conclusion might seem to come from nowhere; I shall have more to say about its significance shortly. But first let us take a closer look at Aquinas's understanding of the argument's main premises and their relation to our principles P4–P6.

Premise 1 and Principle P4. Aquinas begins the argument by claiming that every change involves not only a subject existing in different states at different times, but also a pair of termini associated with these different states: "in every change, there must be a subject that is common to the termini of change" (ll. 4–5).[21] From the examples that Aquinas offers to support this claim, it seems clear that he is thinking of termini as distinct from states of change. Thus when a body goes from the locative state of being here to there, it does so in virtue of being differently related to the entities serving as the termini of local motion (namely, places); when it goes from the quantitative state of being smaller to larger, it does so in virtue of being differently related to the entities serving as the termini of augmentation and diminution (namely, quantities); and when it goes from the qualitative state of being healthy to sick (or lump-shaped to statue-shaped), it does so in virtue of being differently related to the entities serving as the termini of alteration (namely, qualities). And clearly the point is meant to apply not just to these three examples of accidental change, but to change in general. In short, Aquinas's defense of premise 1 reveals his commitment to P4:

> (P4) *Change and the ontology of states.* For a pre-existing subject to come to exist in a new state just is for that subject to come to be newly related to a distinct entity — namely, a terminus of change.[22]

21. Aquinas adds the qualification "associated with contrary changes" (*in contrariis mutationibus*) to signal that he is not here dealing with cases of cognitive change, which do not involve contraries and hence raise important complications for his general theory of change. I ignore these complications here. Thus, when I speak of Aquinas's theory of change in general, this reference should be understood as tacitly restricted to his theory of natural (as opposed to cognitive) change. But see Brower and Brower-Toland 2008, and references cited therein, for discussion of these complications; and see Cohoe 2013 for a discussion of the differences between cognitive and natural change in Aristotle.

22. This understanding of the relationship between termini and states of change fits well, I think, with Aquinas's own description of states of change. For when he describes such states in terms of a subject's "holding itself differently now than it did previously" (*aliter se habere nunc et prius*), it is natural to suppose

In each of Aquinas's three examples for accidental change, it is easy to identify both the subject and the termini of the change. Indeed, in each example the subject is an ordinary sensible substance or body, and the termini are things like qualities, quantities, and places. When it comes to examples of substantial change, however, things are not so easy. In the remainder of the argument, therefore, Aquinas focuses on identifying the subject and the termini for this type of change.

Premises 2 and 4 and Principles P5 and P6. As my statement of premise 2 indicates, Aquinas takes it to be obvious that there are substantial changes. In fact, as his use of the term 'generation and corruption' suggests, he takes changes of this type to include the familiar changes by which ordinary sensible substances, such as plants or animals, come into being and pass away. And, as my statement of the rest of the argument indicates — in particular, premise 4 and the main conclusion at 5 — it is precisely because Aquinas thinks the termini of substantial change involve form and privation that he thinks its subject must be identified with matter in some sense.

In Passage A Aquinas does not explicitly tell us why he identifies the termini of substantial change with form and privation. But the reason is straightforward: this identification allows him to explain how substantial change involves the generation and corruption of ordinary sensible substances. For if we conceive of such substances as hylomorphic compounds, then whenever some matter acquires a form it previously lacked, a new substance will come into existence; whereas whenever some matter is deprived of a form it previously possessed, a pre-existing substance will pass away. The notions of form and privation, furthermore, appear to be closely connected to those of actuality and potentiality. Thus, in speaking of the subject or matter of a substantial change, Aquinas says:

> And this subject, whose termini are form and privation, is such that sometimes it has actuality through the form and other times it is a subject for the privation of that form. (ll 16–19)

When he speaks here of a subject having "actuality through the form," he presumably means to indicate that the form actualizes one of the subject's potentialities — indeed, one of its passive potentialities. Likewise, when he speaks of the same subject as "a subject for the privation of that form," this is presumably meant to indicate that the subject is in a state of mere potentiality for receiving a form it currently lacks.

In cases of generation, therefore, it is clear that substantial change involves the reception of form by matter. But what about cases of corruption? Here it might appear as if substantial change involves the mere loss of form, rather than its reception — and hence the mere loss of actuality instead of the actualization of any passive potentiality. As it happens, though, these appearances are misleading. For Aquinas thinks that matter cannot exist without some form or other. What is more, whenever some matter is deprived of one form, Aquinas explains the deprivation in terms of its possession of another form:

> Matter is never without some privation; insofar as it possesses one form, it lacks another, and vice versa. (*DPN* 2.20–22)

In short, Aquinas thinks that even substantial corruption involves the generation of a substance, and hence some matter receiving a form. For the same reason his understanding of substantial change commits him to at least a version of P5:

> (P5) *Change and the reception of distinct forms.* For a pre-existing subject's passive potentiality for existing in a new state to be actualized just is for that subject to receive a new entity — namely, a distinct form that it previously lacked.

that he takes the subject to do so relative to something else — say, qualities in the case of alteration, quantities in the case of augmentation, and places in the case of local motion. Indeed, the Latin phrase '*se habere*' is often shorthand for 'se *habere ad*', which is naturally translated as 'related to'.

If Passage A were all we had to go on, one might be forgiven for thinking that only substantial change involves the reception of distinct forms for Aquinas. For in this passage he explicitly identifies just the subject and termini of substantial change with matter and form. But it turns out that Passage A is not all we have to go on. And even in this passage there are grounds for thinking that Aquinas accepts P5 in the perfectly general form I have given it.

Consider the final sentence of Passage A. Here Aquinas tells us that the subject of substantial change is "related to all forms and privations in the same way that a subject of alteration is related to contrary qualities" (ll. 25–26). But as we have seen, Aquinas is happy to speak of qualities — that is, the entities serving as the termini for alteration — as forms. Evidently, therefore, the subject and termini of alteration must also be understood in terms of matter and form — or better, matter, form, and privation. For presumably whenever a substance acquires one quality, it thereby comes to be deprived of another. Thinking of alteration in such hylomorphic terms might seem problematic, insofar as it would seem to imply that even accidental change involves both generation and corruption of hylomorphic compounds. But here too Aquinas seems perfectly happy to accept the implication; in fact, he explicitly describes the change by which some bronze goes from being lump-shaped to statue-shaped as one in which "a statue is generated from bronze" (*DPN* 1.71–2). In addition, though commentators do not often emphasize this point, Aquinas is also happy to distinguish different types of generation and corruption, depending on the different types of form they involve. Consider, for example, the following two texts:

> In an unqualified sense (*simpliciter*), generation and corruption are found only in the category of substance. But in a qualified sense (*secundum quid*), they are found in other categories as well. (*DPN* 1.58–61)

> Because generation is a change with respect to form, there are two types of generation corresponding to the two types of form. Generation in the unqualified sense corresponds to substantial form, and generation in the qualified sense corresponds to accidental form. (*DPN* 1.47–50)

Evidently, then, Aquinas's views about the connection of change to form reception are not restricted to substantial change, but include accidental changes as well. In fact, it is precisely because Aquinas thinks of different types of change as involving different types of form that he refers to the matter of substantial change as "prime" matter near the end of Passage A (ll. 22–24). For 'prime matter' (*materia prima*) is the term Aquinas standardly uses to distinguish the substratum for a substantial form, which is not a substance, from that of an accidental form, which is a substance. And it is precisely because Aquinas thinks that the subject of a substantial change cannot itself be a substance that he says, in l. 2, "it is necessary to posit matter as if it were a subject *and a substance*."

There are two further reasons for thinking that Aquinas takes all change, including all types of accidental change, to involve the reception of distinct forms by matter. First, he often speaks of matter and form in ways that would seem to require them to serve as the subject and termini for any change:

> Anything that exists in potentiality can be called *matter*. So too, anything through which something has being [or actuality], regardless of its type, whether substantial or accidental, can be called *form*. (*DPN* 1.36–39)

As we have seen, Aquinas thinks every change requires "something changeable that is [actually] changed" — that is, something that exists in potentiality together with something that actualizes this potentiality. But as this passage makes clear, he often speaks as if matter just is what exists in potentiality, and as if form just is its corresponding actuality.[23]

23. But we have to be careful here, because as I indicated at the outset, not

The second reason is that Aquinas habitually speaks as if all change involves the generation of hylomorphic compounds. Insofar as change requires "something changeable that is [actually] changed," it would seem to require something to proceed from existing merely in potentiality to existing in actuality. But just as Aquinas identifies matter with what exists in potentiality and form with actuality, so too he identifies compounds with what exists in actuality:

> There is a difference between matter and form: matter is a being in potentiality, whereas a form is an entelechy — that is, an actuality — by which matter is actualized. For the same reason, a compound is a being in actuality. (*In II DA*, lect. 1, n. 5)

In addition, although Aquinas sometimes speaks of matter, form, and privation as principles of change (*principia fieri*), more often than not he refers to them as principles of nature (*principia naturae*) — which he specifically associates with generation:

> There are three principles of nature — namely, matter, form, and privation. One of these (namely, form) is that towards which generation is directed; the other two fall on the side of that from which generation proceeds. (*DPN* 2.1–4; see also 1.62–71 and *In I Phys*., lect. 13)

All of this strongly suggests that Aquinas accepts P5 as stated. And, of course, it is a short step from P5 to P6:

> (P6) *Change and the production of distinct forms.* A pre-existing subject's passive potentiality for existing in a new state cannot be actualized without some efficient cause producing a new entity in it — namely, distinct a form that it previously lacked.

everything that can be "called" *matter* or *form* qualifies as a matter or form "in extramental reality".

For if change involves the reception of distinct forms, as P5 requires, then presumably it also involves their production, as P6 requires. And there are passages where Aquinas seems to be taking something like P6 for granted:

> In bodily changes, the agent (*movens*) is described as whatever gives the form which is the principle of change. So too the intellect is described as the agent that produces the form which is the principle of the intellectual activity that is the "motion" of the intellect. (*ST* Ia, q. 105, a. 3)

In the end, therefore, Aquinas's theory of change in general would appear to be governed by all six principles we've articulated — that is, not only by P1–P3, but also by P4–P6. And just as P1–P3 spell out Aquinas's general understanding of change in terms of the notions of potentiality, actuality, and coming-to-be, so too P4–P6 further specify this understanding in terms of the more ontologically robust notions of matter, form, and terminus. Thus, whereas P1 analyzes change in terms of qualified coming-to-be, P4 further specifies this understanding of change by analyzing the states associated with such coming-to-be in terms of a subject's relation to a terminus. Likewise, whereas P2 analyzes qualified coming-to-be in terms of the actualization of passive potentiality, P5 further specifies this understanding by analyzing such actualization in terms of the reception of distinct forms. And finally, whereas P3 merely connects the actualization of passive potentiality to efficient causation, P6 further specifies the connection by insisting that it be understood in terms of the production of the same forms mentioned in P5.

As all of these points help make clear, there is a close connection between P1–P6 and the first of the two theses mentioned at the outset of the paper:

First Thomistic Thesis About Change

(T1) All change can be analyzed in terms of the reception of distinct forms by matter.

Indeed, T1 is a straightforward consequence of the analysis of change associated with four of our six principles (P1–P2 and P4–P5), and it is also reinforced by the theory of efficient causation associated with the other two (P3 and P6). Admittedly, none of our six principles explicitly mentions matter. But because Aquinas takes matter and form to be correlative, he assumes that any subject capable of receiving any type of form must qualify as matter in some sense.

2. Local Motion

I began this paper by identifying two theses that give rise to the problem of local motion:

Two Thomistic Theses About Change

(T1) All change can be analyzed in terms of the reception of distinct forms by matter.

(T2) Local motion is a type of change that cannot be analyzed in terms of the reception of any distinct forms by matter.

Having examined the evidence for Aquinas's commitment to T1, I now turn to the evidence for his commitment to T2. And here I proceed by considering the extent to which Aquinas's views about local motion are governed by the same six principles we have articulated in connection with his views about change in general.

2.1 Principles of Local Motion.

There can, I think, be little doubt that Aquinas's views about local motion are governed by the first three principles — namely, P1–P3. For as we have seen, Aquinas thinks of local motion as change with respect to the category of spatial location (*ubi*) and hence as involving

"a common subject that is now here and later somewhere else." But to say that a subject exists in different spatial locations at different times is, presumably, just a way of specifying the types of state involved in local motion. Moreover, if a subject is going to change with respect to its locative states, it must not only possess the potentiality to do so, but must also at some time actualize that potentiality. Finally, just as the actualization of potentiality in general requires an efficient cause, the same is surely true for the actualization of a potentiality for a new spatial location. In short, there is no reason to doubt that Aquinas would accept each of the following specifications of P1–P3:

Theory of Local Motion I: General Principles of Change Specified

($P1_L$) *Local motion and qualified coming-to-be.* For a local motion to occur just is for a pre-existing subject to come to exist in a new locative state (i.e., one in which it did not exist previously).

($P2_L$) *Local motion and the actualization of passive potentiality.* For a pre-existing subject to come to exist in a new locative state just is for its passive potentiality for existing in that state to be actualized.

($P3_L$) *Local motion and efficient causation.* A pre-existing subject's passive potentiality for existing in a new locative state cannot be actualized without some efficient cause acting on it.[24]

24. Cases of self-motion might seem to violate $P3_L$ — that is, cases in which some living thing moves itself from one place to another. Strictly speaking, however, Aquinas thinks there are no cases of self-motion. Thus, what is really happening when a living thing "moves itself" from one place to another is that one part of the living thing (the soul) is acting on another part (the body or some bodily part). For some discussion of self-motion, and Aquinas's defense of the Aristotelian principle that what is moved is always moved by another, see MacDonald 1991.

As for the other three principles we articulated, P4–P6, it is much more difficult to see how Aquinas could accept them. More precisely, it is difficult to see how he could accept two of the three. To see why, consider the following specifications:

> **Theory of Local Motion II: Further Principles of Change Specified**
>
> ($P4_L$) *Local motion and the ontology of states.* For a pre-existing subject to come to exist in a new locative state just is for that subject to come to be newly related to a distinct entity — namely, a terminus of local motion.[25]
>
> ($P5_L$) *Local motion and the reception of distinct forms.* For a pre-existing subject's passive potentiality for existing in a new locative state to be actualized just is for that subject to receive a new entity — namely, a distinct form that it previously lacked.
>
> ($P6_L$) *Local motion and the production of distinct forms.* A pre-existing subject's passive potentiality for existing in a new locative state cannot be actualized without some efficient cause producing a new entity in it — namely, a distinct form that it previously lacked.

Specified this way, it is not hard to see how Aquinas could be said to accept the first of these principles, $P4_L$. For like all other changes, he clearly takes local motion to involve both a subject and some termini. But for reasons I shall now explain, his conception of the termini for local motion makes it difficult to see how he could accept either $P5_L$ or $P6_L$. For whereas other types of change can be said to involve forms precisely because their termini do, the same cannot be said of local motion:

> Just as the type of change that occurs in respect of forms led human beings to a knowledge of matter (since there must be a subject in which forms can succeed one another), so too the type of change that occurs in respect of place led human beings to a knowledge of place (since there must be something where [*aliquid ubi*] bodies can succeed one another). And this the point that [Aristotle] makes later — namely, that when some water departs from where it now exists (e.g., a particular vessel), some air comes to replace it.
>
> Since, therefore, distinct bodies may exist in the same place [at different times], it seems clear that place is something distinct from the things that both exist in place and are moved with respect to it. For it would not be possible for some air now to exist where some water existed previously, if place were not distinct from both the air and the water.
>
> Consequently, place is something (*aliquid*); indeed, it is a type of receptacle (*quoddam receptaculum*) distinct from any of the objects located at it. What is more, place is the terminus from which local motion begins and toward which it proceeds. (*In IV Phys.*, lect. 1, n. 6)

Here Aquinas distinguishes local motion from other types of change precisely because its termini must be identified with places (*loci*) rather than forms (*formae*). As I noted earlier (§1.3), Aquinas's specific views about the nature of place are complicated, and the details need not detain us. For our purposes, it's enough to see that when a body is in local motion, Aquinas takes the termini of its change not to be forms of the moving body, but rather to be receptacles or containers successively filled by that body. But if that is correct, then it is hard to see how local motion could be said to involve the positing of any distinct forms to be received by or produced in matter, as $P5_L$ and $P6_L$ require.

25. Here I ignore cases of circular local motion, which raise some special complications for Aquinas's views. But see Trifogli 2000, ch. 3 for some discussion.

But here we must take care. For even if we grant that the entities serving as the termini for local motion are not forms, it might still be thought that Aquinas takes local motion to involve the reception of distinct forms by matter. For insofar as a body comes to fill a new place (i.e., a receptacle that it did not fill previously), it will still come to be newly related to that place. And one might take the new relation itself to be a form — that is, an entity both distinct from and received by the body, as well as produced by some agent.

Now if there were such a form, it would have to be a type of accidental form, insofar as it would belong to one of the accidental categories — namely, that of spatial location or "where" (*ubi*). As an accidental form, moreover, it would have to be a monadic (one-place) form, since Aquinas is emphatic that no accidental form can belong to more than one subject at a time.[26] But, of course, if all this is right, then if there were a form involved in local motion, it would have to be a distinctive type of monadic property — one posited solely to explain how a subject of local motion is related to the places serving as its termini. The suggestion that local motion involves such a form might seem foreign to us — but it was not unheard of in the Middle Ages. John Duns Scotus, for example, seems to have held just such a view, introducing the abstract term 'spatial locatedness' (*ubietas*) precisely to refer to the special type of monadic form relating bodies to the places they fill.[27]

But however it may be with other medieval philosophers, Aquinas himself cannot be interpreted as holding such a view. On the contrary, as I shall now show, he explicitly commits himself to denying that local motion involves positing any distinct forms in extramental reality.

26. See, e.g., *In I Sent.* d. 27, q. 1, a. 1, ad 2: "As Avicenna says, some thinkers have held that one and the same relation is in each of its relata; but that is not possible, since one accident cannot belong to two subjects."

27. See Cross 1998 (esp. chs 6 and 11) and Pini 2005 for this interpretation of Scotus.

1.1 Local Motion and Angelic Causation.

Aquinas's views about the relationship of local motion to extramental forms emerge most clearly in contexts where he is discussing angelic causation. For in such contexts, Aquinas is at pains to establish both (i) that local motion is the only type of bodily change that angels can directly produce, and (ii) that this is so precisely because local motion does not posit any distinct forms in matter. To see why, let us consider some of the things he says in such contexts.

Given his theological commitments, it is not perhaps surprising that Aquinas assumes that angels exist and are causally active in the physical world. But it is interesting to note that he thinks this assumption is also accepted by many philosophers who do not share his theological commitments. As he says in his treatment of angelic causation in the *Summa Theologiae*:

> [A]ll corporeal beings are ruled (*reguntur*) by the angels. This is accepted not only by the holy doctors, but also by all those philosophers who have posited incorporeal substances. (*ST* Ia, q. 110, a. 1)

Aquinas recognizes that the existence of angels is not uncontroversial — but he thinks that those philosophers prior to him, who posit the existence of angels generally, take them to have efficient causal power or control over the physical realm. And as he tells us in his *Sentences Commentary*, the reason why has to do with the superiority of their nature: "Insofar as spiritual nature is superior to corporeal nature, corporeal nature must be subject to it." (*In II Sent*. d. 8, q. 1, a. 2)

Although Aquinas takes for granted that angels are active in the physical world, he denies that they are capable of producing changes in bodies that involve the reception of distinct forms in matter. In fact, he makes this denial explicit in the text immediately following that just quoted:

> Insofar as spiritual nature is superior to corporeal nature, corporeal nature must be subject to it — though not with

> respect to the reception of forms. This is because the first beginning (*inchoatio*) of forms in matter, which are said to be natural capacities for form in it, is from the work of the creator, whereas their actualization proceeds from the power of determinate natural agents. With respect to local motion, however, which does not require the positing of any form in what is moved, a body is subject to a spiritual power. (*In II Sent*. d. 8, q. 1, a. 2)

In this passage, Aquinas tells us that, although corporeal nature must be subject to spiritual nature, its subjection is not "with respect to the reception of forms" but only "with respect to local motion" — and this is precisely because local motion "does not require the positing of any form in what is moved." Indeed, Aquinas here suggests that the natural capacity for matter to receive form, or what he calls "the first beginning of forms in matter," must be traced to God, whereas its actualization must be traced to "natural agents" — that is, corporeal objects or bodies.

At this point we might wonder what motivates Aquinas's denial that local motion involves positing any distinct forms in matter. Aquinas explicitly addresses this question in the *Summa*:

> It is clear that what is produced is similar to what produces it, since every agent produces something similar to itself. And so an agent that produces natural things bears a likeness to a compound, either because (a) the agent itself is a compound, as when a fire generates a fire, or (b) because the whole compound, both its matter and form, lies within power of the agent — and this is proper to God alone.
>
> So, then, every reception of form by matter (*omnis informatio materiae*) comes directly either from God or from some corporeal agent, but it does not come directly from any angel. (*ST* Ia, q. 110, a. 2)

Here, Aquinas begins by asserting a likeness principle that he takes to govern efficient causation — namely, that effects must be "similar to" the causes directly producing them. He then proceeds to explain how this principle excludes the possibility of an angel's directly causing the reception of any distinct forms by matter. The effect of such a change would be a compound. But angels are simple substances, and no simple substance — or rather, no simple substance other than God, to whom all creatures bear a likeness — can be similar to a compound. For this same reason, only compounds or God can directly produce a change involving the reception of distinct forms by matter.

Although this passage continues the line of thought developed in the others we have considered, it also clarifies and extends it in certain ways. For one thing, it specifically allows there to be at least one incorporeal substance or spirit that can produce the reception of distinct forms by matter — God. For another, it explicitly restricts the ban on angelic production of these forms to direct causation. This is because Aquinas wants to leave open the possibility that angels can *indirectly* cause the reception of distinct forms by matter. Thus, in the same context he also says:

> By first causing a local motion, angels can cause other changes through it — namely, by applying corporeal agents to the production of their own effects, just as a blacksmith uses fire to soften iron. (*ST* Ia, q. 110, a. 3 ad 2)

The idea here is that, even if an angel cannot directly cause some iron to receive a distinct form, such as a quality of heat or softness, it can indirectly cause that change by directly causing the iron to move closer to a fire.

As all of this helps to make clear, in his treatments of angelic causation Aquinas commits himself to each of the premises of the following argument:

Argument from Angelic Causation

1. Angels cannot directly produce changes in bodies that involve the reception of any distinct forms by matter.

2. Local motion is the only type of change that does not involve the reception of any distinct forms by matter.

3. Hence, local motion is the only type of change that angels can directly produce in bodies.

But, of course, if all of this is right, then Aquinas's views about local motion cannot be governed by P5 and P6. On the contrary, far from accepting the specification of these principles introduced earlier, he instead accepts their *denials* — which we might represent as follows (with changes indicated in **bold**):

(P5*$_{L}$) *Local motion **without** the reception of distinct forms.* For a pre-existing subject's passive potentiality for existing in a new locative state to be actualized is **not** for that subject to receive a new entity — namely, a distinct form that it previously lacked.

(P6*$_{L}$) *Local motion **without** the production of distinct forms.* A pre-existing subject's passive potentiality for existing in a new locative state **can** be actualized without some efficient cause producing a new entity in it — namely, a distinct form that it previously lacked.

And, of course, it is a short step from here to the second of the two Thomistic theses giving rise to the problem of local motion:

Second Thomistic Thesis About Change

(T2) Local motion is a type of change that cannot be analyzed in terms of the reception of any distinct forms by matter.

3. The Problem of Local Motion

Aquinas's views about local motion, then, appear to be in serious conflict with his views about change in general. This is not a problem commentators have directly addressed, but it clearly deserves our attention. In this final section, I offer a solution that resolves the apparent conflict and then highlight some of its most important implications.

3.1 Solution.

To prepare the way for my solution, I wish to consider one further passage from Aquinas's discussion of angelic causation — one that offers further insight into his denial that local motion admits of hylomorphic analysis:

> Now corporeal nature is lower than spiritual nature and, as is proved in *Physics* VIII, local motion is the most perfect of all corporeal change (*motus*). The reason is that something that can change its place is not, as such, in potentiality with respect to anything intrinsic, but is rather in potentiality only with respect to something extrinsic — namely, a place. And that is why a corporeal nature is capable of being moved directly by a spiritual nature with respect to place. (*ST* Ia, q. 110, a. 3)

Here, Aquinas is once again explaining how bodies are subject to spirits — namely, via local motion. But having insisted in the previous article that local motion does not involve the reception of any distinct forms by matter (see again the passage from *ST* Ia, q. 110, a. 2 cited above), he now goes a step further, suggesting that the reason why is that local motion is a type of change "with respect to something extrinsic — namely, a place." Indeed, he suggests here that it is precisely the extrinsicness of local motion that explains why it is "the most perfect of all corporeal change." Initially this suggestion might seem strange. But in fact there is a good reason for it. Insofar as intrinsic change involves the reception of distinct forms, it must also involve some sort of

generation or corruption. But it is precisely because the heavenly bodies are incapable of undergoing any sort of generation and corruption that Aquinas takes them to be the most perfect of all corporeal substances, and hence assumes that the type of change they can undergo must be the most perfect type.

Earlier I noted that Aquinas's four primary or *per se* types of change can be naturally divided into two groups — one substantial and three accidental. But as we now can see, this is not the only way they can be divided. We can also divide them into two other groups — three intrinsic and one extrinsic:

Types of *Per Se* Change Revisited

- *Generation and corruption* (= change in substance)
- *Alteration* (= change in quality)
- *Augmentation and diminution* (= change in quantity)

} Intrinsic

- *Local motion* (= change in spatial location)

} Extrinsic

This further division is, in certain ways, the more important one, at least from an ontological perspective. For it is only intrinsic changes that involve reception of distinct forms by matter, and hence require the positing of some type of compound.

All of this suggests an obvious strategy for resolving the apparent tension in Aquinas's views about change and local motion. In particular, it suggests that we take his apparently general claims about change and the reception of distinct forms to be tacitly restricted to intrinsic change. But if that is right, then we can represent Aquinas's views about change and local motion more perspicuously as follows (once again with changes indicated in **bold**):

Two Thomistic Theses About Change Revisited

(T1*) All **intrinsic** change can be analyzed in terms of the reception of distinct forms by matter.

(T2*) Local motion is a type of **extrinsic** change that cannot be analyzed in terms of the reception of any distinct forms by matter.

The tacit restriction of Aquinas's claims about change and hylomorphism to intrinsic change makes good sense, given how natural it is to think of change specifically in terms of intrinsic change.[28] In addition, this restriction seems to best fit with Aquinas's specific association of matter, form, and privation with generation and corruption of compounds. As noted earlier, he does sometimes speak of all three as principles of change, and in this regard commentators tend to follow him. But as I also noted, more often than not, Aquinas speaks of them as principles of nature, which he specifically associates with generation and corruption.

3.2 Implications.

If my solution to the problem of local motion is correct, it has a number of implications. Here I want to highlight several of the most important.

Principles P1–P6. The first and perhaps most obvious implication has to do with the scope of the six principles we articulated in connection with Aquinas's views about change. Indeed, if my solution is correct, only the first four principles qualify as truly general, and hence apply to changes of any type, including local motion. By contrast, the last two principles apply only to intrinsic change, and so not to local motion (see Table 1).

28. This way of thinking is certainly encouraged by Aquinas's paradigm examples of change. But even in contemporary debates it is standard to focus on such examples, and hence to associate the problem of change almost exclusively with the problem of temporary intrinsics — that is, the problem of how something can have different intrinsic properties at different times.

Change in General		Local motion	
(P1)	*Change and qualified coming-to-be.* For a change to occur just is for a pre-existing subject to come to exist in a new state (i.e., one in which it did not exist previously).	($P1_L$)	*Local motion and qualified coming-to-be.* For a local motion to occur just is for a pre-existing subject to come to exist in a new locative state (i.e., one in which it did not exist previously).
(P2)	*Change and the actualization of passive potentiality.* For a pre-existing subject to come to exist in a new state just is for its passive potentiality for existing in that state to be actualized.	($P2_L$)	*Local motion and the actualization of passive potentiality.* For a pre-existing subject to come to exist in a new locative state just is for its passive potentiality for existing in that state to be actualized.
(P3)	*Change and efficient causation.* A pre-existing subject's passive potentiality for existing in a new state cannot be actualized without some efficient cause acting on it.	($P3_L$)	*Local motion and efficient causation.* A pre-existing subject's passive potentiality for existing in a new locative state cannot be actualized without some efficient cause acting on it.
(P4)	*Change and the ontology of states.* For a pre-existing subject to come to exist in a new state just is for that subject to come to be newly related to a distinct entity — namely, a terminus of change.	($P4_L$)	*Local motion and the ontology of states.* For a pre-existing subject to come to exist in a new locative state just is for that subject to come to be newly related to a distinct entity — namely, a terminus of local motion.
Generation and corruption		Local motion	
(P5)	*Change and the reception of distinct forms.* For a pre-existing subject's passive potentiality for existing in a new state to be actualized just is for that subject to receive a new entity — namely, a distinct form that it previously lacked.	($P5^*_L$)	*Local motion* **without** *the reception of distinct forms.* For a pre-existing subject's passive potentiality for existing in a new locative state to be actualized is **not** for that subject to receive a new entity — namely, a distinct form that it previously lacked.
(P6)	*Change and the production of distinct forms.* A pre-existing subject's passive potentiality for existing in a new state cannot be actualized without some efficient cause producing a new entity in it — namely, a distinct form that it previously lacked.	($P6^*_L$)	*Local motion* **without** *the production of distinct forms.* A pre-existing subject's passive potentiality for existing in a new spatial location **can** be actualized without some efficient cause producing a new entity in it — namely, a distinct form that it previously lacked.

Table 1: Change vs. Types of change

Extrinsic denomination. A second important implication of my solution has to do with Aquinas's views about extrinsic denomination. To explain why, I must say a little about how Aquinas understands denomination in general and extrinsic denomination in particular.[29]

Like other medieval philosophers, Aquinas thinks that whenever we have a true predication of the form *'a* is *F'*, we thereby have some

29. For a helpful introduction to medieval theories of denomination and the secondary literature on this topic, see Embry 2015.

being or entity that is denominated by the predicate '*F*' — namely, *a* itself — as well as some basis for this denomination — namely, whatever it is that accounts for the truth of the predication in question. Thus, if 'Socrates is white' is true, then Socrates is denominated as 'white' on the basis of his whiteness. Likewise, if 'Socrates is somewhere' is true, then Socrates is denominated as 'somewhere' on the basis of his relation to a place.

Now just as Aquinas thinks we can distinguish between intrinsic and extrinsic change, so too he thinks we can distinguish between intrinsic and extrinsic denomination:

> There are two ways in which a denominative predication can occur: (1) something can be denominated from what is extrinsic to it, as when someone is said to be 'somewhere' from a place or 'some-when' from a time; or (2) something can be denominated from what is intrinsic to it, as when someone is said to be 'white' from his whiteness. (*SCG* 2, cap. 3, n. 3)

Here, Aquinas suggests that a true predication such as 'Socrates is white' involves intrinsic denomination, whereas a true predication such as 'Socrates is somewhere' involves extrinsic denomination. Nor is it hard to see why. For the basis of Socrates's denomination as 'white' would appear to involve only what is intrinsic to him — his color — whereas the basis for his denomination as 'somewhere' would appear to involve his relation to at least one thing extrinsic to him — a place.

In medieval discussions of denomination, it is standard to speak of the basis for any given denomination as a form. But as I noted at the outset of this paper, Aquinas denies that this way of speaking should be taken with ontological seriousness: "The basis for a denomination need not always be a form in extramental reality." We're now in a position to understand why. If the basis for every denomination were a form in extramental reality, then all relations, including a body's relation to its place, would have to be distinct forms. But as we have seen, this view is incompatible with Aquinas's own understanding of local motion. Additionally, if we return to the passage I quoted at the outset of the paper and consider it in its original context, where it occurs as part of a reply to an objection, we can see that this same view is also incompatible with Aquinas's understanding of extrinsic denomination:

> *Objection.* The basis for every denomination is a form. But a form is something inhering in that of which it is the form. Therefore, since God is denominated from his relations to creatures, it would seem that these relations are something [inhering] in God. (*QDP* q. 7, a. 10, obj. 8)
>
> *Reply.* The basis for a denomination (*a quo aliquid denominatur*) need not always be a form in extramental reality (*secundum rei naturam*). On the contrary, it suffices for it to be signified in the manner of a form grammatically speaking. For a man can be denominated from his action, from his clothing, or from other things of this sort, but these are not really forms. (*QDP* q. 7, a. 10, ad 8)

Here, Aquinas is dealing with a theological worry about extrinsic denomination that exactly parallels the one involving a body's relation to a place. For just as a body can be denominated as 'somewhere' on the basis of its relation to a place, so too God can be denominated as 'creator' or 'Lord' on the basis of his relations to his creatures. But as Aquinas sees it, God's relations to his creatures can no more be understood in terms of distinct forms than a body's relation to a place can be. And the same is true for other extrinsic denominations — whether they involve relations to actions, clothing, or "other things of this sort." And as all of this helps to make clear, Aquinas has a distinctive theory of denomination in general and extrinsic denomination in particular. For as I noted earlier, there were medieval philosophers, like Scotus, who take both intrinsic and extrinsic denominations to include forms as a part of their basis.[30]

30. In later medieval and early modern debates about denomination, it becomes

Spatial location. Another closely related implication of my solution has to do with Aquinas's views about spatial location. As the foregoing makes clear, Aquinas is committed to each of the following claims: (a) spatial location is a relation (in particular, one a body bears to any place it fills), and (b) spatial location is not a form or entity in extramental reality. But it is hard to see how to makes sense of his commitment to these two claims, unless we also assume that (c) spatial location is a mind-dependent feature of objects (say, as an act of thought or mental comparison). And yet it seems clear that Aquinas would reject (c). After all, he takes spatial location to be one of the ten Aristotelian categories, and he takes the categories themselves to provide us a with a mind-independent classification of the world.[31] But this merely increases our difficulty. For if spatial location is a mind-independent feature of objects and cannot be understood in terms of any extramental form or entity, how is it to be understood?

I think that Aquinas's preferred answer to this question would be: "as a specific mode of being." For this is how he understands the Aristotelian categories themselves — namely, as ten distinct modes of being (*modi essendi*) corresponding to ten distinct modes of predicating (*predicating)*:

> Being is divided into the ten predicaments not univocally, as a genus into its species, but according to distinct modes of being (*modi essendi*). Now these modes of being correspond to [distinct] modes of predicating (*modi predicandi*). For when one thing is predicated of another, we say the one *is* the other. And this is why the ten categories (*decem genera*) are called *predicaments*. (*In III Phys.*, lect. 5, n. 15)

Obviously the details of Aquinas's category theory go beyond this paper. But his identification of the Aristotelian categories themselves with distinct modes of being helps to make sense of how he thinks of spatial location in particular. For a mode of being is presumably just a "way" things can be. And although "ways" of being may, in some cases, be understood in terms of entities — say, as substrata and their distinct forms — they need not always be so understood. Indeed, there have been many philosophers historically who insist that relations in particular can be understood as primitive modes of being. This is especially clear in traditional debates about universals.

Consider, for example, proponents of austere nominalism, or the view that there are no properties or universals of any sort. Such philosophers typically allow that things can change their colors, shapes, and sizes apart from any activity of the mind. To explain how this is possible, they also usually conceive of colors, shapes, and sizes in terms of a relation of resemblance. But of course they do not conceive of this relation as a property or universal — or indeed as an entity of any type. On the contrary, they simply take it to be a primitive "way" things can relate to one another.[32] And even those most critical of austere nominalism often help themselves to this same understanding of relations. It is standard among realists about universals, for example, to insist that, even though things instantiate universals, instantiation itself cannot be identified with any entity. Rather, it must be taken as a primitive "way" things can relate to properties.[33]

What all this suggests is that Aquinas's views about spatial location represent a distinctive form of realism, one we might refer to as

increasingly common to distinguish three types of denomination — intrinsic, extrinsic, and semi-extrinsic — depending on whether the basis for the denomination is wholly intrinsic to the subject, wholly extrinsic to it, or partly intrinsic and partly extrinsic. See again Embry 2015. Insofar as Scotus takes denominations on the basis of spatial location to include relational forms, where such forms are monadic properties inhering in their subject, his theory of such denominations might best be described as *semi-extrinsic*.

31. See, for example, *QDP* q. 7, a. 9: "Nothing is placed in any category unless it is something existing outside the soul."

32. For a contemporary defense of austere nominalism, see Lewis 1983.

33. See again Lewis 1983, which notes that one of the most prominent contemporary defenders of realism about universals, David Armstrong, "declines, with good reason, to postulate a dyadic universal of instantiation to bind particulars to their universals" (p. 443).

non-ontic realism and contrast with more familiar views about spatial location as follows:

Three Views About Spatial Location

- *Anti-realism*. Spatial location is a mind-dependent entity (say, an act of thought or mental comparison).
- *Ontic realism*. Spatial location is a mind-independent entity (say, a type of form or property).
- *Non-ontic realism*. Spatial location is not an entity of any type, but rather a primitive, mind-independent features of things (say, a special mode of being).[34]

Potentiality, actuality, and efficient causation. Finally, I want to highlight some important implications my solution has for Aquinas's understanding of potentiality, actuality, and efficient causation.

The first thing to note is that my solution introduces a division of potentiality and actuality whose significance has yet to be appreciated in the literature. Aquinas's division of potentiality into active vs. passive potentiality is well known and often remarked on; the same can be said for his treatment of the two types of actuality corresponding to these two types of potentiality (action vs. passion).[35] But if my solution is correct, Aquinas also divides potentiality into intrinsic vs. extrinsic potentiality — that is, potentiality for an intrinsic vs. an extrinsic state — and he treats the types of actuality corresponding to these two types of potentiality very differently. Thus, the actuality corresponding to an intrinsic potentiality is a distinct form, whereas the actuality

34. Aquinas's views about spatial location connect, in interesting ways, to contemporary debates about metaphysical structure. In this context, what I am calling a primitive relation (or special mode of being) is often referred to as *non-ontic structure*. See Finocchiaro 2018 for a helpful introduction to these debates, as well as a defense of the intelligibility of non-ontic structure. And see also Brower-Toland forthcoming for an interpretation of Ockham as explicitly defending the sort of realism about spatial location that I'm here suggesting Aquinas is committed to and also connecting it to debates about metaphysical structure.

35. See, e.g., the discussion of these divisions in Frost 2022 and Löwe 2021.

corresponding to an extrinsic potentiality is a primitive relation or mode of being. And this, in turn, has important implications for Aquinas's understanding of efficient causation.

Just as it is natural to think of change in terms of the reception of distinct forms, so too it is natural to think of efficient causation in terms of the production of entities. But if my solution is correct, this can be only part of the story. When an agent produces an intrinsic change, by causing the actualization of an intrinsic potentiality, the result is a new form and compound. By contrast, when an agent produces a local motion, by causing the actualization of an extrinsic potentiality, no new entities of any type result. Instead, when an agent produces a local motion, it merely causes some pre-existing entities (say, bodies and places) to be primitively differently related.

This last point is important because it helps us to appreciate an important restriction on the likeness principle governing efficient causation. Aquinas often speaks as if this were a perfectly general principle. But in fact it seems to apply only to efficient causation of intrinsic changes. For presumably it is only when agents produce new entities that they must be like the entities they produce. By contrast, in the case of productions involving the mere rearrangement of pre-existing entities — as, for example, when an angel causes some iron to be closer to a fire — there is no reason to expect a likeness. Indeed, in such cases there appears to be nothing for the agent to bear a likeness to!

Finally, it is worth noting that if my solution to Aquinas's puzzle is correct, we must resist the tendency to identify form, in an ontologically robust sense, with actuality for Aquinas. As we have seen, Aquinas himself sometimes speaks *as if* he accepts this identification. But if what I have said here is right, this identification holds only for the type of actuality involved in the actualization of an intrinsic potentiality. For it is only the actualization of this type of potentiality that can be said to result in new entities of any type.[36]

36. Earlier versions of this article were presented at five conferences: *Colloque de recherche Institut de Philosophie Université de Neuchâtel* (September 2022), *Human Abilities Colloquium* in Berlin (April 2022), *Second Scholasticism: A*

Bibliography

Algra, Keimpe. 1994. *Concepts of Space in Greek Thought*. Leiden: Brill.

Brower, Jeffrey. 2018. "Medieval Theories of Relations," *The Stanford Encyclopedia of Philosophy* (Winter 2018 Edition), Edward N. Zalta (ed.), URL = <https://plato.stanford.edu/archives/win2018/entries/relations-medieval/>.

_____. 2014. *Aquinas's Ontology of the Material World: Change, Hylomorphism, and Material Objects*. Oxford: Oxford University Press.

Brower, Jeffrey and Susan Brower-Toland. 2008. "Aquinas on Mental Representation: Concepts and Intentionality," *The Philosophical Review* 117: 193–243.

Brower-Toland, Susan. Forthcoming. "Ockham's Metaphysical Commitments: The Case of Location," *Australasian Journal of Philosophy*.

Cohoe, Caleb. 2013. "Why the Intellect Cannot Have a Bodily Organ: *De Anima* 3.4," *Phronesis* 58: 347–377.

Cross, Richard. 1998. *The Physics of Duns Scotus*. Oxford: Clarendon Press.

Embry, Brian. 2015. "Truth and Truthmakers in Early Modern Scholasticism," *Journal of the American Philosophical Association* 1: 196–216.

Finocchiaro, Peter. 2018. "The Intelligibility of Metaphysical Structure," *Philosophical Studies* 176: 581–606.

Frost, Gloria. 2022. *Aquinas on Efficient Causation and Causal Powers*. Cambridge: Cambridge University Press.

Grant, Edward. 1976. "Place and Space in Medieval Thought." In *Motion and Time, Space and Matter: Interrelations in the History of Philosophy and Science*, ed. Peter Machamer and Robert Turnbull. Columbus: Ohio State University Press, 137–167.

——. 1981. *Much Ado about Nothing: Theories of Space and Vacuum from the Middle Ages to the Scientific Revolution*. Cambridge: Cambridge University Press.

Henninger, M., 1989. *Relations: Medieval Theories 1250–1325*. Oxford: Clarendon Press.

Lewis, David. 1983. "New Work for a Theory of Universals," *Australasian Journal of Philosophy* 61 (4): 343–377.

Löwe, Can. 2021. *Thomas Aquinas on the Metaphysics of the Human Act*. Cambridge: Cambridge University Press.

Macdonald, Scott. 1991. "Aquinas's Parasitic Cosmological Argument," *Medieval Philosophy & Theology* 1: 119–155.

Morison, Benjamin. 2002. *On Location: Aristotle's Concept of Place*. Oxford: Oxford University Press.

Odzuck, Sebastian. 2014. *The Priority of Local motion in Aristotle's Physics*. Göttingen: Vandenhoeck & Ruprecht.

Pini, Giorgio. 2005. "Scotus's Realist Conception of the Categories: His Legacy to Late Medieval Debates," *Vivarium* 43: 63–110.

Thomas Aquinas. 1882–. *S. Thomae Aquinatis Doctoris Angelici Opera Omnia*. Rome: Commisio Leonina.
Vols. 4–12: *Summa theologiae*.
Vol. 43: *De principiis naturae*.
Vol. 45.1: *Sentencia libri De anima*.

_____. 1971. *In duodecim libros Metaphysicorum Aristotelis expositio*, ed. M. R. Cathala and R. M. Spiazzi. Rome: Marietti.

_____. 1965. *Quaestiones disputatae de potentia*, ed. P. M. Pession. Rome: Marietti.

_____. 1929–47. *Scriptum super libros Sententiarum*, ed. P Mandonnet and M. F. Moos. Paris: P. Lethielleux.

Trifogli, Cecilia. 2000. *Oxford Physics in the Thirteenth Century (Ca. 1250–1270): Motion, Infinity, Place, and Time*. Leiden: Brill.

_____. 2017. "Thomas Wylton and Walter Burley on Local Motion and Relative Change." In *Lieu, espace, mouvement. Physique, métaphysique et cosmologie* (XIIe-XVIe siècles), eds. Suarez-Nani, Tiziana, Olivier Ribordy, and Antonio Petagine. Barcelona: Brepols, 145–164.

Conference in Honor of Stanislaw Sousedik (November 2021), *Society of Medieval and Renaissance Philosophy Inaugural Conference* (October 2021), and *Cornell Colloquium in Medieval Philosophy* (June 2021). I am grateful to audiences on all five occasions for stimulating comments and criticism. For further comments, criticism, and advice, I am also grateful to Simona Aimar, Susan Brower-Toland, Caleb Cohoe, Heine Hansen, Kathrin Koslicki, Jordan Lavender, Can Löwe, Scott MacDonald, Bob Pasnau, Dominik Perler, Chris Shields, Zita Toth, Rega Wood, and two anonymous referees for this journal.

Wippel, John F. 2000. *The Metaphysical Thought of Thomas Aquinas: From Finite Being to Uncreated Being*. Washington, D.C.: The Catholic University of America Press.