Medieval Modalities

Robert Pasnau and Arif Ahmed

I—Robert Pasnau

Medieval Modal Spaces

There is often said to be something peculiar about the history of modal theory up until the turn of the fourteenth century, when John Duns Scotus decisively reframed the issues. I wish to argue that this impression of dramatic discontinuity is almost entirely a misimpression. Premodern philosophers prescind from the wide-open modal space of all possible worlds because they seek to adapt their modal discourse to the explanatory and linguistic demands of their context.

I

Introduction. It is widely agreed that there is something peculiar about premodern conceptions of necessity and possibility. As Sarah Broadie once complained, Aristotle's ways of connecting modality and time 'find no echo in the standard modern treatment of these modalities' (Broadie 1982, p. 1). For the centuries that run through later antiquity and into the early Middle Ages, the situation hardly became more familiar until, as the usual historical narrative goes, the turn of the fourteenth century, when John Duns Scotus decisively reframed the issues. Antonie Vos and colleagues speak in this regard of Scotus's 'splendid discovery' of synchronic contingency, which they take to supply the 'cornerstone of so-called possible worlds semantics' (John Duns Scotus 1994, pp. 6, 30). In the wake of this innovation, as the story goes, the subsequent history of modal thought falls into line along the path our current conceptions of modality would naturally lead us to expect.

I wish to argue that this impression of dramatic discontinuity, bridged by sudden innovation, is almost entirely a misimpression. Premodern modal thought is not generally as strange as it looks, and Scotus's alleged innovations are in large part neither his own nor reflective of a dramatic reconception of basic modal principles. But this is by no means to suggest that the history of modal thought lacks

Aristotelian Society Supplementary Volume xciv
doi: 10.1093/arisup/akaa004

the sort of provocative departures from current orthodoxy that give the work of prior generations its abiding interest. On the contrary, although premodern philosophers generally have our concept of modality—otherwise, indeed, they would not be talking about modality at all—they often seek to restrict their modal thinking in ways that are surprising from our current vantage point. Rather than help themselves to the wide-open modal space of all possible worlds, the tendency of philosophers in antiquity and the Middle Ages is to restrict their attention, even in modal contexts, to the actual world. This tendency to work within a smaller modal space can make premodern modal talk look wholly alien, if not simply confused. In fact, however, these authors prescind from our wide-open modal spaces because they seek to adapt their modal discourse to the explanatory and linguistic demands of their context. In what follows, I will look at the golden century of medieval thought that runs between 1250 and 1350, with a view to raising the question of whether all this modal space is as helpful as we tend to assume.

Before attempting to make good on these claims, let me stress that I by no means wish to challenge the usefulness of modern modal logic as a tool for thinking extensionally about modal operators by quantifying over possible worlds. Indeed, although in what follows I will not belabour the point, careful consideration of one or another historical claim often benefits from thinking through the issues in these terms. Moreover, I know of no reason why quantified modal logic, supplemented by various sorts of restricted accessibility relations between worlds, cannot capture in formal terms precisely the sort of limited modal space in which premodern authors often choose to work. Yet even if quantifying over possible worlds provides sufficient formal resources, there is a danger in its very capaciousness. Like the land from which it comes, our modern modal logic might be said to give us too much—more space than we need, more food on the plate than we could ever eat, more horsepower under the hood than we will ever have occasion to use. What's the harm in such over-abundance? Perhaps there is none, for those equipped with the virtues of prudence and temperance. In the wrong hands, however, these open modal spaces may easily lead us astray. This, I believe, is the lesson we can take from looking at medieval discussions.

Aristotelian Society Supplementary Volume xciv
doi: 10.1093/arisup/akaa004

II

Surprising Correlations between Modality and Time. The feature of premodern modal thought that looks most obviously incongruous is the way it tends to fuse temporal and modal considerations. To take a very egregious case, Diodorus Cronus, circa 300 BCE, is reported to have offered the following account:

> The possible is that which either is or will be [true]; the impossible that which is false and will not be true; the necessary that which is true and will not be false; the non-necessary that which either is false now or will be false. (Boethius 1998, p. 176)

This yields a temporal rendering of modality in purely extensional terms limited to present and future states of the actual world. Diodorus seems to think it true by definition that the possible, for example, includes all and only those statements that either are true or will be true. Boethius, our source for this report, immediately complains that this is a hopeless account: it has the absurd consequence that someone who dies at sea could not have died on land.[1] But this temporal interpretation of modality crops up throughout premodern discussions. Aristotle, for instance, seems to endorse the thought that 'it cannot be true to say "this is capable of being but will not be"' (*Meta.* IX.4, 1047b4). Later, Aquinas puts what looks to be the logically equivalent claim into the middle of his Third Way: 'that which possibly does not exist, at some time does not exist' (*Summa Theologiae* 1a 2.3c).[2] Such claims look alien indeed from our current vantage point.

Perplexingly, however, many authors who seem to help themselves on occasion to temporal models of modality elsewhere disavow the model. Aristotle offers this example: 'it is possible for this

[1] For a surprisingly enthusiastic appraisal of Diodoran modality, see Denyer (1981). There is much that we do not know, including the very question of why Diodorus adopts this view. One possibility is that it falls out as a consequence of the so-called Master Argument (see Bobzien 1999). Another possibility is that it follows from a metaphysical commitment to the world's containing a plenitude of all possibilities. Lovejoy (1960) traced this idea across many periods, and Hintikka (1973) argued for its connection to temporal modality. Following Hintikka, 'statistical modality' is often used for this sort of view, but it would be better if this unhappy label were retired.

[2] See also *ST* 1a 48.2c. Where possible, I cite published English translations, although the quotations are generally my own rendering of the text. Aside from a few instances where more precision is required, I will follow my historical source in speaking flexibly and casually about modalities as applying to propositions, sentences, states of affairs, facts, events, and even, as here, things.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

cloak to be cut up, and yet it will not be cut up but will wear out first' (*De interpretatione* 9, 19a13–14). And Aquinas critiques the above Diodoran modalities with the remark that 'something is necessary not because it always will be, but rather it always will be because it is necessary, and the same is clear in the other cases' (Thomas Aquinas 1962, I.14 n.8).[3] This rules out an *analysis* of modality in temporal terms, even if it perhaps leaves some room for surprising correlations between time and modality.

There is a very large and sophisticated literature on these topics, and I will make no attempt to adjudicate all the relevant issues.[4] Instead, in what follows, I will limit myself to considering three cases where later medieval authors link time and modality in ways that now strike us as surprising. The first will concern debates over the necessity of the past, in the context of debates over whether God can change the past. The second will take up the alleged necessity of the present, in the context of debates over the contingency of human choices. The last will consider how medieval logicians, when offering their own extensional account of modal terms, explicitly provide for a distinction between a narrow, temporal reading of modality and the wide-open reading associated with modern possible-worlds semantics.

Discussions of these issues very often take for granted that the necessity of the past and present is symptomatic of a commitment to temporal modalities. Alanen and Knuuttila (1988), for instance, remark that it would otherwise be 'mysterious' why anyone would endorse the necessity of the present (p. 27). As we will see, however, the issues in play are quite different. And although none of these medieval authors use the language of 'possible worlds' in this context, we will also see that this too is quite beside the point. Interesting as it might be to watch this mixed cosmological–metaphysical metaphor come increasingly into use, that story is not particularly relevant to the history of modal theory.[5] The story that matters is the choice to

[3] See also William Ockham: 'A sentence is said to be necessary not because it is always true, but because if the sentence exists it is true and cannot be false' (*Summa logicae* II.9 [*OPh* I: 275]). For a generally critical discussion of the claim that Aquinas and other scholastic authors are committed to temporal modality, see Jacobi (1983).

[4] Important studies of various aspects of these debates, beyond the works cited elsewhere in the notes, include (Sorabji 1980; Bobzien 1993; Knuuttila 1993).

[5] On the origins of talk of possible worlds, see Kukkonen (2000) and Schmutz (2006). The tendency to conflate a modern conception of modality with the notion of possible worlds, and to associate both with Scotus, is widespread. See, for instance, Knuuttila (1982,

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

work within a smaller modal space, and the reasons these authors offer for those restrictions.

III

The Necessity of the Past. There is essentially no controversy, among philosophers today, that the past could have been otherwise. We can imagine its being so; there is nothing incoherent in its being so; we can describe possible worlds in which it is so. Among premodern authors, in contrast, there is a broad consensus that the past is necessary. Aristotle says as much,[6] and Diodorus's temporal account of the modalities, as quoted earlier, does not even bother to mention past times, because he takes for granted that such truths are necessary by default. The assumption holds firm in Chrysippus, Boethius, and later in Aquinas, Scotus, and Ockham, and seems uncontroversial even as late as Jonathan Edwards.[7] In a rough sort of way, it is clear enough why there is this disagreement. For whereas we now understand the question in terms of the wide-open space of unrestricted logical possibility, premodern authors limited themselves to some more restricted domain. But since these earlier discussions rarely say much about why they think the past is necessary, it will take some work to see what exactly this restricted modal space looks like and why they understand the modal question in those terms.

One common explanation is that the necessity of the past is simply a corollary that follows from embracing a temporal model of modality. After all, if modal claims are made true only by their truth or falsity at some actual moment in time, then a true proposition that is restricted to the time at which it is true must be true. If, for instance, it is true that Serena ran at *t*, then there is no modal space for this to be anything other than true, and so it comes out as necessarily true. Yet, as we have seen, temporal modality was very far from taken for

p. 355): 'Thus it was not Leibniz who invented the idea of possible worlds; the idea is present in Duns Scotus' modal theory, and this new view of modal notions constitutes the general basis of fourteenth-century modal logic.'

[6] See *De caelo* I.12, 283b12–14; *Nicomachean Ethics* VI.2, 1139b5–11; *Rhetoric* III.17, 1418a4–5.

[7] Chrysippus, in Cicero, *De fato* 12–15 (1942, pp. 204–9); Boethius 1998, pp. 180–1; Aquinas, *ST* 1a 25.4; Scotus, *Lectura* I.39 n.69 (1994, p. 152); Ockham, *Quodlibet* II.5 (*OTh* IX: 133); Edwards (1829, pp. 114–15 [part 2, §12]). For an inventory of ancient and medieval authorities, see Thomas Buckingham (1992, pp. 269–73).

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

granted during the later Middle Ages. Hence we need a more complicated story about what motivates the necessity of the past.

A more credible explanation is that it arises from circumscribing modality to some sort of natural necessity. For if the question is 'What can I do?' or, more generally, 'What can anyone do?', then, holding fixed the natural order of things, it would seem that the past cannot be *made* otherwise. This understanding of what is being claimed fits well with how a temporal–modal link is sometimes motivated. Aristotle, for instance, writes that 'there is no power over what is in the past, but over what is in the present or future' (*De caelo* I.12, 283b12–13). Here, as is regularly the case in Aristotle, the word he uses for power (*δύναμις*) is closely related to his word for possible (*δυνατόν*). When possibility is conceived of in terms of what is in a thing's power, it becomes intuitive to incorporate temporal and causal information about the natural world into one's thinking, making facts about the past look not just settled but even necessary. And if this strikes us as a peculiar view, that would be because we are thinking in terms of some less restricted modal concept, perhaps that of metaphysical or logical possibility. For medieval authors, in contrast, what is possible for a thing is standardly understood in terms of what sort of powers a thing has (see below). And so an obvious diagnosis of what has changed in our view of the necessity of the past is that we are simply understanding the question in terms of a wider space of modal possibilities. We need not suppose that either party is confused in its thinking or in the grips of a tendentious metaphysics.

Yet, as natural as this line of thought is, it does not fit how the discussion actually goes. Medieval authors standardly want to claim not only that the past is necessary for us, but that it is necessary in some more absolute sense, such that not even God can make the past be otherwise. Aristotle had said as much (*Nicomachean Ethics* VI.2, 1139b5–11), and this claim is generally accepted throughout the Middle Ages, by all the most prominent authors. Again, then, it becomes tempting to think that something is missing from their conception of modality, perhaps a conception of what it means for a thing to be logically possible, possession of which would have made it seem obvious that, say, Socrates could have been a dentist. Here is a place where Scotus has often been said to be decisively innovative, because he clearly articulates a notion of logical possibility (*possibile logicum*), as applying to a sentence 'whose terms do not include a

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

contradiction' (*Ordinatio* 1.2.2.1–4 n.262; *Opera* 2:282–3). On this basis, it has been suggested that Scotus *ought* to have denied the necessity of the past, and yet in fact he insisted on it, in just the way his contemporaries did.[8] So what is going on?

Here is one of those cases where it is a mistake to look to Scotus for innovations in modal thought. Contrary to what has often been said, he is very far from having invented the notion of logical possibility. Although it does seem that he was the first ever to use that exact phrase, the idea itself is clearly described by Aquinas, who is himself following the lead of earlier scholastic authors.[9] Indeed, both Aquinas and Scotus attribute the idea to Aristotle, and even if it is only doubtfully present in Aristotle's text, it does seem identifiable in Stoic thought.[10]

It is instructive to look at how Aquinas talks about logical possibility:

> The possible is said in two ways according to the Philosopher in *Metaphysics* V. In one way with respect to some power, as when that which is subject to a human power is said to be possible for a human being. ... In the other way of speaking of the possible, something is said to be possible or impossible absolutely, from how the terms stand to one another. It is possible because the predicate is not repugnant to the subject, as that Socrates sits. It is absolutely impossible because the predicate is repugnant to the subject, as that a human being is a donkey. (Thomas Aquinas, *ST* 1a 25.3c)[11]

The context is a discussion of God's omnipotence. Aquinas begins by drawing the connection mentioned earlier, between the possible (*possibile*) and power (*potentia*), but here he sets it aside as unhelpful in thinking about omnipotence, because it would take us in a circle to define divine omnipotence in terms of the powers possessed by God. So he turns instead to the 'absolute' impossibility that arises

[8] See, for example, Vos et al., in John Duns Scotus (1994, pp. 32–3). Normore (1996) suggests that it was Scotus's influence that led later authors to deny the necessity of the past. On Scotus's conception of logical possibility in general, see King (2001, pp. 181–4).

[9] See Solère (2000) and Schmutz (2006, pp. 16–25). For Scotus as the originator of the term, see Schmutz (2006, note 35), with references to earlier literature.

[10] Both Scotus (*Ordinatio* 1.2.2.1–4 n.262 [*Opera* 2: 282]) and Aquinas (*ST* 1a 25.3c) cite *Metaphysics* V.12, presumably with an eye toward 1019b22–35, though it is not obvious the notion is there. For logical necessity within Stoicism see, for instance, de Harven (2016).

[11] See also *Summa contra Gentiles* II.37.5. For a detailed discussion of Aquinas's conception of possibility, see Stolarski (2001). The impossibility of a human being's being a donkey might seem metaphysical rather than logical. Throughout the premodern era, so far as I am aware, that distinction is not explicitly drawn, and I will not attempt to draw it myself.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

from a contradiction in terms, and he uses this to set the limits of God's power. Evidently, Aquinas does not regard it as circular to define omnipotence in this way, which suggests that he considers logical possibility to be independent of God's power. Here is another place where credit has wrongly been given to Scotus. Although Scotus explicitly stresses the point that logical possibilities would obtain even if, *per impossibile*, there were no God, this too seems to be something that Aquinas recognizes, albeit less explicitly.[12]

Yet, returning to the question at hand, if later medieval authors have available to them this wide-open conception of logical possibility, why do they generally insist that the past is necessary? There is, again, no evident logical impossibility in the supposition that Socrates was a dentist. At this point, though, we might distinguish several versions of that supposition. One thing we might be supposing is our *discovering* that Socrates spent his youth pulling the rotten teeth of his fellow Athenians. This clearly does seem possible, but the possibility is wholly epistemic and so irrelevant for present purposes. Another supposition would be that Socrates could have spent his younger years as a dentist, given that in fact he never did any such thing. This sort of *conditional* possibility looks on its face to be contradictory. Is this, then, the sense we have been looking for in which the past is necessity? On the face of things, the suggestion looks promising. Medieval authors often say that the necessity of past events is merely *accidental*, by which they mean that they are necessary only given that they in fact happened.[13] And when Aquinas, in the article immediately following the one just quoted, expressly insists that it is a contradiction for God to make the past not to have been, the key move in his argument might seem to be making only a conditional claim: 'just as it implies a contradiction to say that Socrates sits and does not sit, so too that he will have been sitting and will not have been sitting' (*ST* 1a 25.4c). So we may here have found common ground between ourselves and early views, in

[12] For Scotus, see, for example, *Ordinatio* 1.7.1 n.27 (*Opera* 4: 118), *Questions on the Metaphysics* 9.1–2 n.18 (John Duns Scotus 1997–8, p. 459), and the detailed discussion in Mondadori (2004). For Aquinas, see also *Power of God* 3.1 ad 2 and 3.17 ad 10. There is dispute among scholars, however, over whether Aquinas does separate possibility from God. For the negative case see Wippel (1981).

[13] See, for instance, Aquinas, *ST* 1a 25.4 obj. 1; Ockham, *Ordinatio* prol. q. 6 (*OTh* 1: 178).

Aristotelian Society Supplementary Volume xciv
doi: 10.1093/arisup/akaa004

the conditional claim that past events are necessary, given that they did indeed happen.

But again this cannot quite be right. Aquinas, for instance, cannot mean to insist only on the trivial $\neg\Diamond(p \wedge \neg p)$ or the equivalent $\Box(p \rightarrow p)$. After all, these are claims that hold for any proposition, whatever its tense, and so one could equally say that, given that my daughter will be a dentist, it is necessary that she will be a dentist. Evidently, we have become ensnared, like so many before us, in the familiar equivocation between the composite and divided senses of conditional modal claims. The above composite-sense readings are too trivial to be what is at stake in these discussions, and so we need to shift to the divided sense of the conditional: $p \rightarrow \Box p$. For even while philosophers have famously struggled to resist the future-tense divided sense, on which future events become necessitated, they generally have wanted to embrace that divided-sense conditional when set in the past. And so now our puzzle about the necessity of the past can be reframed in the light of this difference: why should there be this sort of temporal asymmetry, so that past-tense truths come out as necessary whereas (at least some) future-tense truths remain contingent?

Here is a good place to introduce a further complication in our story, which is that some medieval authors simply denied that any such asymmetry obtains, and instead argued that the past is not necessary. This thought—usually framed as the claim that God can make the past be different—had only a slender thread of support running through earlier centuries, but become a major subject of contention in the fourteenth century. Thomas Bradwardine seems to have been the instigator of the debate, with his insistence that all things that happen—past, present and future—happen according to the omnipotent will of God. In virtue of God's immutable eternal will, both the past and the future are necessary. But because God can will whatever does not involve a contradiction, and because all times are equally present to God, there is no asymmetry with regard to the modal status of the past and future. Just as God can will a different future, so God can will a different past. Bradwardine's main interest is to secure the necessity of all events, as caused directly by God, and so to refute the invidious influence of the obstinate Pelagians. Inasmuch as God's will is both perfectly efficacious and also timelessly eternal and so immutable, what God wills must necessarily be the case. Still, God's will is free, and so God's choices are contingent,

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

and so what takes place could be otherwise. In general, 'there is, for God, an equal necessity with respect to the future and the past, inasmuch as all these things are, for him, in the eternal present' (*De causa Dei* III.52 [1618, p. 866 D]). Bradwardine's views were harshly criticized by his fellow Mertonian, Thomas Buckingham, who in turn gets attacked by Gregory of Rimini, who officially remains neutral in the debate but makes clear that his sympathies are in favour of God's power over the past. Later in the fourteenth century, in the face of Church pressure, John of Mirecourt would have to retract arguments in favour of the past's being able to be otherwise.[14]

It is, however, surprisingly hard to see what these authors are disagreeing about. No one claimed that God could make true contradictions: that, at a certain time in the past, Serena was running and was not running. Accordingly, both Bradwardine and Rimini were happy to grant the conditional (composite-sense) necessity of the past, and indeed of the future.[15] Nor did anyone defend the view that God could 'undo' the past, in the sense that, at some past time, Serena was running, and then at some later time God somehow changed or erased that earlier fact, so that, from that later time forward, it was no longer true that Serena was running at that earlier time. For better or worse, the debate is not that arcane, even if some of the rhetoric might suggest as much. Instead, what both Bradwardine and Rimini urge is that it is possible, now, for God to make it so that the past had always been different—as Rimini carefully puts it, 'for every past thing, God can make it that it was not' (1979–84, p. 362).

Even here, however, the grounds of disagreement remain unclear. All parties to the dispute agreed that God exists in a timelessly eternal present, and that, from the perspective of that eternal present, God has the free and omnipotent power to make the world be as he wants it to be. Moreover, virtually no one took divine eternality to imply that, at the created level, past, present and future things equally exist. On the contrary, the consensus view was that only the

[14] See Gregory of Rimini, *Sentences* I dist. 42–44 q. 1 (1979–84, pp. 362–84); John of Mirecourt (2003, I.38–9). Courtenay (1972–3) provides a useful guide to the history of these debates, beginning with Peter Damian in the eleventh century, through Gilbert of Poitiers in the twelfth and William of Auxerre in the thirteenth.

[15] Gregory of Rimini (1979–84, pp. 362–5, 378). Bradwardine (1618, ch. 28) argues that the necessity that obtains for past, present, and future is in fact more than mere conditional necessity.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

present exists,[16] and indeed Bradwardine relies on that consensus to build his case regarding the contingency of the past:

> Everything that necessarily is a certain way is necessarily that way by some necessity. But nothing past has any existence; therefore neither does it have any necessity, and yet every such thing is necessarily in the past. Therefore this is because of some present necessity, which is necessarily God, or depends on him, and therefore depends on his will. (Thomas Bradwardine 1618, p. 209B)

To the extent the past is necessary, it is not intrinsically so, but only in virtue of the will of God. Inasmuch as God can will otherwise, the past can be otherwise. In contrast, for those who denied God's power over the past, the passage of time itself makes a modal difference, such that there steadily comes to be a growing number of things over which God has no power—not because God changes, but because the world changes.[17]

Although the various parties to this dispute were far from admitting it, there looks to be no fundamental metaphysical disagreement here, but effectively only a verbal dispute over the proper assessment of necessity claims. On the standard account of Aquinas, Scotus, and many others, we assess the claim from the historical perspective of the created world, leaving no salient open possibilities for things to be otherwise. For Bradwardine, the modal claim is instead assessed *sub specie aeternitatis*, which leaves open as many possibilities as are consistent with God's omnipotence. This perspective brings us close to the wide-open modality characteristic of our modern era, inasmuch as the space of God's power coincides with the space of logical possibility. But Bradwardine defends that as the proper way to assess the modal question not because he wants to evaluate the question in terms of logically possibility. After all, Aquinas had said this as well. In fact neither he nor Aquinas is thinking in terms of unrealized logical possibilities, but rather in terms of what is possible in the actual world. What separates them is simply the question of whether that evaluation should be made from a temporal perspective or an eternal perspective.

[16] The only exception I know of to this generality is John Wyclif. Tellingly, Wyclif specifically singles out Bradwardine as someone who *ought* to be committed to eternalism. See Pasnau (2011, pp. 388–90).

[17] This thesis is defended expressly in Thomas Buckingham (1992, pp. 273–7, conclusion 13).

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

IV

The Necessity of the Present. It is easy to see that the necessity of the past has an intuitive appeal, given that we have no power over it. But present events would seem to be another matter. After all, as Aristotle himself says in the passage quoted earlier, we do seem to have power over the present. Yet there is another often-quoted Aristotelian passage that might call even this into question:

> What is, necessarily is, when it is; and what is not, necessarily is not, when it is not. But not everything that is, necessarily is; and not everything that is not, necessarily is not. For to say that everything that is, is of necessity, when it is, is not the same as saying unconditionally that it is of necessity. (Aristotle, *De interpretatione* 9, 19a23–27)

Interpretation of this passage has varied widely over the centuries, with some reading the passage as merely a statement of the trivial composite-sense necessity, and others taking Aristotle to be making a substantive modal claim.[18] By the later Middle Ages, mainstream interpretation tilted toward the more substantive, and so understood Aristotle to be making a metaphysical claim about the necessity of present events.[19]

Although the necessity of the present has often been thought of as a direct consequence of a temporal conception of modality, in fact the doctrine is usually defended in an entirely different way, as the consequence of a principle I will call the Actualization Test. This principle derives from how Aristotle had characterized possibility:

> A thing is possible if there is nothing impossible in its taking on the actuality of that of which it is said to have the capacity. I mean, for instance, if it is possible for a thing to sit and it is open to it to sit, then

[18] For examples of the trivial interpretation see Scotus, *Lectura* I.39 nn. 55, 58 (1994, pp. 130–6), Jacobi (1983, p. 105), Fine (1984, pp. 24–5). Discussion of the passage is made considerably more complex because of its location within Aristotle's notoriously difficult discussion of future contingents. This forces the would-be exegete to arrive at a reading of the larger argument within which this claim must function as a premiss.

[19] Proponents of the necessity of the present include Boethius (1998, pp. 142, 158–9), Peter Abelard (in Knuuttila 1981, pp. 183–4), Hugh of Saint-Victor (1880, col. 256BC), Peter Lombard (*Sentences* II.25.1 [2007, II: 116]), Robert Grosseteste (2017, pp. 25, 57), Aquinas (*ST* 1a 14.13 ad 2), and William Ockham (see below). Admittedly, the interpretative uncertainty that infects Aristotle's claim might be thought present in some of these later texts.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

> there will be nothing impossible in its taking on that sitting. (Aristotle, *Metaphysics* IX.3, 1047a24–7)[20]

The Actualization Test, at least as it came to be understood, demands that modal claims be assessed in terms of the constraints imposed by the actual world: we take our alleged possibility and imagine actualizing it in this world, and we look to see whether there is indeed 'nothing impossible' in so doing. So understood, the Test provides a route to the contentious divided sense: for if, at a given time, p obtains, then, $\neg p$, at that time, is not possible. In other words, $p \longrightarrow \Box p$. Whether or not this is what Aristotle had in mind, this is how the Test was constantly understood by scholastic authors, particularly with respect to the necessity of the past and the present. Robert Grosseteste, for instance, reasons as follows: 'If that which is true at instant *a* could be false at *a*, then, if this possibility is brought to actuality, the same statement will be simultaneously true and false in the same indivisible instant, which is impossible' (2017, pp. 46–7).

As in previous cases, it is hard from a modern perspective to see why modality should be given such narrow scope. Rather than constrain the possible by features of the actual world, we now find it natural to look to possible worlds where the actual features of this world are lacking. And even if it is temporally definite propositions we are interested in, the resources of Montague semantics, incorporating the world–time pairs that Kaplan (1989) referred to as *circumstances*, allow us to characterize worlds that are indexed at times, allowing us to speak meaningfully of the same time across worlds. In light of these modern expectations, it is interesting to look at Scotus's famous rejection of the necessity of the present in favour of what has come to be known as synchronic contingency. Although synchronic contingency is often described as the key to Scotus's advance in modal thinking, this is doubly mistaken. First, as with logical possibility, so too this idea is not original with him. Grosseteste had already worked out this approach for the case of God,[21] and

[20] Beere (2009, p. 119) characterizes this as the 'Criterion of Possibility'. Broadie (1982, pp. 26–8) offers a clear account of how it seems to commit Aristotle to the necessity of the present. See also *Prior Analytics* I 13, 32a18–19.

[21] See Robert Grosseteste (2017, pp. 51–9) and Lewis (1996). Grosseteste expressly considers whether synchronic contingency could apply to creatures (2017, p. 55), but he seems to think that in fact, in the natural world, possibilities are always future-directed: 'possibility without actuality is only with respect to the future' (2017, p. 57).

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

Peter John Olivi had applied it, in considerable detail, to the case of human action (see Dumont 1995). (Although Olivi's work was clearly the inspiration for Scotus, it had less influence in the long run, because, for other reasons, his writings were condemned by the Church.) Second, the theory of synchronic contingency is not at its heart a revisionary approach to modality. What it is, instead, is a claim about the causal structure of voluntary action, designed to open up additional modal space within the actual world.

Synchronic contingency is, at its heart, an account of what it is to act freely. On this picture an agent, at the instant at which it is φ-ing, can at that very instant, instead, be not-φ-ing. Scotus has a few different motivations for wanting to insist on this picture. One comes from thinking about the divine case. God's eternal mode of existence can be understood as a single durationless instant. But if God exists for just an instant, albeit an eternal instant, it might look tempting to suppose that the same rationale that makes the present necessary would make God's choices necessary too. Scotus accepts the orthodox view that God's choices are wholly free, even at an instant, and to explain that he appeals to synchronic possibility. A second motivation is that an adequate conception of human freedom requires it. Scotus thinks that, if present events are necessary, then the most one can say about a human choice taking place right now is that the agent was able to do otherwise, or that the agent will be able to do otherwise. But what's wanted, Scotus thinks, is that the agent, right now, is able to do otherwise. Freedom requires such a capacity, and requires it now, when the choice is being made, rather than at earlier or later times. To render the situation in stark terms, he has us imagine a being with free will who exists for only an instant. Such a being could make a free choice, Scotus asserts, but could do so only given the possibility, synchronic with that instant, of doing otherwise.[22]

This explains why Scotus wants to be able to defend synchronic possibility. And we might at this point stop to discuss the merits of the view as one of the best-developed early statements of a libertarian conception of freedom. But I want to push on instead to consider

[22] For the case of the instantaneous agent, see *Lectura* I.39 n.50 (1994, pp. 116–18). This idea too is already in Robert Grosseteste (2017, p. 55), and indeed there was a stock disputed question, among thirteenth-century scholastic authors, with a history going back to Augustine, over whether the devil willed to be bad from the very first instant of its creation (see, for instance, Bonaventure 1882–1902, II: 115–17 [*Sentences* II.3.2.1.2], which argues that the devil's choice required an interval of time). Scotus's treatment of synchronic contingency in the *Lectura* gets restated in his *Reportatio* (2017, pp. 86–94).

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

the more properly modal aspects of the question, and to do this we need to look carefully at the sort of modal space he attempts to open up. As a critical first step, Scotus has to deny the Actualization Test as others had understood it. First, he urges that there is no *logical* impossibility that 'in the same instant in which the will has one act of willing, in that same instant, and for the same instant, it can have an opposite act of willing' (*Lectura* I.39 n.50 [1994, pp. 116–18]). That opposite act is no more repugnant to the will's nature, at that very instant, than is the actual act, and so is equally logically possible. As for the familiar appeal to the Actualization Test—that the will's current act of willing itself generates the contradiction that blocks the will from willing the opposite—Scotus just flatly denies that this Test, so understood, provides an accurate guide to logical possibility. It is enough if there is no logical inconsistency in the will, as such, willing the opposite. The actualization of that possibility does not have to be consistent with every other available fact.

What makes Scotus's treatment of this topic so characteristic of the era, however, is the way he quickly sets aside these points about logical possibility, and turns to a defence of the claim that there is also a 'real possibility'—that is, whether a will like ours, in a world such as this, does in fact have the synchronic possibility of willing otherwise. Here is his argument:

> To this logical possibility there corresponds a real possibility. For every cause is understood prior to its effect. So the will, at that instant at which it elicits an act of willing, is prior by nature to its willing and stands free (*libere se habet*) with regard to it. Accordingly, at that instant at which it elicits its willing, it stands contingent to willing and has a contingent standing (*habitudinem*) toward not willing. This is not because, at some prior time, it *had* a contingent standing toward willing, because it was not a cause then. Rather, now, when it *is* the cause that elicits the act of willing, it has a contingent standing toward the act. As a result, willing at time *a*, it can not-will at time *a*. (John Duns Scotus, *Lectura* I.39 n.51 [1994, pp. 118–20])

The critical idea here is one that both Grosseteste and Olivi had already suggested: that within a single temporal instant there is a further order that can be described. This is an ordering of 'nature' that, as the second sentence of the passage explains, is founded in causal priority. Now, it is a familiar idea from Aristotle that we can speak of one thing as being prior to another even where there is no

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

temporal order. Among the various sorts of non-temporal orderings that Aristotle discussed, here Scotus particularly wants the sort of order that arises in a causal relationship. Since Scotus, like most of his contemporaries, was committed to the simultaneity of cause and effect, he finds it natural to conclude that, within a single instant, the will, as initiating cause, is prior to the act of willing that is elicited.[23] Having identified this sort of non-temporal priority within a single temporal instant, Scotus then wants us to think of these as non-temporal instants within a single instant of time. In later writings, he refers to these as 'instants of nature' (for example, *Ordinatio* I.43 n.14 [*Opera* 6:358]). These instants of nature are what furnish the modal space needed to account for the will's real synchronic possibility. At the first instant of nature, the will is eliciting its act. At this point the will is open to either willing or not-willing. At the second instant of nature, the will is willing. At that posterior instant there is no real possibility of doing otherwise, because the fact of the will's willing blocks that from being a real possibility. Yet in virtue of the first instant of nature it remains true that the will can do otherwise, and so one's present choices are not necessary.

In all of this, Scotus adheres to the overarching spirit of the Actualization Test, inasmuch as he accepts that claims of real possibility should be understood in terms of the limited modal space offered by the actual world. By making room within a temporal instant for multiple instants of nature, he opens up modal space for synchronic contingency, but within the timeline of this world. So even though Scotus is often described with enthusiasm as the foundational figure in a possible-worlds conception of modality, there turns out to be nothing about his way of conceiving synchronic contingency that suggests we should be evaluating modal claims in terms of other worlds.[24]

[23] On causal relations as simultaneous, see Scotus, *Ordinatio* II.1.3 n.158 (*Opera* 7: 79–80) and *Questions on the Metaphysics* V.2 (1997–8, pp. 359–70). For Aristotle on causation as giving rise to a non-temporal ordering, see *Categories* 12, *Meta.* IV.5, 1011a1, and *Meta.* VII.3, 1029a5.

[24] Normore (2003, p. 155) registers this point, remarking that 'Although one can find the ingredients in Scotus's picture for talking about possible worlds, the notion would do little or no work within that picture itself.' Still, he goes on: 'That Duns Scotus is a pivotal figure in the history of modal theory seems beyond doubt.' Elsewhere, however, he puts the point more cautiously: 'Almost everyone now agrees that John Duns Scotus is a pivotal figure in the history of the philosophy of modality, but there is much less agreement about why Scotus is so central' (Normore 1996, p. 161).

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

V

Ockham's Rejection of Synchronic Contingency. Scotus's appeal to instants of nature is designed to secure a very robust form of the principle that free will requires the power to choose otherwise. But even among subsequent authors who embraced a libertarian conception of freedom, this way of securing that result was highly controversial. The most prominent such case is William Ockham, whose views are interesting for present purposes because of the light they shed on how Ockham thinks modal questions should be adjudicated. His parsimonious inclinations lead him to be appalled by the obscurity and profligacy of instants of nature, which he characterizes as a purely imaginary invention.[25] But he also thinks that he can prove there is something contradictory in Scotus's approach. His first attempt to do that is a bare appeal to the Actualization Test. But he immediately recognizes that Scotus will not accept this: he expects Scotus to reply that if we actualize the will's possible alternative volition and look for contradictions, we need not suppose that the will's current volition remains (*De praedestinatione* q. 3 [*OPh* II: 533–4; 1983, pp. 72–3]). So Ockham immediately offers a more complex argument intended to show that synchronic contingency is inconsistent not only with the necessity of the present but also with the necessity of the past. If this argument can work, it should have some force against Scotus, since although Scotus is keen to reject the necessity of the present, he does not wish to reject the necessity of the past.

Ockham's complex argument runs as follows, with sentences numbered:

> [1]Every proposition that is merely about the present, if it is true, has [corresponding to it] some necessary proposition about the past. [2]But this proposition
>
> [α] *The will wills this at instant a*
>
> is true, we are supposing, and is merely about the present. [3]Therefore this proposition will subsequently be always necessary:
>
> [β] *The will willed this at instant a*.
>
> [4]Therefore, after instant *a*, this cannot be true:
>
> [γ] *The will did not will this at instant a*.
>
> ([5]In confirmation: if, after *a*, β always was necessary, then after *a* its opposite [γ] always was impossible.) [6]Therefore, further, after *a* it always was and will be true to say that this proposition could not be true at *a*:

[25] See, for instance, Ockham, *Ordinatio* I.9.3 (*OTh* III: 294–8).

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

> [δ] *The will does not will this*,
> because at that time its opposite was true, namely β.
> [7]So the reply consists in this: if the will wills this at a [= α], then, after a, β will always be necessary. [8a]Then, if the will's unmanifested power [for δ] could be brought to actuality at instant a, either [8b]contradictories [β and γ] will be true at the same time after instant a, or [8c]after a that necessary proposition about the past [= necessarily β], which is necessary since it had [corresponding to it] a true proposition merely about the present [= α], will be false, because its opposite [= possibly γ] will be true. (William Ockham, *OPh* II: 534; 1983, pp. 73–4)

Ockham's essential strategy is again to deploy the Actualization Test, but to shift the locus of contradiction. Granting to Scotus, at least for the sake of argument, that contradiction can be avoided at time a, Ockham shifts to times after a, and urges that the contradiction will turn up then. For if the past is necessary, then for all future times it will be necessary that the will willed at a (sentences 3 and 7). But then (8a) if we imagine actualizing its alleged power not to will, we have our contradiction in one of two ways. Either (8b) we have the familiar (now past-tense) contradiction that the will both willed and did not will at time a, or (8c) we have to reject the necessity of the past, and hold that the will's willing at a has not become a necessary truth.

All of this is, admittedly, extremely confusing. Matters would be simpler if Ockham, or Scotus, treated sentences as timelessly possessed of their modal status.[26] Then from the fact that willing at a was necessary, we could happily conclude that it is timelessly necessary. But, as we have seen over and over already, this is not the usual premodern way of handling modality. Ockham, moreover, is quite explicit about this. With the passage of time, he says, future possibilities 'frequently become impossible' (*Ordinatio* I.38 [*OTh* IV: 579; 1983, p. 85]). Both he and Scotus want to be able to say that the will's future acts are contingent, and that those same acts become necessary once they fall into the past. All that is at stake, then, is the instant of transition. Does that go on the side of necessity or contingency? Fussing in this way over the instantaneous present may seem like worse than splitting hairs, but neither author saw it that way.

[26] On the slow rise of the modern tendency to treat truth and modality in this way, see Prior (1957, appendix A).

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

For Scotus, as we have seen, our very freedom as agents depends on the contingency of our choices, and that contingency must be in place at the moment of decision. For Ockham, in contrast, what is at stake is the metaphysical cogency of the relationship between time and necessity. Claims about the past are necessary, as Ockham thinks of it, because of the occurrence of the events themselves. That is what licenses, in the first sentence of the above passage, the claim that for sentences about the present there are corresponding necessary propositions about the past. It is natural to think that Ockham simply begs the question by taking for granted (most obviously in sentence 6) that the present impossibility of the will's having done otherwise entails that it was impossible at *a* for the will to do otherwise.[27] But for Ockham there is a metaphysical connection between these two impossibilities. We might say that, for Ockham, the *reason* the past cannot be otherwise is that the present cannot be otherwise, as soon as it is present.[28]

The large claims made on each side of this dispute encourage the thought that there must be a deep, substantive disagreement here. But, as with the necessity of the past, it is not clear that this is the case. Scotus accepts, in particular, that 'that which passes into the past is necessary' (*Lectura* 1.40 n.9; *Opera* 17:513), suggesting that events becomes necessary only once they leave the present instant. And although Scotus refuses to admit that the present is necessary, he does describe it as determinately true, whereas truths about the future are indeterminate.[29] To be sure, for Scotus, that determinate truth holds only in virtue of the second instant of nature, when the will actually wills. Scotus would deny only that Ockham's argument holds at the first instant of nature, where the will's choice is

[27] This is the diagnosis of the argument's fault in Normore (2016, p. 145).

[28] Does Ockham's argument prove too much, by allowing us to run a version of this argument for *future* true sentences, and so prove the necessity of the future? Out of context, it might seem so, but the argument comes in the midst of his most extended argument in favour of future contingents, and so is carefully calibrated to account for that case. In the usual modern parlance (see, for instance, Plantinga 1986), the will's present act of willing is a hard fact to which backwards-looking necessary truths correspond. But even though there are true propositions about future acts of will, those are mere soft facts that do not yield necessities. This is the force of sentence 1's insistence that we are concerned with propositions 'merely about the present'—that is, with hard facts. Ockham makes the distinction explicit in *De praedestinatione* Question 1 supposition 3 (*OPh* II: 515; 1983, pp. 46–7). It has been urged upon me that, this distinction notwithstanding, it remains unclear that Ockham's reasoning is compatible with the contingency of the future. But I beg leave to defer this large topic for another time.

[29] *Lectura* 1.39 n.69 (1994, p. 152), where he also allows that past truths are necessary.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

contingent. In the face of such subtleties, Ockham insists that Scotus has violated the principle of non-contradiction. For it looks as if Scotus must accept that, at instant *a*, it is both true and not-true that the will necessarily wills. But Scotus can evade this result by insisting that a modal question regarding a temporal instant has to be evaluated by looking at *every* instant of nature within the temporal instant. Scotus could say that if, at any instant of nature within the relevant temporal instant, it is possible that the agent might have done otherwise, then we should say, *simpliciter*, that the will at that temporal instant might have done otherwise.

Ironically, this is not altogether different from how Ockham himself understands the contingency of our free choices. Although, strictly speaking, Ockham believes that the will's choices are necessary at the instant at which they take place, he provides his own account of the sense in which the will's choices are contingent, one that is structurally quite similar to Scotus's, except that instead of appealing to synchronically simultaneous instants of nature, he opens up modal space diachronically, across multiple instants of time. If we look before *a*, we may find a future contingent truth: 'that the will, existing for a prior duration before the instant *a* at which it causes, can freely and contingently cause or not cause at *a*'. Alternatively, we can look at later times, and we may find that 'freely, without any variation and change arriving to it or to any other cause, and without any other cause's ceasing, the will can cease from its act at another instant after *a*' (*OPh* IV: 536; 1983, p. 76). Either of these indeterminate capacities to do otherwise, at either a prior or a subsequent instant, is sufficient to save the will's contingency at the present instant. In both cases, Ockham is appealing to the only place in temporal space where he allows genuine contingency: in the open future for the will to do otherwise. The possibility of this sort of account suggests that we should be cautious in accepting the often-voiced conclusion—see, for instance, MacDonald (1995, p. 171)—that a libertarian conception of will requires synchronic contingency. To be sure, Scotus thinks that these diachronic claims do nothing to establish the will's present contingency. But it is ironic that Scotus himself, as I read him, must make a similar appeal to multiple instants of nature to find a contingency that is missing from the instant of nature at which the will actually wills.

It would not be right to say that this dispute is purely verbal, since it turns in part on a disagreement over the cogency of appealing to

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

instants of nature as a source of modal space. Even so, at least with respect to the purely modal dispute (as opposed to the further conclusions they reach about the nature of freedom), their shared substantive assumptions far outweigh their disagreements. Both embrace a fundamental modal asymmetry between the past and the future, and both embrace the thought that it is the present instant, in its determinate actuality, that generates this asymmetry, turning the contingent into the necessary. Their dispute concerns simply where exactly to draw that line between the necessary and the contingent. Ockham, treating the present instant as indivisible, puts the line just after the present. Scotus, instead, splits the present instant, drawing a line that puts one instant of nature on one side and another instant of nature on the other side. And even here they are nominally in agreement, since both accept that there is some sense in which present choices are contingent. Most importantly, for our purposes, both agree that we should assess its contingency, not by looking at non-actual possibilities, but rather by looking at other instants (temporal or natural) on our actual timeline.

VI

Ampliation and Modal Space. As a final case study, I turn to the domain of medieval logic. Whereas in our previous examples there was little awareness of the largely verbal nature of these disputes, we will find among logicians an increasingly explicit awareness of this point: that debates over modality turn not on disputed questions of metaphysics but on a semantic decision about how to restrict the scope of such discourse.

Like their modern counterparts, medieval logicians attempt to understand modal terms extensionally, so that possibility and necessity can be understand as forms of quantification. As John Buridan put it, 'the necessary is to the possible as the universal is to the particular' (*Summulae* 4.6.2 [2001, p. 300]). The usual machinery for achieving this was to understand modal terms as ampliating the supposition of other terms within a sentence. To understand these technical notions, begin with a simple case. On the standard later medieval analysis, 'A person is running' comes out true if and only if that which the subject supposits for is among the things that the predicate supposits for.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

Supposition is a way of characterizing a term's reference: it tells us what things a word ranges over, within the context of a sentence. 'Running' in this sentence supposits for everything that is running, and so if that includes a person, the sentence is true.[30] Supposition can be restricted or ampliated: restricted, for instance, by an adverb in the sentence 'A person is quickly running'; ampliated if we switch to the future tense, so that the supposition extends to future individuals.

Modal terms are generally understood to be ampliative, but there was disagreement over exactly how a term like 'can' affects the ampliation of the other terms in a sentence. In Peter of Spain's classic thirteenth-century textbook, the force of the modality in 'a man can be white' is said to be that 'the term "man" supposits not only for present [human beings] but also is ampliated for all who will be' (*Summaries of Logic* 9.5 [2014, pp. 442–3]). This suggests a temporal approach to modality, as if 'can be' is extensionally equivalent to 'is or will be'. For Ockham and Buridan, in contrast, modal terms ampliate the subject of a sentence so as to extend not just to future individuals, but to all possible individuals of the relevant kind. Thus the modal expression in 'a person can be running' ampliates the subject so that it supposits for all possible persons.[31] Obviously, this leaves unanalysed the notion of possibility, but it makes clear that medieval modal operators are capable of accessing the sort of wide modal spaces that we now take for granted. Indeed, Arthur Prior (1957, pp. 30–1), writing in more parsimonious metaphysical times, wondered about the 'weird' metaphysics of this 'permanent pool of objects'.

Relying on this framework, later medieval discussions of modality recognize that differences in ampliation will yield different notions of modality. This is particularly clear in Buridan:

> Sometimes 'possible' is taken ampliatively, that is, indifferently toward the past and the future, and so too for 'necessary'. Thus we would say, for instance, that everything is possible that is, was, or will be, or even if it is not contradictory (*non repugnat*) that it is, was, or will be. And

[30] For a good brief introduction to these issues, see Ashworth (2009).

[31] See, for example, Ockham, *Summa logicae* 1.72 (*OPh* I: 216–17); John Buridan, *Tractatus de consequentiis* 1.6 and 2.4 (1976, pp. 27, 58). Several complications should be noted. First, fourteenth-century authors generally agree that, in sentences of this form, the *subject* is ampliated. It is surprisingly unclear, however, what happens to the *predicate* in such sentences. (I consider this issue in a subsequent paper.) Second, strictly speaking, Ockham does not speak of 'ampliation' in these contexts (see Priest and Read 1981). This too I set aside, since Ockham agrees that modal expressions work by enlarging the supposition of their subject.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

> in this way we would grant 'Aristotle can exist' or 'it is possible for Aristotle to run', and we would deny 'it is necessary for Aristotle not to run'. (John Buridan, *Summulae* 1.8.5 [2001, p. 75])

So here is ampliation in the wide-open sense on which terms are allowed to supposit across all times and even across *possibilia*. So construed, the past is not necessary. But, Buridan immediately continues, there is another way to read modal claims:

> In another way 'possible' is taken restrictively, toward the future, so that nothing is said to be possible unless it is or will be, or at least it is not contradictory that it is or will be. So it is said in *De caelo* 1 [283b12–13] that there is no power over the past. For in this way we would say that a horse that perished cannot exist, and that it is impossible for it to walk, and that it is necessary that it does not exist. So too, we would say that the proposition 'Aristotle walks' is impossible, whereas it (or a similar proposition) was true, and we would say that 'Aristotle does not walk' is necessary, even though at one time it was false. So in this way the possible becomes impossible and the contingent becomes necessary. (John Buridan 2001, pp. 75–6)

Here is how we must understand modal claims if we want to insist on the necessity of the past. The key is to restrict ampliation so as not to range over past possibilities. 'Aristotle walks' thus comes out as impossible, whereas 'Aristotle walked' comes out as necessary, because when we ampliate only toward the future, then on every supposition the first sentence comes out false and the second comes out true.[32] For Buridan, there is no point in engaging in a metaphysical dispute over whether the past is necessary. The problem turns instead on how we want to understand the modal semantics in the context of a particular sentence.

Ockham, a generation earlier, is less explicit about this, but he effectively proceeds in the same way. He distinguishes two ways of taking the modal operator: either widely, so that the subject supposits for both things that exist and things that can exist, or narrowly, so that the subject supposits only for things that exist (*Summa logicae* II.25 [*OPh* I: 331]). Although elsewhere Ockham is happy to analyse modal expressions using wide ampliation, he here argues that

[32] Compare the very similar discussion at *Summulae* 8.6.3 (2001, p. 735), where Buridan explicitly says that, taken restrictively, it is necessary that Aristotle walked (although this phrase is unfortunately omitted from the usually reliable translation). Something like this distinction goes back at least to William of Sherwood, *Introduction to Logic* 1.23 (1966, p. 41).

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

we should be wary of this when considering whether modal propositions are convertible. He thinks we must deny, for instance, this instance of conversion: 'The true can be impossible; therefore the impossible can be true.' After all, suppose it is true that I have not been to Rome. If I then go to Rome, it becomes necessary that I have been to Rome, and so impossible that I have not been to Rome. In this case, the true becomes impossible. But Ockham takes it to be obvious that the impossible cannot become true.[33] Narrow supposition is required, then, to account for how true sentences become impossible. In effect, it is required to explain why the past is necessary. Ockham recognizes that such modal claims could be given wide supposition, in which case the past would not come out as necessary, but he thinks, at least in these contexts, that we should read them as having narrow supposition.

At least in the hands of Ockham and Buridan, then, medieval logic recognizes that we can choose the modal spaces we want to work in. So how do we choose? Ockham's discussion provides some clues about how to think about this. In the example just considered, the shift in modal status that is the hallmark of narrow ampliation runs in only one direction, from truth (or possibility) to necessity (or impossibility). Conversely, the impossible cannot become true. It runs in the first direction, and not the second, because restricted ampliation is forward-looking rather than backwards-looking. But why is it forward-looking? Evidently, it is because this is the direction of time—because if I have not yet gone to Rome, I still may do so, but once I have done so, I cannot not have gone to Rome. Ockham offers another example where we want to forbid conversion: 'Someone who sees can be blind; therefore someone blind can see' (*Summa logicae* II.25 [*OPh* I: 332]). This is to be denied, but on grounds that are interestingly different from the Rome example, because here it is not an immutable past fact that does the work, but a directional difference in possibilities that, as we might now put it, tracks the direction of entropy: the visual faculty can be destroyed, but once destroyed it cannot be remade. Ockham allows that conversion can be maintained in both of these examples, if we want to read the modal operators as ampliating widely. And of course in a theological context—or thanks to modern medicine—we might well

[33] The example is discussed at *Summa logicae* II.24 (*OPh* I: 329), and again at *Summa logicae* II.25 (*OPh* I: 332). I am indebted to Johnston (2015) for drawing my attention to these passages.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

want to insist on the possibility of the blind coming to see. Just as we saw with the necessity of the past, we get different results depending on which causal framework we consider.

Buridan is more clear than Ockham that there is no metaphysical fact of the matter here.[34] After setting out the distinction in ampliation described above, he remarks that 'in the present context I speak of necessity and impossibility ampliatively, for this is how the demonstrative sciences speak, although narrative histories speak the other way' (*Summulae* 1.8.5 [2001, p. 76]).[35] Buridan, in other words, thinks we should be open to either reading of the modal operators, since the choice depends on what we are trying to do. If what we care about are narrative histories, then it matters that one can go from seeing to being blind but not vice versa. We want a modal theory that takes into account the arrow of time. If, on the other hand, we are interested in establishing a demonstrative science, then we will be trafficking in universal, timeless, necessary truths. Then we may want wide ampliation, which will fix the modal values of our sentences timelessly, sparing us the messy temporal transmutations that arise when a proposition goes from being false to true to necessary. Independently of such contextual considerations, there is no fact of the matter about which modal values are correct. This is of course a conclusion we can formulate within our modern idioms, but the tendencies of modern modal theorizing work against it.[36]

Department of Philosophy
University of Colorado

[34] Indeed, Normore (2016) takes Ockham to be a 'modal monist,' which would mean, in my terms, that Ockham accepts only the narrow supposition that yields the necessity of the past. To me, Ockham's view seems less definite.

[35] See the similar discussions in *Summulae* 8.6.3 (2001, p. 736), *Quaest. Periherm.* 1.12 (1983, pp. 54–7), and the related discussion of natural supposition at *Summulae* 4.3.4 (2001, pp. 259–62). These passages are discussed, in the broader context of Buridan's modal theory, in Normore (2013). There is an Aristotelian basis for linking timeless propositions to demonstration at *Prior Analytics* I 15, 34b7–18.

[36] I have received a great deal of help on this paper from many people, including Arif Ahmed, Dominic Bailey, Justin D'Ambrosio, Graeme Forbes, Gloria Frost, Brian Garrett, Spencer Johnston, Guy Longworth, John Marenbon, Christopher Shields, and Daniel Stoljar. Thanks also to audiences at the Australian National University, the Cornell Medieval Colloquium, the Humboldt University of Berlin, the London Medieval Network, the University of California San Diego, and the University of Colorado Boulder.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

Boulder, CO 80309
USA
pasnau@colorado.edu

References

Alanen, Lilli, and Simo Knuuttila 1988: 'The Foundations of Modality and Conceivability in Descartes and His Predecessors'. In Simo Knuuttila (ed.), *Modern Modalities: Studies of the History of Modal Theories from Medieval Nominalism to Logical Positivism*, pp. 1–69. Dordrecht: Kluwer.

Aristotle 1984: *The Complete Works of Aristotle: The Revised Oxford Translation*. Edited by Jonathan Barnes. Princeton, NJ: Princeton University Press. Cited by title, followed by the standard book, chapter, and line numbers.

Ashworth, E. Jennifer 2009: 'Terminist Logic'. In Robert Pasnau (ed.) and Christina Van Dyke (assoc. ed.), *The Cambridge History of Medieval Philosophy*, pp. 146–58. Cambridge: Cambridge University Press.

Beere, Jonathan 2009: *Doing and Being: An Interpretation of Aristotle's Metaphysics Theta*. Oxford: Oxford University Press.

Bobzien, Susanne 1999: 'The "Megarics"'. In Keimpe Algra, Jonathan Barnes, Jaap Mansfeld, and Malcolm Schofield (eds.), *The Cambridge History of Hellenistic Philosophy*, pp. 83–92. Cambridge: Cambridge University Press.

——1993: 'Chrysippus' Modal Logic and Its Relation to Philo and Diodorus'. In Klaus Döring and Theodor Ebert (eds.), *Dialektiker und Stoiker: Zur Logik der Stoa und Ihrer Vorläufer*, pp. 63–84. Wiesbaden: Franz Steiner.

Boethius 1998: *On Aristotle's On Interpretation 9*. Translated by Norman Kretzmann. Ithaca, NY: Cornell University Press.

Bonaventure 1882–1902: *Opera Omnia*. Quaracchi: Editiones Collegii S. Bonaventurae.

Broadie, Sarah [as Sarah Waterlow] 1982: *Passage and Possibility: A Study of Aristotle's Modal Concepts*. Oxford: Clarendon Press.

Cicero 1942: *De Fato*. In H. Rackham (tr.), *De Oratore Book III*, pp. 187–249. Cambridge, MA: Harvard University Press.

Courtenay, William J. 1972–3: 'John of Mirecourt and Gregory of Rimini on Whether God Can Undo the Past'. *Recherches de théologie ancienne et médiévale*, 39, pp. 224–56 and 40, pp. 147–74.

de Harven, Vanessa 2016: 'Necessity, Possibility, and Determinism in Stoic Thought'. In Max Cresswell, Edwin Mares, and Adriane Rini (eds.),

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

Logical Modalities from Aristotle to Carnap: The Story of Necessity, pp. 70–90. Cambridge: Cambridge University Press.
Denyer, Nicholas 1981: 'Time and Modality in Diodorus Cronus'. *Theoria*, 47(1), pp. 31–53.
Dumont, Stephen D. 1995: 'The Origin of Scotus's Theory of Synchronic Contingency'. *Modern Schoolman*, 72, pp. 149–67.
Edwards, Jonathan 1829: *A Careful and Strict Enquiry into the Modern Prevailing Notions of That Freedom of the Will*. In *The Works of President Edwards*, vol. 2. New York: S. Converse.
Fine, Gail 1984: 'Truth and Necessity in *De Interpretatione* 9'. *History of Philosophy Quarterly*, 1, pp. 23–47.
Gregory of Rimini 1979–84: *Lectura super Primum et Secundum Sententiarum*. Edited by A. Damasus Trapp et al. Berlin: De Gruyter.
Hintikka, Jaakko 1973: *Time and Necessity: Studies in Aristotle's Theory of Modality*. Oxford: Clarendon Press.
Hugh of Saint-Victor 1880: '*De Sacramentis*'. In J. P. Migne (ed.), *Patrologiae Cursus Completus, Series Latina*, vol. 176. Paris: Garnier Fratres.
Jacobi, Klaus 1983: 'Statements about Events: Modal and Tense Analysis in Medieval Logic'. *Vivarium*, 21(2), pp. 85–107.
John Buridan 1976: *Tractatus de Consequentiis*. Edited by Hubert Hubien. Leuven: Publications Universitaires.
——1983: *Questiones Longe super Librum Perihermeneias*. Edited with an introduction by Ria van der Lecq. Nijmegen: Ingenium.
——2001: *Summulae de Dialectica*. An annotated translation, with a philosophical introduction by Gyula Klima. New Haven, CT: Yale University Press.
John Duns Scotus 1950–2013: *Opera Omnia*. Edited by C. Balić et al. 21 vols. Vatican City: Typis Polyglottis Vaticanis Cited by volume as *Opera*.
——1994: *Contingency and Freedom = Lectura I* 39. Edited and translated by A. Vos Jaczn., H. Veldhuis, A. H. Looman-Graaskamp, E. Dekker, and N. W. den Bok. Dordrecht: Kluwer.
——1997–8: *Questions on the Metaphysics of Aristotle*. Edited by Girard J. Etzkorn and Allan B. Wolter, 2 vols. St Bonaventure, NY: Franciscan Institute.
——2017: *Selected Writings on Ethics*. Edited and translated by Thomas Williams. Oxford: Oxford University Press.
John of Mirecourt 2003: *Commento alle Sentenze (Libro I): Edizione on-Line Provvisoria*. Edited by M. Parodi. http://www.filosofia.unimi.it/mparodi/mirecourt/home.htm.
Johnston, Spencer 2015: 'Ockham and Buridan on the Ampliation of Modal Propositions'. *British Journal for the History of Philosophy*, 23(2), pp. 234–55.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

Kaplan, David 1989: 'Demonstratives: An Essay on the Semantics, Logic, Metaphysics, and Epistemology of Demonstratives and Other Indexicals'. In Joseph Almog, John Perry, and Howard Wettstein (eds.), *Themes from Kaplan*, pp. 481–563. Oxford: Oxford University Press.

King, Peter 2001: 'Duns Scotus on Possibilities, Powers, and the Possible'. In Thomas Buchheim, C. H. Kneepkens, and Kuno Lorenz (eds.), *Potentialität und Possibilität: Modalaussagen in der Geschichte der Metaphysik*, pp. 175–99. Stuttgart: Frommann-Holzboog.

Knuuttila, Simo 1981: 'Time and Modality in Scholasticism'. In Simo Knuuttila (ed.), *Reforging the Great Chain of Being: Studies in the History of Modal Theories*, pp. 163–257. Dordrecht: Reidel.

——1982: 'Modal Logic'. In Norman Kretzmann, Anthony Kenny, and Jan Pinborg (eds.), *The Cambridge History of Later Medieval Philosophy: From the Rediscovery of Aristotle to the Disintegration of Scholasticism, 1100–1600*, pp. 342–57. Cambridge: Cambridge University Press.

——1993: *Modalities in Medieval Philosophy*. London: Routledge.

Kukkonen, Taneli 2000: 'Possible Worlds in the *Tahāfut al-Falāsifa*: Al-Ghazālī on Creation and Contingency'. *Journal of the History of Philosophy*, 38(4), pp. 479–502.

Lewis, Neil 1996: 'Power and Contingency in Robert Grosseteste and Duns Scotus'. In Ludger Honnefelder, Rega Wood, and Mechtild Dreyer (eds.), *John Duns Scotus: Metaphysics and Ethics*, pp. 205–25. Leiden: Brill.

Lovejoy, Arthur 1960: *The Great Chain of Being: A Study of the History of an Idea*. New York: Harper.

MacDonald, Scott 1995: 'Synchronic Contingency, Instants of Nature, and Libertarian Freedom: Comments on "The Background to Scotus's Theory of Will"'. *Modern Schoolman*, 72(2), pp. 169–74.

Mondadori, Fabrizio 2004: 'The Independence of the Possible According to Scotus'. In Olivier Boulnois et al. (eds.), *Duns Scot à Paris, 1302–2002*, pp. 313–74. Turnhout: Brepols.

Normore, Calvin G. 1996: 'Scotus, Modality, Instants of Nature and the Contingency of the Present'. In Ludger Honnefelder, Rega Wood, and Mechtild Dreyer (eds.), *John Duns Scotus: Metaphysics and Ethics*, pp. 161–74. Leiden: Brill.

——2003: 'Duns Scotus's Modal Theory'. In Thomas Williams (ed.), *The Cambridge Companion to Duns Scotus*, pp. 129–60. Cambridge: Cambridge University Press.

——2013: 'Buridanian Possibilities'. In Jakob Leth Fink, Heine Hansen and Ana María Mora-Márquez (eds.), *Logic and Language in the Middle Ages: A Volume in Honour of Sten Ebbesen*, pp. 389–402. Leiden: Brill.

——2016: 'Ockham and the Foundations of Modality in the Fourteenth Century'. In Max Cresswell, Edwin Mares, and Adriane Rini (eds.),

doi: 10.1093/arisup/akaa004

Logical Modalities from Aristotle to Carnap: The Story of Necessity, pp. 133–53. Cambridge: Cambridge University Press.
Pasnau, Robert 2011: *Metaphysical Themes* 1274–1671. Oxford: Clarendon Press.
Peter Lombard 2007: *The Sentences*. Translated by Giulio Silano. 4 vols. Toronto: Pontifical Institute of Mediaeval Studies.
Peter of Spain 2014: *Summaries of Logic*. Edited and translated by Brian Copenhaver, with Calvin G. Normore and Terence Parsons. Oxford: Oxford University Press.
Plantinga, Alvin 1986: 'On Ockham's Way Out'. *Faith and Philosophy*, 3, pp. 235–69.
Priest, Graham, and Stephen Read 1981: 'Ockham's Rejection of Ampliation'. *Mind*, 90, pp. 274–9.
Prior, A. N. 1957: *Time and Modality*. Oxford: Clarendon Press.
Robert Grosseteste 2017: *The Two Recensions of On Free Decision*. Edited and translated by Neil Lewis. Oxford: Published for the British Academy by Oxford University Press.
Schmutz, Jacob 2006: 'Qui a Inventé Les Mondes Possibles?' In Jean-Christophe Bardout and Vincent Jullien (eds.), *Les Mondes Possibles*, pp. 9–45. Caen: Presses universitaires de Caen.
Solère, Jean-Luc 2000: 'La Logique d'un Texte Médiéval: Guillaume D'Auxerre et le Problème du Possible'. *Revue Philosophique de Louvain*, 98(2), pp. 250–93.
Sorabji, Richard 1980: *Necessity, Cause, and Blame: Perspectives on Aristotle's Theory*. London: Duckworth.
Stolarski, Grzegorz 2001: *La Possibilité et l'être: un Essai sur la Détermination du Fondement Ontologique de la Possibilité dans la Pensée de Thomas D'Aquin*. Fribourg: Editions Universitaires.
Thomas Aquinas 1932–4: *On the Power of God*. Translated by Lawrence Shapcote. London: Burns, Oates and Washbourne. Cited by question and article.
——1962: *Aristotle on Interpretation: Commentary by St. Thomas and Cajetan*. Translated by Jean T. Oesterle. Milwaukee, WI: Marquette University Press.
——1975: *Summa Contra Gentiles*. Translated by Anton C. Pegis et al. 5 vols. Notre Dame, IN: University of Notre Dame Press.
——2018: *Summa Theologiae*. Translated by Alfred J. Freddoso. https://www3.nd.edu/~afreddos/summa-translation/TOC.htm. Cited by question and article as '*ST*'.
Thomas Bradwardine 1618: *De causa Dei contra Pelagium et de virtute causarum ad suos Mertonenses, libri tres*. Edited by Henry Savile. London: I. Billium. Reprinted at Frankfurt: Minerva, 1964.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004

Thomas Buckingham 1992: *Determinatio de contingentia futurorum*. In Jean-François Genest, *Prédétermination et liberté créée à Oxford au XIVe siècle: Buckingham contre Bradwardine*. Paris: Vrin.

William Ockham 1967–89: *Opera Philosophica et Theologica*. St Bonaventure, NY: Franciscan Institute. Cited by volume as *OPh* and *OTh*.

——1983: *Predestination, God's Foreknowledge, and Future Contingents*, 2nd edn. Translated, with introduction, notes and appendices, by Marilyn McCord Adams and Norman Kretzmann. Indianapolis: Hackett.

William of Sherwood 1966: *Introduction to Logic*. Translated with an introduction and notes by Norman Kretzmann. Minneapolis: University of Minnesota Press.

Wippel, John F. 1981: 'The Reality of Nonexisting Possibles According to Thomas Aquinas, Henry of Ghent, and Godfrey of Fontaines'. *Review of Metaphysics*, 33, pp. 729–58.

Aristotelian Society Supplementary Volume XCIV
doi: 10.1093/arisup/akaa004