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as providing an adequate response to an objection he is considering: "Aliter dicunt alii quod isti termini 'visio', 'notitia', 'intellectio', 'scientia', 'dilectio' et consimiles non distinguuntur ex eo quod aliquis de facto actuetur per tales actus... sed distinguuntur aptitudine naturali actuandi... aliquem vel aliquos et sic si intellectio vel visio Sortis poneretur in lapide adhuc esset intellectio vel visio licet actu nullus per eam intelligeret vel videret sed quia de natura sua est si esset in subjecto... per eam aliquid (viz. Sortes) videretur vel intelligeretur..." *Adam Goddam super IV lib. Sent.* I, d. 3, q. 1 (ed. Major, fol. 53ra).

It is remarkable that later authors, writing as late as in the early 16th century, subscribe to this view. An echo of the passage just quoted can be found in George Lokert, who writes: "Contra illud arguitur: posito quod talis qualitas ponatur extra potentiam cognitivam, tunc non amplius naturaliter proprie significabit... (ad istud) potest dici quod... semper aptitudinaliter significat". *Script. in mat. notit.* (Paris 1518, fol. a4rb). Another author of the same period, Gervasius Waim, writes: "Qualitas ex intrinseca sua natura habet quod sit notitia huius objecti potius quam alterius sic quod a priori nulla potest dari ratio nisi natura rei. Adverte tamen quod quando dico quod qualitas ex intrinseca sua natura habet quod sit notitia huius objecti, nolo dicere quod aliqua qualitas accidens sit intrinsece notitia, immo nulla talis est intrinsece notitia, cum possibile sit quamlibet talem esse et non esse notitiam. Sed volo dicere quod qualitas que est notitia huius objecti ex natura sua habet quod non stat ipsam esse notitiam et non esse notitiam huius objecti. Nec habet istud ex efficientia illius vel illius objecti". *Tract. notit.* (Paris 1519, fol. b4vb).

INTENTIONALITY AND FINAL CAUSES

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One of the characteristic aspects of early modern philosophy is its hostility to final causes. Spinoza, to take just one example, attacks the common prejudice "that all natural things act, as men do, on account of an end".¹ According to Spinoza, the doctrine of final causes is fundamentally confused:

This doctrine concerning the end turns Nature completely upside down. For what is really a cause, it considers as an effect, and conversely. What is by nature prior, it makes posterior.

Spinoza frames his attack vividly, but it is hardly original. Later medieval philosophers debated at length the status of final causes: they were troubled about whether ends should even be causes, and particularly troubled about how a cause could come after its effect. In this paper I will sample a few of the interesting moments in that debate—in Avicenna, Thomas Aquinas, John Duns Scotus, William Ockham, and John Buridan—and show how changing views about intentions and intentionality contributed to the decline of teleology.

What exactly is Spinoza objecting to? Evidently, he allows that human beings may act "on account of an end", but denies that all of nature does so. Instead, "all things proceed by a certain eternal necessity of Nature, and with the greatest perfection". It is one of the principal aims of *Ethics*, part I to establish this conclusion. But here in the appendix Spinoza offers the more general argument quoted above against "this doctrine concerning the end". Using Spinoza's memorable example (one that goes back at least to Aristotle), let our alleged final cause be a man's death, and let our "efficient cause" be a stone's falling off a roof. The doctrine of final causes reverses cause and effect, Spinoza claims, inasmuch as it makes the effect (the man's death) be a cause of the efficient cause, and makes the cause (the stone's falling) be the effect of the final cause. By putting effect before cause, it "turns Nature completely upside down".

¹ *Ethics*, part I, appendix.

The objection is an old one. Thomas Aquinas, for instance, argues at the outset of the second part of his *Summa theologiae* that "all agents necessarily act for the sake of an end" (1a2ae, 1.2c). The very first objection that he considers to this doctrine of final causes looks much the same as Spinoza's argument:

A cause is naturally prior. But an end has the character of something ultimate, as the name itself suggests. Therefore an end does not have the character of a cause (1a2ae, 1.1, obj. 1).

Aquinas's reply is brief, so brief that it's not clear just what he has in mind:

An end, even if it comes last in execution, still comes first in the agent's thoughts (*in intentione agentis*). And in this way it has the character of a cause.

One might take Aquinas's reply to be essentially concessive: of course the end itself cannot play a causal role, it has not even come into existence yet. The end plays a role only insofar as some agent (God, a human being) is thinking about that end. The end itself, then, is not literally a cause. It is the thought concerning that end which is the cause.

This would be a quick and obvious path around Spinoza's argument: too quick and obvious, according to Jonathan Bennett. Bennett has argued that such a reply entirely misconstrues Spinoza's position.² Although the concessive approach looks uncontroversial—who could deny that our thoughts direct our actions?—Bennett thinks that Spinoza does just this. Not only are future events unacceptable as an explanation of our present actions, for Bennett's Spinoza, but so are our present thoughts about those future events. Part of what motivates this reading is Bennett's conviction that no one could plausibly take a non-concessive approach to final causality. If Spinoza is objecting merely to a future event's being treated as the cause of a present event, then Bennett says "it is a noisy assault on a minuscule target". So although Spinoza says nothing against the concessive approach in the appendix to part I, and although he himself even appeals to our acting "on account of an end", Bennett labors to find the resources from elsewhere in the *Ethics* to block such explanations.

² Bennett [1984], 217.

The results are characteristically ingenious and interesting, but it seems to me that Spinoza's objection deserves more credit. (Or should I say *less credit*? When reading Bennett, it is often hard to know which to say.) From the proper historical perspective, what is supposedly a minuscule target looms much larger. Indeed, if we look back to the later Middle Ages we find widespread agreement—shared in even by a philosopher as abstemious as William Ockham—that future events can be the cause of present events.

Even looking back at Aquinas's words, we can notice that there is nothing concessive in his reply. He does not grant that the end itself is not a cause. He does not say that what we call the final cause is in fact the agent's intention. Instead he insists that the end itself, although "last in execution", is nevertheless "first in the agent's thoughts". To invoke thoughts of the end at this point is not to dismiss the end itself: later in the question he insists that "the end is a principle in things done by human beings" (1a2ae, 1.1sc). And elsewhere, in his useful summary of Aristotelian physics, he makes the same point more clearly:

The end does not actually exist except through the operation of the agent; still, the end is said to be the cause of what exerts efficient causality, because the efficient cause operates only through one's thought (*intentionem*) of the end (*De principiis*, 4.356).

Here there's no ambiguity. The end itself is said to be a cause, even if its contribution comes only by way of the agent's thoughts.

Aquinas has relatively little to say about final causes, and what he does say is not markedly original. It's more illuminating to turn to Avicenna, whose *Metaphysics* was enormously influential in this area. Avicenna considers an objection much like the ones we've already seen:

One could say: let us grant that an end exists for every act. But why have you treated it as a prior *cause*, when in reality it is the *effect* of all the causes?³

In reply, Avicenna distinguishes between the end as it exists in reality and as it exists in the soul. Only when it exists in the soul is an end a cause. From this point of view, "it is the cause of the causes,

³ *Met.* VI, 5 (ed. Anawati, 36). My translation from a French translation of the Arabic, compared against the medieval Latin.

whereas from another point of view, it is the effect of the causes".⁴ When these two points of view are combined, we can say that it is the cause of its own coming into existence.

Whatever force Avicenna's account has comes from his assumption that the end itself can be said to exist within the mind of the agent. When you go somewhere to meet a friend, the final cause is to meet your friend. That state of affairs doesn't yet exist, in reality, and so it cannot be a cause. Yet the state of affairs does exist, in your mind, and so in this sense it is a cause. In his *Liber de anima*, Avicenna had derided the familiar Aristotelian claim that the soul becomes the things it understands:

This is impossible on my view, because I don't understand what it says, that one thing becomes another, nor do I understand how this could occur. For whatever loses one form and takes on another is one thing with the first form and another with the second, and the first is not truly made the second unless the first is destroyed...⁵

To say that the soul becomes the things it understands implies that the soul itself is destroyed, and so Avicenna of course rejects this way of putting things. Still, he holds that somehow "the forms of things subsist in the soul".⁶ This doctrine of formal identity between mind and reality is what distinguishes Avicenna's position from the concessive approach described earlier. An end is a cause "only if it has been represented within a soul or something like a soul",⁷ but this is not tantamount to abandoning final causes in favor of mental states. It is the future event itself, as conceived in the mind, that is the final cause.⁸

Avicenna's account of final causality, combined with his view that all motion has an end, entails a full-blown cosmic teleology that takes us quite far from Aristotle's conception of final causes. This kind of teleology was of course pervasive within Christian medieval philosophy, and we'll see that even John Buridan, despite his hostility to

⁴ *Met.* VI, 5 (ed. Anawati, 43).

⁵ *De an.* V, 6 (ed. S. van Riet, 135).

⁶ *De an.* V, 6 (ed. S. van Riet, 137).

⁷ *Met.* VI, 5 (ed. Anawati, 42).

⁸ Anneliese Maier [1955a] misses this point when she remarks, with regard to Avicenna: "es ist nicht das noch nicht realisierte äussere Ziel, das als causa finalis anzusehen ist, sondern die Vorstellung dieses Ziels" (282). But it needs to be added that both Maier and I are basing our account of Avicenna upon just one text, in translation. The input of specialists would be welcomed.

final causes, preserves the doctrine for the special case of God. In this respect we might say that the Latin West was more Avicennian than Aristotelian. Aristotle was of course the remote source, but here, as in much else, Avicenna's influence loomed larger. His particular version of final causality would do much to provide the theoretical underpinnings for the cosmic teleology embraced in the Latin West.

When Aquinas describes final causes as coming "first in the agent's thoughts", it is easy to read this as shorthand for the account Avicenna spelled out in more detail. This is particularly so because Aquinas was likewise committed to the formal identity of mind and reality.⁹ Moreover, the Avicennian analysis fits nicely with Aquinas's broader teleological worldview. First, since ends can be causes only when existing in the mind, it follows that "for something to be done for the sake of an end, some sort of cognition of the end is required" (*Summa theologiae*, 1a2ae, 6.1c). Second, since Aquinas like Avicenna believes that all things act for the sake of an end, he concludes generally that "every work of nature is the work of an intelligent substance" (*Summa contra gentiles* III, 24, 2050). Rational creatures choose their own end, whereas nonrational agents follow God's will:

All natural things are inclined toward their ends through a certain natural inclination from the first mover, which is God, and consequently that toward which a thing is naturally inclined must be that which is willed or intended by God (*De veritate*, 22.1c).

This is a view that Aquinas found attractive for reasons not directly related to the debate over final causality. But it's nevertheless true that the way in which Aquinas developed his cosmic teleology grew out of specific concerns about how a final cause could be a cause, concerns which motivated a particular theory of final causality, a theory which presupposed a certain view about mental representation.

By the end of the thirteenth century, Avicenna's account had become the classic text on final causes, invoked over and over again at Paris and Oxford. John Duns Scotus uses the precise phrase that

Writing in the late sixteenth century, Francisco Suárez reports that this view—"finem movere secundum esse quod habet in cognitione, non secundum esse reale"—was attributed to both Avicenna and Aquinas (*Disp. Met.* XXIII, sec. VIII, 878). But Suárez, rightly to my mind, finds Aquinas holding another view: "finem movere secundum esse reale, illudque esse rationem formalem movendi, et consequenter cognitionem finis esse tantum conditionem seu approximationem necessariam huiusmodi causae". Suárez goes on to defend this view himself (879–882).

⁹ But for doubts on this score see Claude Panaccio's contribution to this volume.

we found in Aquinas: a final cause exists *in intentione agentis*.¹⁰ He calls this the *opinio communis* and quotes Avicenna at length in its support.¹¹ In an effort to clarify the situation, he invokes his standard analysis of mental representation:

Embracing the first path, then, that [an end] is a cause inasmuch as it exists in the thoughts of the agent, we should note that it exists there in the sense that it has objective and formal existence. Objective existence is real existence, and formal existence is that in virtue of which it is now thought of, and this is to exist in thought. For example: if I consider an existing rose, and the object of the intellect is the thing, then the species exists objectively and formally in the intellect.¹²

Clearly, this is not the concessive approach. The end itself is the cause, insofar as it exists in the thoughts of the agent, according to a special kind of *esse obiectivum*. In other contexts, Scotus uses this terminology to explain intentionality. Even in cases where the object of our thoughts or perceptions is right in front of us, making an impression on our cognitive faculties, we still need some sort of account of how we manage to have a mental representation of that object. Throughout the natural world, objects are causally present to one another: the sun shines on a rock, waves fall on a beach. To account for the special sort of relationship at work in cognition, Scotus appeals to a further kind of presence, which he describes as the object's having *esse obiectivum*—elsewhere, *esse cognitum* or *esse deminutum*—within the mind.¹³ It is this sort of presence that is required for the intentional relationships found in all cognition.

Scotus stresses in the above passage that this *esse obiectivum* is “real existence”. This is an important point, because the leading objec-

¹⁰ *QMet.* V, q. 1, nn. 20, 30, 61, 63, 77.

¹¹ See *QMet.*, n. 51, for the discussion of Avicenna, and also *QMet.*, appendix I, where another redaction of V, q. 1 holds: “finis enim duplex habet esse, finis dico secundum quod communiter loquitur de fine, scilicet in intentione et in re” (n. 51).

¹² “Tendendo ergo primam viam, quod est causa in quantum est in intentione agentis, notandum quod est ibi quasi esse obiectivum et esse formale. Esse obiectivum est esse reale; formale est illud quo nunc illud intentum est, et hoc est esse in intentione. Exemplum: si intelligo rosam existentem, et obiectum intellectus est res, obiective formaliter in intellectu est species” (*QMet.* V, q. 1, n. 77).

¹³ For *esse cognitum*, see *QMet.* VII, q. 18, n. 51; *Quodlibet* XIII, nn. 33, 41–47, 60–61; *Ordinatio* I, 3.3.1, nn. 386–387; *textus interpolatus* at n. 359. For *esse deminutum*, see *Ordinatio* I, 3.6, n. 34 and II, 3.2.1, n. 271; *Lectura* II, 3.2.1, n. 246. For discussion see Perler [1994], Pasnau [forthcoming], sec. II, and the essays in this volume by Joël Biard and Dominik Perler.

tion against ends as causes takes off from the dilemma that an end either has or does not have existence. It cannot have existence, because ends by their very nature are things not yet achieved. (This is so at least in standard cases, but see below). It cannot not have existence, “because a non-being is the cause of nothing” (*QMet.* V, q. 1, n. 2). Scotus uses the above distinction to reply. The end does not exist in the external world, and so it is a suitable candidate to be an end. But it does have existence—real existence—in one's thoughts, and so it is a suitable candidate to be a cause.

Characteristically, Scotus is introducing difficult metaphysical machinery to defend what is in fact a mainstream position. For more radical developments, we need to turn to the fourteenth century. But before making that turn, I want to look at the Avicennian model of final causality in a broader context. This model can be characterized as forward-looking, inasmuch as it attempts to give teleological explanations in terms of events that have not yet occurred and in fact may never occur, but that some agent intends to bring about. This is quite different from modern theories of teleology. Ruth Millikan, for instance, couches her theory of teleology in terms of the notion of proper function. On her view, proper function always has an historical basis, never a forward-looking one. To say that teeth are sharp for tearing will be true only if the right sort of account can be told—standardly, one in terms of biological evolution.¹⁴ For Larry Wright, to take a contrasting case, objects have a function neither because of historical considerations nor because of the forward-looking concern of a designer, but simply because it is true that objects of that kind produce effects of the relevant sort.¹⁵ As different as these two views are, neither endorses a forward-looking account of teleology. Indeed, in the modern era, forward-looking accounts have simply been non-starters.

There are many interpretations of Aristotle's teleology. But, as noted earlier, his position is clearly quite different from that of the medievals. Aristotle holds that final causes can be explanatory without having what we might call intentional salience. On his view, ends are the states toward which natural processes tend, and these tendencies are, in R. J. Hankinson's phrase, “internal natures possessed

¹⁴ Millikan [1993], 13–29.

¹⁵ Wright [1976], 90–91.

by natural objects in virtue of their specific forms".¹⁶ How did so many so-called Aristotelians go off the tracks in the Middle Ages? One familiar diagnosis describes how Aristotle's notion of explanation (*aitia*) got transformed into a theory of causality (*causa*), with the result that final causes were mistakenly conceived of on the model of efficient causes.¹⁷ There is something puzzling, however, about this suggestion that a crude conflation of two sorts of causes can account for the changing conception of final causality. Later Aristotelians were always very careful and concerned to avoid any slip-page between the various categories of cause; it would have been most un-scholastic of any scholastic to have confused final and efficient causes. It's hardly plausible, then, to charge the whole medieval period with confusion on this score.

What seems right about the familiar diagnosis, however, is its suggestion that medieval accounts of final causes presupposed a certain model of causality, patterned after the paradigm case of efficient causality. On this model, a cause had to be (a) a particular, concrete object or state that (b) plays a direct role in the production of a certain effect. So in the face of Aristotle's example,

It rains to make the corn grow (*Physics* II, 8, 198b18).

the Avicennian model looks to a specific day of rain, and a specific crop of corn, and asks how that crop of corn (not yet grown) can play a role in today's weather patterns. When the problem is conceived in this way, there seems no other solution than the appeal to intentional salience. Thus the doctrine of final causality comes to rest on cosmic teleology. And since the medievals were already committed to that kind of teleology for theological reasons, there would have been little reason for them to rethink their approach.

When final causality is understood along Avicennian lines, much of what is today considered teleological no longer counts as such. On the Avicennian model, final causality is possible only in virtue of a mind that grasps the end in question. So if nature does not act

¹⁶ Hankinson [1995], 128. This is the orthodox reading of Aristotle, but there is room to wonder whether we now read Aristotle this way because we want this to be his view. The texts are perhaps more ambiguous than the current orthodoxy would suggest. For some discussion of this ambiguity, see Charles [1991].

¹⁷ See, e.g., Frede [1987]: "A good part of the unfortunate history of the notion of a final cause has its origin in the assumption that the final cause, as a cause, must act and in the vain attempt to explain how it could be so" (126).

according to the divine mind, then there is no genuine acting for ends in nature, and hence no genuine teleology. The theory of evolution may suggest that giraffes have long necks for the sake of eating from high branches. Yet it is not some future end that plays a causal role here, but the past and present success of long-necked giraffes. For both Millikan and Wright, that's a paradigmatic case of teleological explanation. But on the Avicennian model, this is not genuine final causality. Genuine final causality involves a mind's reaching forward toward some goal and, by conceiving of that goal, giving it causal efficacy.

This much of the standard medieval view would remain unchallenged throughout the heyday of scholasticism. But the Avicennian approach would be subject to criticism by the ever vigilant William Ockham. Ockham gave at least as much serious attention to final causality as anyone in the medieval period. He takes the characteristically combative position that there is no way to prove philosophically that every effect has a final cause. The only events that can be proved to occur for the sake of some end are those that are non-natural—that is, those that can vary without any change in the agent and the surrounding conditions. Of course, Ockham holds as a matter of faith that all of nature pursues an end. But,

someone strictly following reason would say that the question "for the sake of what" (*propter quid*) has no place in natural actions, because he would say that there is no question to ask, "Fire is generated for the sake of what?" but that this has a place only in voluntary actions.¹⁸

In voluntary actions one can see that an agent is moved by some end: she does one thing, or she does another, not because anything is forcing her in that direction, but because there is something there that she wants. In precisely the same circumstances she might do something else, merely because she had a different end in mind. Ockham sees a close connection, then, between acting freely and acting for an end. It's only because we see that people can freely make choices based on one end or another that we know they are acting for the sake of an end. Indeed, Ockham's argument depends on a libertarian construal of free will: we have evidence of acting for ends only insofar as we have evidence that agents can choose

¹⁸ *Quodlibet* IV, 1 (ed. Wey, 299). See also *Quodlibet* IV, 2 (ed. Wey, 301–309), *Quodlibet* II, 2 (ed. Wey, 115–116); *Summula* II, 6 (ed. Brown, 227–230).

one goal or another, independently of all antecedent circumstances. Thus Aristotle's arguments for final causality

are sound only for an agent that can act wrongly and deficiently without any change in a concurring agent or in the thing being acted on or in any other dispositions. Only a free agent is like this—one that can be wrong and deficient in its action even if everything else remains constant (*Quodlibet* IV, 1).

Given this stance, Ockham must hesitate even in the case of non-rational animals. Ultimately, he thinks that we can assign them ends, on the basis of their changeable appetites.¹⁹ But the ends of noncognitive things, whose appetites are not changeable, are entirely opaque.

Because Ockham takes seriously the possibility that nature might have no ends, his discussions of final causality have a depth that other treatments lack. Officially, an end is "something intended or desired or loved for the sake of which an agent acts".²⁰ This, he says, is the proper understanding of ends, according to Aristotle's own words (*propter dicta Aristotelis*). This entails, again on Aristotle's own principles, that "if things without souls are not directed or moved by anything that cognizes an end, then there is no final cause in them".²¹ In such a case there would be "no question to ask" (as above) about ends or purpose. Ockham concedes that Aristotle sometimes speaks of ends in another sense:

In another way, the end or the final cause is taken as that which follows from the operation of another according to the common course of nature, if not impeded—following just as if it were foreknown or desired by an agent. It is in this way that an end is found in things without souls, even supposing that they were directed or moved by no cognitive being. This is how the Philosopher speaks about final causality, toward the end of *Physics* II.²²

This is, Ockham hastens to add, an improper way of thinking about ends. In the strict and proper sense, an end must be desired, and something can be desired only if it is cognized. That is Ockham's consistent position on final causality.²³

¹⁹ *Summula* II, 6 (ed. Brown, 227–228).

²⁰ *Summula* II, 6 (ed. Brown, 229).

²¹ *Summula* II, 6 (ed. Brown, 228).

²² *Summula* II, 6 (ed. Brown, 229–230).

²³ See also *Variae*, q. 4: "Dicitur enim communiter quod causatio eius est movere efficiens ad agendum. Istum movere non est realiter aliud nisi ipsum finem amari

But how does a final cause do its work? It's reasonably clear how the other three causes work: the role of an efficient cause "is to bring about or do (*efficere vel agere*) something"; the role of a material cause is "to materialize (*materiare*), or to be the material of the composite"; the role of a formal cause is "to give existence formally to the composite". Of course, none of these descriptions is very illuminating. But Ockham thinks that in each case the general idea is reasonably clear. The situation is very different with regard to final causes. Here "there is greater doubt". The consensus view, he says, is that the final cause moves the efficient cause to act. But what this really means is that the end is loved by the agent, so that something is done or willed for the sake of that end. "Nothing is really acquired from it or comes from it, and so it follows that this movement of the end is not real, but metaphorical".²⁴

ab agente . . ." (ed. Etzkorn, 107–108); "Et cum nihil ametur nisi cognitum . . ." (ed. Etzkorn, 116). Even in *ExPhys.* Ockham holds that true final causes must be grasped by an agent (see II, 12.4, ll. 36–43; II, 12.18, ll. 107–116).

Adams [1998] questions whether Ockham had a consistent position on final causality. It seems to me, however, that she exaggerates the conflict among Ockham's various texts. Adams pays close attention to *Quodlibet* II, 2, where Ockham allows that natural agents can act "for the sake of" something without that thing's being cognized: "Ad argumentum igitur dico quod non potest demonstrari quod omnia *propter quae* agunt causae naturales, cognoscuntur vel diriguntur ab aliquo . . ." (ed. Wey, 115). Ockham then goes on to say that the question of why a natural agent acts can be explained simply in terms of its nature's being such as to do so: "Et si quaeras *quare* tunc plus calefacit quam frigefacit, respondeo quod natura sua talis est" (ed. Wey, 116). Adams thinks that each of these claims clashes with *Quodlibet* IV, 1, where Ockham claims that, from a strictly philosophical perspective, there is nothing an agent acts for the sake of: "Unde ad primum in contrarium diceret sequens praecise rationem quod quaestio 'propter quid' non habet locum in actionibus naturalibus, quia diceret quod nulla est quaestio quaerere propter quid ignis generatur; sed solum habet locum in actionibus voluntariis" (ed. Wey, 299, translated above in main text).

But these passages can be reconciled. First, it's reasonable enough to refer to the ends that one knows (as a theologian) are present in nature, and to point out that these ends cannot be proved (philosophically) to exist. This is surely what Ockham is doing in the first passage from *Quodlibet* II, 2. Second, there is an ambiguity in the phrases *propter quid* and *quare*. Sometimes, these phrases are used narrowly to ask about a final cause, and it's Ockham's view, clearly expressed in *Quodlibet* IV, 1, that natural agents can't be proved to have final causes. But sometimes the phrases *propter quid* and *quare* are used broadly to ask about causes in general (see *Physics* II, 7, 198a15, 16, 19, 23, where the medieval Latin translation of *dia ti* is *propter quid*). It's in this broad sense that the question of why fire heats can be answered in terms of the nature of fire.

²⁴ *Variae*, q. 4 (ed. Etzkorn, 107–108). Cf. *Summula* II, 4 (ed. Brown, 221) for a similar account of the end's metaphorical movement, and *Quodlibet* IV, 1 (ed. Wey, 293) for a similar comparison to the other types of cause.

This last, striking formulation is in fact nothing new. Aristotle had likewise spoken of final causes as acting metaphorically—that is, only on some extended sense of ‘acting’—and many of Ockham’s predecessors had picked up on the phrase.²⁵ But to call the motion metaphorical hardly settles the question of how final causes work; if anything, it accentuates the problem. Ockham is interesting at this point because he moves away from the standard Avicennian solution. Although he explicitly acknowledges Avicenna’s view that an end moves “in virtue of the existence that it has in the soul”, he contrasts this position with a view he finds in Averroes, that “a final cause moves as a final cause in virtue of the existence that it has outside the soul”.²⁶ Ockham thinks that these views can be reconciled, but his reconciliation favors Averroes. Avicenna is right that the end must somehow exist in the soul, inasmuch as “it is impossible for it to move the efficient cause as something loved if it does not have existence in the soul”. But this is the realm of efficient causality. The end, considered as an end, is something in the external world. “An end moves the agent to act in virtue of its reality outside the soul”.²⁷

Ockham, then, is even less inclined than his predecessors to take a concessive approach to final causality. The final cause, on his view, is literally the external object toward which an action is directed. He in essence rejects Avicenna’s attempt to soften the doctrine of

²⁵ For Aristotle, see *De gen. et cor.* I, 7, 324b14–15. On Ockham’s predecessors, see Maier [1955a].

²⁶ *Variae*, q. 4 (ed. Etzkorn, 113–114). See Averroes, *InMet.* XII, t. 36 (ed. Venice, 318v): “Haec autem differunt in nobis, scilicet illud quod movet nos in loco secundum quod est agens, et quod movet nos in loco secundum quod est finis. Et habet duplex esse, in anima, et extra animam. Quod autem est in anima, est agens motum. Secundum vero, quod est extra animam, est movens secundum finem. Verba gratia quoniam balneum duplicem habet formam, in anima, et extra animam: et propter illam formam, quae est in anima, desyderamus aliam formam, quae est extra animam. Forma igitur animae balnei in quantum est in anima, est agens desyderium et motum: secundum autem quod est extra animam est finis motus, non agens”.

²⁷ *Variae*, q. 4 (ed. Etzkorn, 116). Ockham’s argument rests on an interesting analysis of the phrase ‘in virtue of’ (*secundum*). Both Avicenna and Averroes are right in saying that final causality operates *in virtue of* the end’s existence inside/outside the soul, because each can be read as meaning something different. To spell this out, Ockham appeals to a distinction between

- a causal reduplicative sense of the phrase ‘in virtue of’ (at p. 116, lines 373–374, I read *causaliter*, with one manuscript, rather than the editors’ *synkategorematicè*);
- a specifying sense of ‘in virtue of’.

This distinction gets worked out carefully in *Summa logicae* II, 16, but the account is too complex to be even summarized here.

final causality through an appeal to formal identity. For Ockham the final cause is the external thing itself, not the thing as it exists in the agent’s thoughts. But this raises two questions: why did Ockham move away from the Avicennian approach, and how can his own view be defended? Perhaps one reason why Ockham abandons (or at least reinterprets) Avicenna’s approach is that he came to be suspicious about the alleged formal identity between object and mind. In his earliest writings, Ockham subscribed to a bold version of formal identity, holding that the external objects of one’s thoughts exist in the mind as *ficta*, mental conceptions that have objective existence mirroring the subjective, real existence for which they stand:

The intellect apprehending something singular conceives a singular like it. That conceived (*fictum*) singular does not exist in reality anywhere, no more than the castle that a builder conceives exists in reality before he produces it. Nevertheless, it is such in conceived existence (*esse ficto*) as the other one is externally.²⁸

On this account, the Avicennian approach to final causality might well flourish. An end could be said to have objective, conceived existence in the mind, corresponding to its real, subjective existence in the world. This would be scarcely different than Scotus’s account. But Ockham came to give up this theory of mental representation. In his later writings he replaces *ficta* with acts of thought, ridiculing his former “little world of objective entities”, and holding that the act itself, a thoroughly real entity, can represent external objects.²⁹ From this perspective it is no wonder that Ockham moved away from the Avicennian approach.

Yet this is not Ockham’s stated reason for favoring the Averroistic line on final causality. He instead makes a very direct and effective argument:

An end’s moving an agent to act is an end’s being loved and the agent’s acting for the sake of that end, as loved. But an end is loved by an agent in virtue of its reality outside the soul and the agent acts for the love of that end as it is external. For walking is not for the sake of health as it has existence in the soul alone, nor because I love health or life in virtue of its existence in the soul, but because I love health and life in virtue of its real being outside the soul. And it is

²⁸ *ExPer.* I, proem., sec. 7 (ed. Garbatose, 360).

²⁹ *Quodlibet* III, 4 (ed. Wey, 218–219). For further references and discussion see Pasnau [1997].

for the sake of such loved being that I walk and abstain and do such things.³⁰

The argument concedes that in some sense the end itself might exist within the soul, but contends—plausibly enough—that we do not desire the end in that sense. It's not, to use the above example, the castle in the builder's mind that is desired, but the actual castle itself, in the external world. So the Avicennian approach, even granted its underlying account of mental representation, cannot be correct as an account of final causality. It misplaces the objects of our desire.

In embracing Averroes's more straightforward account of final causes, Ockham seems to be vulnerable to all the obvious objections. We've seen Spinoza make the quite reasonable assumption that what does not exist can have no causal power, and that later results can have no causal role in earlier events. Ockham must maintain that both of these claims are false. That which does not exist can have a causal influence, when conceived of in the agent's mind. Repeatedly, he considers the objection:

What does not exist is not the cause of anything.

His reply does not make the Avicennian move, most clearly apparent in Scotus, of invoking the object's existence in the mind. Instead he simply denies the premise.

If you say that what does not exist is not the cause of anything, I say that this is false. What must be added is that it is also neither loved nor desired, and then it does rightly follow that it is not a cause. But an end can in fact be loved and desired even though it does not exist, and so it can be a final cause even though it does not exist.³¹

Rather than relying on the obscurities of formal identity between object and mind, Ockham simply insists that what does not yet exist—and what may in fact never exist—can play a causal role, in virtue of its being loved and desired by an agent.

This strikes me as a more plausible way to maintain a medieval-style forward-looking account of teleology. We speak of fearing the future, of desiring the future, of being motivated by the future. The last of these seems no more mysterious than the others. One obvi-

³⁰ *Variae*, q. 4 (ed. Etzkorn, 115).

³¹ *Quodlibet* IV, 1 (ed. Wey, 294); cf. *Summula* II, 4 (ed. Brown, 224); *Variae*, q. 4 (ed. Etzkorn, 116–117).

ously can *think* about things that do not exist. Is it any harder, then, to countenance being motivated by things that do not exist? The alternative would be to insist that the future cannot motivate us, and that it is our present beliefs and desires that motivate us. But to insist that I cannot be motivated by something in the future, that it must be my idea of the future that motivates me, seems to have as little merit as insisting that I cannot *think* about a nonexistent object, and that it must in fact be my *idea* of that object that I think about. Ockham makes this point from the other direction:

It does not follow: *This is loved by some agent in terms of its real being outside the soul; therefore it exists in terms of that being.* This is the fallacy of the qualified and unqualified. Analogously, it does not follow: *A rose is thought of in terms of its external being; therefore it now exists in terms of that being.* Likewise, it does not follow: *Homer exists in thought; therefore he exists.*³²

Just as our thinking about an object, or being motivated by that object, does not entail that object's existence, so too an object's nonexistence does not preclude our thinking about it, or preclude our being motivated by it. Spinoza's line of criticism neglects the special role of the mind in final causality: the way the mind allows us to be motivated by what is not immediately at hand, and even by what does not exist. Whereas Spinoza thinks of all causality along the lines of efficient causality, Ockham wants to leave room for causality of a special sort. Such causality is almost as counterintuitive as Spinoza complained. But it is not, on reflection, obviously incoherent.

Ockham's is the fullest and most energetic medieval defense of final causality. But within a decade this teleological framework would come under attack, most notably at the hands of John Buridan. Buridan accepts without any of Ockham's hesitations the doctrine that God designs and directs all of nature. And he takes for granted the forward-looking teleological framework of his era, according to which final causes must be intentionally directed. But despite going this far, Buridan still argues that the medieval doctrine of final causality is largely mistaken. In his *Questions on the Physics*, Buridan asks the simple question, *Is an end a cause?* He begins his reply cogily:

³² *Variae*, q. 4 (ed. Etzkorn, 116–117). For the fallacy of the qualified and unqualified (*secundum quid et simpliciter*), see Aristotle, *Sophistical Refutations*, 5, 166b36–167a20.

It seems to me that by a natural impulse, as if determined by nature, everyone accepts that an end is the cause of our operations. So if you ask a little old lady why (*propter quam causam*) she goes to church or to the market, she will say to you that she goes for the sake of hearing a mass or for the sake of buying a tunic. And if you are asked why you go to school, you will reply: for the sake of learning. Claims accepted in this way by everyone should not be entirely dismissed, because (as Aristotle says in *Ethics* VII) nothing more plausible and accepted could be brought forward to prove the opposite.³³

It's not that we have decisive reasons for our teleological explanations: rather, we can hardly help but give them—we're programmed that way, as we would now put it. This is true as much for a peasant woman as for a sophisticated university student. Such universal beliefs "should not be *entirely* dismissed", but that's not to say they must be swallowed whole. And so Buridan sets out to reassess the meaning of our teleological explanations.

Even if we accept that final causes must in some sense be legitimate, Buridan immediately notes that we still face the following, by now familiar, difficulty: "How can that which is nothing be a cause of things that exist?" Buridan takes the view that Spinoza later would adopt, that there simply is no way to answer this question: "for it does not seem to me that what exists actually depends on and is ordered by things that do not exist".³⁴ But this doesn't mean we have to abandon final causes entirely. Buridan distinguishes between two sorts of ends: ends of first intention, for the sake of which an act is performed, and ends of second intention, by means of which one achieves an end of first intention. God, for example, is an end of first intention, and is in fact the end of all things. A human being may also be an end of first intention. One builds in order to have a house, and the house is an end of second intention. But one's own self is an end of first intention, because one builds the house for one's own sake.³⁵ Ends of second intention cannot be final causes,

³³ *QPhys.* II, 7 (ed. Paris, 35rab).

³⁴ *QPhys.* II, 13 (ed. Paris, 39vb).

³⁵ *QPhys.* II, 7 (ed. Paris, 35rb). Buridan credits Averroes with this terminology, but thinks the distinction is equivalent to Aristotle's distinction between ends *gratia cuius* and ends *quo*. Ockham had likewise discussed the difference between proximate and remote ends, e.g.: when I drink the bitter medicine, is health the final cause, or am I myself the final cause? He concludes that in such a case I am the final cause, properly speaking, and he draws on some arguments by John of Reading for the same conclusion (*Variae*, q. 4 [ed. Etzkorn, 101–107]; see also *Summula* II, 4 [ed. Brown, 223]).

because they come into existence as a result of the action in question; they are effects, not causes. But ends of first intention don't face any such difficulty: they clearly do direct and determine the outcome of our actions. The standard arguments against final causes don't apply here.

This distinction preserves God's status as a final cause, and it saves us from having to say that creatures are a final cause for God (an issue Spinoza had likewise raised).³⁶ But it's not clear how these remarks could be compatible with the ordinary sorts of teleological explanations that Buridan pledged to preserve. In fact, Buridan doesn't think that such explanations can be preserved in any straightforward way. So he suggests that we reinterpret such claims in terms of an agent's *intentions* to achieve such and such secondary end. Returning to the original example, "if someone asks you why you are going to church, you should say that I intend or want to hear mass".³⁷ When we describe the mass, or the tunic, as the final cause, this should be understood as shorthand for the claim that our desire to hear the mass, or to own the tunic, is the cause. In this way, having granted that we can't help but think of ends as causes, and having allowed that some ends are causes, Buridan reinterprets most teleological talk so as to eliminate the references to final causes.

This looks like a powerful position. In the face of Ockham's appeal to the intuitive plausibility of our being motivated by the ends themselves, Buridan concedes that these are our intuitions. But he insists that secondary ends are not literally causes. In reply, Ockham would stress the analogy to intentional states: we think about the future, fear the future, etc. Why deny that we are motivated by the future? Buridan's implicit answer is to stress that we are looking for a causal relationship. For the future to have an effect on us, our present actions would somehow have to depend on future events. But this is clearly not the case: one's present actions depend on one's intentions and desires, but they do not depend on future events. "The intention and desire of the doctor desiring to heal Socrates does not

³⁶ "Again, this doctrine takes away from God's perfection. For if God acts for the sake of an end, he necessarily wants something which he lacks" (*Ethics*, part I, appendix). In *QPhys.* II, 7, this seems to be Buridan's main motivation for holding that ends of second intention are not final causes. In *QPhys.* II, 13 he focuses more on the implausibility of introducing effects into the explanation of their cause.

³⁷ *QPhys.* II, 7 (ed. Paris, 35vb).

depend on producing Socrates' health".³⁸ Sometimes, we can intend to do things that never will exist, even things that cannot possibly exist. It may, for instance, be *impossible* for Socrates to be healed. How could the doctor's intentions hinge on something impossible? Not all causes need be efficient causes. But Buridan assumes, reasonably, that nothing is a cause unless its effect somehow depends on it.

Much of the force of this line of argument comes from the assumption that the end in question is a particular, concrete end. It's absurd, Buridan repeatedly insists, to think that the doctor's actions could depend on *Socrates' health*—i.e., on Socrates' becoming healthy in the immediate future. The assumption is a reasonable one for Buridan to make, inasmuch as the medievals did standardly think of final causes in this way. One can see Ockham making this assumption, for instance, in his arguments against the demonstrability of teleology in the natural world. One cannot know the final cause of rain, he argues, because "its end is concealed from us on account of its matter".³⁹ This will look like an odd argument if one supposes that we're looking for the final cause of the general phenomenon. Obviously, *it rains to make the crops grow*—or so we would expect—the scholastics to say. But once one sees that Ockham is thinking of a particular rainfall, his point becomes much more clear. We can't see why it rains on this particular day, because the various incidental circumstances surrounding the event cloud the underlying purpose.

It seems to me that an effective reply to Buridan would have to give up this aspect of the medieval account. Rather than think of final causes as concrete future events, a forward-looking account might characterize these causes in a more abstract way. One might suggest that the doctor's end is health, for example, rather than Socrates' health. Buridan continually resists this construal of final causes, referring to the ends in question as "that health", "the health of Socrates", etc. If we instead characterize the end more abstractly, it becomes less absurd to introduce it in an explanation of our intentions. The doctor's desire for Socrates' health does not depend on any contingent future event, but it does depend on the doctor's grasping the abstract ideal of health. A doctor can intend to make Socrates healthy only to the extent that she recognizes and is moved by this

³⁸ *QPhys.* II, 13 (Paris, 40ra).

³⁹ *Brevis summa* II, 6 (ed. Brown, 37).

abstract ideal. The ideal may never be instantiated in Socrates, of course, but that doesn't matter: it's not the concrete instantiation that is literally a cause, but instead the abstract ideal.

This line of thought helps with another problem that plagues a forward-looking teleological account. Very often, an agent has no particular end in mind, but a general desire to see objects of a certain kind produce effects of the relevant sort. Perhaps God does not work this way: perhaps God always has in mind all the particular effects of his actions, and so is motivated by each and every actual event. But human beings are not so provident. A doctor discovers the cure for a disease in order to save lives, but did not specifically have Socrates' life in mind. Buridan noticed this kind of problem, remarking that when I form an intention concerning human beings it would seem to apply to all human beings—past, present and future. "But it is absurd to say that my intention depends somehow on human beings that are in Rome, or on every human being that was and will be".⁴⁰ This is absurd. But a better way to deal with the generality of our intentions is to construe them more abstractly, in terms of abstract states of affairs or ideal states. It seems quite plausible to say that our intentions and our actions depend on such things. One goes to mass, after all, because of a complex set of religious practices—a state of affairs that motivates one's actions.

This is not a strategy that Ockham himself could embrace, given his nominalism. But it wouldn't be unreasonable to offer this as an interpretation of the Avicennian approach to final causality. After all, the doctrine of formal identity on which that approach rests hardly supposes that the concrete particulars themselves exist both externally and in the soul. It is instead something more abstract that is supposed to exist in both places. Avicenna seems to say as much in explaining how an end can have this sort of dual existence. Taking as his example a human being, he remarks,

The human being has a truth that is his definition and quiddity without supposing that he exists in a particular or general manner, in reality or in the soul, however potential or actual.⁴¹

This truth, the thing's definition or quiddity, would seem to be just the sort of abstract ideal that might more plausibly be identified as

⁴⁰ *QPhys.* II, 13 (Paris, 40ra).

⁴¹ *Met.* VI, 5 (ed. Anawati, 42).

a final cause. And as this doctrine develops in the thirteenth century, it becomes even more clear that what the mind contains is the abstract form of the external object: thus Aquinas speaks of formal identity, and Scotus writes that “the species [of the rose] exists objectively and formally in the intellect” (as quoted earlier). So if one intends to plant a rose garden, the end is not the particular roses that may or may not come to be, but something more abstract, the idea of roses. That, *pace* Buridan, is not the intention itself, but the object of the intention.

On my scorecard, then, Buridan gets the best of Ockham, but Buridan is vulnerable to an abstract conception of ends, which one might or might not want to identify with the earlier Avicennian approach. I’m cautious about making that identification, because the move toward abstract ends strikes me as a move away from one of the key characteristics of medieval teleology: its forward-looking, concrete and particular view of what ends are. It’s only when one gives that up that Buridan begins to look vulnerable. But if one does move toward an abstract account of ends one faces serious questions about the metaphysical status of these abstract entities. It’s not at all clear that the account’s teleological payoff justifies its metaphysical cost.

We’re at an ontological impasse, then, and it is not my project here to settle questions of ontology. But there remains a question of whether ontological issues even need to arise if we treat final causes as explanatory rather than causal. Buridan supposes that ends can be causes only if their effects somehow depend on them. One might, on Ockham’s behalf, argue for a broader notion of causality.⁴² Alternatively, one might defend an entirely noncausal version of teleological explanation, according to which final causes are crucial for explanatory purposes although they are not causes. (This is surely the *opinio communis* of our own time.)

Here again, however, it seems to me that Buridan has the resources to reply. He envisages a new model of scientific explanation, free of appeals to secondary ends.⁴³ When one asks for the cause of why

⁴² But Ockham himself seems committed to something like Buridan’s strict account. He writes, “That is truly the cause of a thing which, when it is posited the effect is posited, and when it is not posited the effect is not posited” (*ExPhys.* II, 12.18, ll.88–89). Ockham asserts this specifically in connection with final causes, but it’s not at all clear how he supposes a final cause will meet this criterion.

⁴³ Maier [1955b] describes Buridan as playing a pivotal role in later medieval science: replacing final causality with natural law, and turning teleological expla-

fire heats, one shouldn’t appeal to the end of generating more fire; rather, one should appeal to “its form, its heat, and God for the sake of whom it acts . . . And if other replies are given they will be in an improper sense”.⁴⁴

God remains on the scene, of course, organizing and directing all events. And Buridan acknowledges that, speaking less than strictly, we may have reason to appeal to the secondary ends of both living and nonliving things. Though these sorts of ends are secondary and imperfect, they are better known to us, and so it is often easier to cast explanations in these improper terms. Although the true explanation for why swallows breed and build nests would appeal to (a) their inner nature, (b) the influence of the seasons, and (c) God,⁴⁵ it’s understandable that we’re inclined to a more obvious explanation: that they’re acting for the sake of their offspring. That isn’t a genuine explanation, but it’s not unreasonable for us to use it as an explanation, given that real explanations are so extraordinarily difficult for us to come by. We can’t say what role the swallow’s inner nature plays, or how the seasons exercise their influence, or what God’s intentions are. So we settle for what’s obvious to us.

Buridan’s ideal methodology is reductive. In the natural world, real explanations show how an event is necessitated by antecedent circumstances: “with respect to the actions of non-free agents, the existence and order of everything that is to come follows of necessity from what exists and precedes it”.⁴⁶ In these contexts, the appeal to final causes—other than God—is not genuinely explanatory, because the event is wholly determined by antecedent factors. It’s these facts that the scientist should look for, setting aside final causes as ultimately irrelevant. Of course it may be helpful, in the short-term, to consider what ends an object is directed to achieve. But mere heuristic value shouldn’t be taken as evidence that such accounts illuminate the natural order.

nations into mechanistic, necessitating explanations (319, 334). Although Maier may overstate her case, this reading strikes me as substantially correct.

⁴⁴ *QPhys.* II, 7 (Paris, 35vb).

⁴⁵ *QPhys.* II, 13 (Paris, 40rb): “nec illi pulli determinant hyrundinem ad sic operandum sed forma et natura hyrundinis et corpora celestia determinatis temporibus et deus supremus per suam sapientiam infinitam determinant hyrundinem ad coitum ex eo consequenter sequitur generatio ovorum”. Buridan repeatedly stresses the way ends of second intention are better known to us, although in fact derivative: see *QPhys.* II, 7 (Paris, 35vb) and II, 13 (Paris, 40rb).

⁴⁶ *QPhys.* II, 13 (Paris, 39vb).

In this way Buridan poses a dual challenge to the proponent of final causes. Show how ends can genuinely be causes, or show how ends can genuinely be explanatory. More than six centuries later, the challenge still stands.

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