Suárez on propinquity and the efficient cause

In the *Principles*, Descartes declares that of the four Aristotelian causes, he will retain only one: the efficient. Though some natural philosophers argued on behalf of the final cause, and others held that form could be rehabilitated, the efficient cause was in fact the only one of the four to flourish in the new philosophy. Descartes' claim would lead one to believe that he preserved the efficient cause—that here, at least, we find continuity. But it is reasonable to wonder whether, when from a fourfold classification three members are removed, the fourth can remain unaltered.

The theory of the efficient cause in late Aristotelianism is a kind of bundle. Among its components are a group of what I will call "formal characters". These are features of efficient causation that are, or so I will argue, relatively independent both of what is said to be the essence of the efficient cause and of the hylomorphic principles of Aristotelian natural philosophy.

[There are three sorts of question on efficient causes in the textbooks & commentaries: questions on the nature of the efficient cause, and on the causal relation or the "causality" of the efficient cause; and questions on

various features or conditions under which efficient
causes operate; and finally questions on freedom.

Leaving out the last, which does not pertain to natural
philosophy, my thought was that if you look backward
from Hume (or Kant, for that matter) you see that the
concept of efficient causation seems to include, by
Hume's time, only some of the features or conditions.
No-one knows any longer (after Malebranche) what a
"necessary connexion" is supposed to be. (In the 20th
century Hempel's theory of explanation, insofar as it was
meant to treat causal claims, and Suppes' probabilistic
causation (e.g.) are studied attempts to "reduce" the
causal relation to other relations, which is to say, they
presupposed that the causal relation has no "nature" of
its own.)

A theory of efficient causation becomes a theory that
argues for or against such claims as:

causes precede their effects in time
no agent acts except on what is "propinquitous" to it
the intensity of the effect is proportionate to the strength
of the (total) cause
given the cause, the effect must follow

Some of these are included in Suárez's disputation on
the efficient cause, and some in a later disputation on the
comparison of causes to their effects (disp26).

Why "formal"? I'm using the term loosely, to contrast
these sorts of claim with claims about what causation is.
To say that causes necessitate their effects is to assert that
a certain logical or modal relation holds between two
propositions, one concerning the cause, the other the
effect; and it is evidently possible, since philosophers have
done so, to argue for or against that claim without
writing the equivalent of Suárez's disp12 and 17.]

   The looseness of the bundle makes it possible for its various
strands to be unravelled. The suggestion I would like to make—a
suggestion that evidently requires more than one instance for its
proof—is that formal characters, because they are independent of

its putative nature, can be retained even as the principles of natural philosophy are transformed. Indeed by the time of Hume, it seems to me, there is so little agreement on the nature of the efficient cause that the theory of efficient causation becomes a theory of its formal characters alone.

Suárez's *Disputations* include a thorough treatment of the four causes, starting with questions on cause in general and proceeding through the material, formal, efficient, and final causes. The disputations on the efficient cause treat its definition, the varieties of efficient cause, certain of its formal characters (as I have called them), and the necessity with which efficient causes operate. (Helen Hattab, I should note, has given a thorough treatment of the definition of efficient cause and the nature of *causalitas*.) A later disputation, on the comparison of causes with their effects, adds questions on temporal priority and the relative nobility of cause and effect.

I examine here the arguments of the section on propinquity. This includes, of course, a judgment on the possibility of action at a distance. Suárez, in agreement with Thomas and his followers, and contrary to Scotus and his followers, holds that action at a distance is impossible. The interest in his discussion lies in not so much in the position he takes as in his account of how causes act on things remote from them—that is, of how causes act through media. The influence of created agents, the sun for example, though always limited to a finite sphere of activity, may extend almost indefinitely; to do so a medium is required. Transmission of influence through media is peculiar to the efficient cause. Once it is shown—without, as it turns out, much difficulty, that there is no action at a distance, the issue becomes one of accurately describing how efficient causes act through media.

That issue is of interest not only in its own right but because it can be seen, or so I believe, to have a role in Descartes' insistence that bodies interact only by collisions. In collision mechanics there are no media; there is only the immediate contiguity of one body with another. If all change is reduced to the collision of bodies,

then there is no need for a model of distant causation. The conceptual apparatus employed by Suárez is no longer of use. The notion, for example, of a sphere of influence, in natural philosophy if not among the angels, has no application when the "sphere" of every body is simply its surface. Descartes may seem to retain in his optics the notion of a medium; but in fact a Cartesian medium is only a causal chain, a sequence of collisions; Cartesian physics has no media in the Aristotelian sense.

In what follows I first present Suárez's formulation of his position and the arguments on its behalf. I then turn to puzzles raised in arguments on behalf of immediate distant causation.

1. The question

An agent can be distant from a patient only if the two are distinct. So only in transeunt causation does the possibility of action at a distance arise. In *Physics* 7c2, Aristotle writes that the Prime Mover must be "together" with what it moves, which is to say that nothing is interposed between them; this, he adds, is common to all movers and things moved. Thomas, arguing that God is present everywhere, writes that "of no agent, however powerful, does any action proceed to anything distant, unless insofar as the agent acts on it through a medium".[1] This was the Thomist position, from which Scotus and others dissented.

The question, then, is this:

> When the proximate and immediate cause acts by a power it
> possesses by itself, and not from another, quam diffundit,
> must it immediately be in contact [*contingere*], by its quantity
> or its presence, with the thing on which it acts; or can it act

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1 "Nullius agentis, quantumcumque virtuosi, actio procedit ad aliquid distans, nisi inquantum in illud per media agit" (ST 1q8, referred to by Suárez, *Disp.* 18§8¶1).

on that thing immediately, even if it is spatially distant from it.[2]

Suárez conjoins with this a second question. Whether any agent can act immediately on a thing spatially distant from it is a question relatively easy to answer: the answer is no. But if agents act immediately only on nearby things, then in order to act, as they obviously do, on distant things, they must somehow act on them by way of nearby things. The question, then, is how. This question is not so easy; the greater part of Suárez's discussion is devoted to answering it.[3]

Nearness (*propinquitas*, also *indistantia*) is for material agents a matter of contact or adjacency of the quantities of their matter. For spiritual agents it is a matter of "presence", substantially or by power. I will concern myself mostly with material agents, for whom the *distantia* between an agent and patient consists, as Suárez puts it, in there being "either a part of a body or a space" between them. In the ordinary course of nature there can be no void; but it is conceivable that two bodies should not be touching even though there is no other body between them. The case of action across empty space, though unnatural, turns out to be fundamental for Suárez.

2. Suárez's position

Suárez's resolution of the question consists in laying out, in four *assertiones*, a model of distant causation. Preceding those assertions

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2 "Et non est dubium inter philosophos, quin possit causa efficiens agere in rem distantem per propinquam; sed difficultas est, quando proxime et immediate agit causa per virtutem quam in se habet, et non per aliam, quam diffundit, an oporteat immediate contingere sua quantitate vel præsentia eam rem in quam agit, vel possit immediate in eam agere, etiamsi spatio distet. Cum qua difficultate conjuncta est alia, nimirum, quando causa agit per rem propinquam indistantem, quomodo per propinquam attingat distantem" (§7¶1, 650).

3 "Cum qua difficultate conjuncta est alia, nimirum, quando causa agit per rem propinquam indistantem, quomodo per propinquam attingat distantem" (*ib.*).

is an explication of what he calls *modi distantiæ et indistantiæ agentis ad passum*.

2.1. Modes of distance

The first and most notorious way of being distant is to be separated by a void. The other ways presuppose a plenum. A patient may be distant from an agent because a spatial medium, not empty but entirely full of bodies, is interposed between them. That medium may be entirely indifferent to the action of the agent, or of any agent; or it may be that the agent acts on the medium by a different power than the power by which it acts on the patient; or, finally, the agent may act on both the medium and the patient by the same power (§8¶13, 654.

Though Suárez calls these alternatives *modi distantiæ et indistantiæ agentis ad passum*, it seems to me that only the distinction between a purely spatial separation and a separation by interposed bodies really deserves that name. The rest, no less interesting for all that, is an analysis of the ways in which an agent might act on a patient through a medium.

Even when an agent acts on both the medium and the patient by the same power, there are various ways it can do so. It can act on the patient by impressing a quality on the medium by which the patient is affected; in such a case the agent acts only remotely on the patient. It can also act simultaneously on the medium and the patient, in such a way that both actions are required in order for the patient to be affected. Finally the agent's action may of necessity spread from near to far, not because affecting the medium is necessary to affecting the patient, but "by necessity of order alone (so to speak)", for example, if the agent's influence is always transmitted along a straight line. The last of these, as it turns out, is the default case as we might say.

2.2. No action across a void

The first of Suárez's assertions is that "an efficient cause can effect nothing in a distant patient, if an empty space is interposed" between them.[4] It is for that reason that the universal providence of nature endeavors to prevent the occurrence of empty space—the famous *horror vacui*. Or rather, as Suárez says, we can infer from the *horror vacui* that a gap in the plenum, though not ruled out by the nature of corporeal things, is to be avoided for the sake of "commodiousness and utility", and *that*, we infer, is because no agent can act across a gap.[5] (It's interesting that Suárez does not want to place much weight on this argument. Does he have doubts about the *horror vacui*? Or is it merely that the argument appeals not to the nature of efficient causation but only to the utility of causal connectedness?)

Since a void cannot occur naturally, experience provides us no test of action across a gap. But suppose (Suárez writes) that the space between agent and patient is filled with a body that "interrupts the action of the agent", so that the space "entirely impedes the action [of the agent] on the distant patient", even if the patient is within the sphere of action of the agent. A void is effectively just such a body; it doesn't resist the action of the agent,

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4. "Primo igitur dicendum est, causam efficientem nihil posse agere in passum distans, si spatium vacuum interpositum sit" (§8¶14, 655).

5. "Tum quia tanta naturæ sollicitudo amorem indicat necessitatem; tum etiam quia si verum esset naturalia agentia posse attingere distans absque medio, sæpe esset utilius ad actionem nullum habere interpositum reale medium, quia magis esset expedita sphæra, minusque circa illam occuparetur virtus agentis, juxta ea quæ statim dicentur" (§8¶14, 655).

but is incapable of receiving its action, just as an opaque body, rather than resisting the action of light, simply lacks the capacity to be acted on by it (and so it fails also to transmit the action of light).[6]

The void so conceived is rather like a Cartesian body, which has no positive power of resisting the movement of other bodies; its "inertia" consists entirely in its being subject to the laws of motion. Suárez's argument resembles Descartes' on the nonexistence of the void. Nothing has no properties, says Descartes, and so in particular if there really is nothing between two bodies, that nothing has no dimensions, no size (*PP* 2§18, AT 8.1:50). Suárez for his part supposes that a void, because it cannot take on the action of any agent (which would entail its having a property), is thereby constituted a perfect impediment.[7] [✪]

The conclusion to be proved is that if there were empty space between an agent and its would-be patient, then no action of the agent could reach the patient, because an empty space "interrupts" all actions. But—you might say—the term 'interrupt' already presumes that some sort of continuity is required when an agent and its action are not in the same place (because the patient is distant, and because the action or *motus* effected by the agent is in the patient). Nothing, it would seem, precludes the action of this fire on that tree over there unless you suppose already that something *spatially between* must connect the fire to its action.

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6. Suárez notes an objection to the effect that the interposed body "does not impede the action of the agent on more distant bodies because it interrupts the action of the agent but rather because all the power of the agent [*tota virtus agentis*] is preoccupied with it (so to speak), so that the agent's sphere terminates here [in the interposed body]" (§15, 655). But if the interposed body is simply incapable of being affected by the agent, it cannot be said to be exhausting the power of the agent.

7. [Aristotle: a vacuum would offer no resistance to motion…]

2.3. Whatever an agent can effect at a distance, it can effect in the medium

Suárez's second assertion: an agent can act on a patient which is distant from it only if it can act on the medium that occupies the space between them. If the previous assertion is accepted, this one follows readily. "If the medium were not necessary to sustaining and as it were conveying the action of the agent," Suárez writes, the relation of the medium to the action would be *per accidens*, and it wouldn't matter whether the medium was real or not (§8¶16, 656). But we have seen that no agent can act across a void: it's not incidental that something real, something receptive to the agent's action, is interposed between agent and patient.

2.4. Whichever power of the agent acts on distant objects must also act on the medium

Suárez's third assertion is that the action of the agent on a distant object and its action on the medium (whereby it acts on the patient) must arise from the same power:

> In order that the agent should affect a distant patient, it is not
> enough that it should by another entirely distinct power or
> action act in the medium; rather it is necessary that by the
> same power by which it acts on the distant patient, or by a
> subordinate power, it should begin to act on the medium near
> to it, and spread its action or influence throughout the
> medium out to the distant patient (§8¶17, 656).

The argument is that if the agent acted on the medium by one of its powers, and on the distant patient by another distinct power, then "formally there are two agents, even though materially they are one by virtue of being of one *suppositum* or subject" (*ib*.). The formally distinct agent that was acting on the distant patient would effectively be acting on it at a distance. So, for example, if a candle, having the power both to heat and to dry, dried the air around it while heating a distant object, it would be as if that object were being heated at a distance. Even if the drying of the air paved the

way, so to speak, for the action of the heat, by disposing the air, let's say, to cease resisting the heat, still that disposition would be "merely material", it would be irrelevant that it was caused by a power residing in the same agent as the heat; that power could just as well reside in another agent.

Suárez's second and third assertions depend on his first: if action across a void is possible, then agents needn't act on the medium to affect distant objects, nor need the same power of the agent affect both medium and object. Causal relations, in other words, depend upon spatial relations; and, as we have seen, insofar as it is a good thing for the world to be universally causally connected, causal relations in part determine what we would now call the topology of physical space.

The model, then, of action at a distance includes an agent, a patient which is not near the agent, and a medium. In the standard case the agent acts only on the part of the medium that is near to it, thereby affecting the patient; its action on the medium and on the patient must be effectively a single continuous action, originating from a single "virtue" in the agent. That virtue, Suárez tells us, need not be a single form; it may be a coalition of active powers. The continuity of the action, moreover, need not be "rigorous and physical"; it suffices for the continuity of the action to be "according to some sort of subordination and causality" (§8¶18, 657).

2.5. Some complications

Suárez's fourth assertion, which consists of two complementary claims, further qualifies the model. First, even though the medium on which the agent acts must be nearby, it need not always be the case that the *intentio* of the agent in causing is that it should first act on the medium and then, *through* the medium, on a distant object. The production of visible species in air or water is a case in point. Visible species *per se* cause only sensations in a visual organ, because "the action of the species *per se et ex intentione naturæ* is wholly

ordered to the eye, since only in the eye can visible species have the effect for which they were instituted" (§8¶19, 657). In short: sometimes the action of an agent on its medium is, though not merely *per accidens* (because without a medium the agent cannot act on distant objects), nevertheless incidental to its *per se* effect on a distant object, because only that effect is, so to speak, explicitly comprised in the nature of the cause. [Contrast with the case of heat.]

Second, sometimes the agent acts on a distant object not through the medium, but as if it were "conjoined" with the medium, through which its influence is diffused. The efficient cause in this instance is the mereological sum of agent and medium, a thing to which the object acted upon is near. (Compare Spinoza on the joint action of bodies considered as one.) We no longer have an instance of distant causation. This second case is approximated in those instances where, as Suárez writes later, the agent "acts through [a nearby portion of the medium] as through a medium necessary to the continuation of the action, or so that the action occurs without interruption" (§8¶21, 658). The medium, so to speak, enlarges the agent so that it can be near the objects it acts on. (Think here of Descartes' analogy between light rays and a blind man's staff, which is in effect just a continuation of his hand.)

3.   Puzzles

The arguments on behalf of immediate distant causation consist mostly in examples in which an agent or power apparently acts, without a medium, on something spatially separated from it. But Suárez also presents two systematic arguments against the claim that agents act only objects not spatially separated from them (§8¶8–9).

3.1. Spheres of action

Suárez's position is that, with the qualifications noted above, an agent can act immediately only on what is near it. Being near at

least entails not being spatially separated from the agent, or more precisely, being part of or inhering in a body that is not spatially separated. But strictly speaking only the bounding surface of the bodies surrounding the agent is not spatially separated from it. If an agent acts immediately only on what is near to it in that sense, then it "would act through that surface on immediate[ly near] parts, and through nearer parts on more distant parts, dividing as it were its action by all proportional parts, near and remote". But this "enumeration" of all the proportional parts of the surrounding medium is "scarcely intelligible", especially for changes that must occur instantaneously throughout some portion of matter, such as generation (§8¶9, 653). Moreover, since there is no corporeal whole which is near the agent in this strict sense, the *subject* on which the agent acts is not well-defined.

The difficulty here is that physical change occurs in bodies, which is to say, in things having not just two but three dimensions. On pain of supposing a volume to consist actually, and not just potentially, in a collection of surfaces, one cannot confine the action of agents to a surface. But only for the surface surrounding a body does the word 'near' have a precise sense. Otherwise, especially in the case of a body surrounded by a continuous fluid, there is no obvious way to distinguish nearby from distant objects. One could take the entire medium to be one thing, and thus all of it to be near the agent; but it would be difficult then to explain why in some cases the transmission of the agent's action takes time, and also why an agent acts more intensely on some parts of the medium than on others.

If the subject on which an agent is capable of acting is not well-defined, neither is its sphere of activity. The immediately surrounding surface is evidently not a sphere. But if we try to extend the range of an agent's immediate action beyond that limit, we must either do so arbitrarily, or by appeal to extrinsic features (e.g. the resistance of the medium). What is worse, we will be unable to explain why the action of an agent is not equally intense throughout its sphere, even though experience tells us that the

actions of some agents diminish in proportion to the distance of their objects:

> since a power is finite, it does not equally overcome [the resistance of] things near and far, and so greater nearness leads to greater perfection in the action; but if the agent acts on remote [things] only through those nearby, it will communicate to remote things all the intensity of quality that it communicates to things nearby, because this quality is similar in activity [to that of the agent: *illa qualitas est active suæ similis*], the remote part is capable of receiving it, and is immediately near to the nearer part […] (§8¶9, 653).

There is no reason, in short, for the intensity of a quality to diminish in proportion to distance from the agent; instead it should be transmitted identically from nearby to distant parts of the medium.

Suárez takes these objections to have been answered by his second, third, and fourth assertions. The sphere of action of an agent, and the domain of its immediate action (or rather of its immediate action independent of preceding immediate actions) do not in general coincide. It is true that an agent acts immediately *primo et per se* only on what immediately surrounds it; on the remoter parts of its sphere of activity it acts immediately but only as a continuation of its action on the nearer parts. That follows from the nature of efficient causality; but the limitation of the activity of created agents to a determinate finite sphere "originates from the limitations of its power" (§8¶47, 668).

The diminution in intensity proportionate to distance observed in some agents can be explained if we suppose that, even though the nearer parts of the medium are capable of acting on more distant parts in their own right, the effectiveness of their action depends partly on the "concurrence" of the agent. The agent does not act on distant parts of the medium merely by way of nearby parts that operate as its instruments, but also by an "actual influx" into those distant parts,

> either because it is not necessary that the patient should be
> absolutely near to the agent, when from that agent there
> emanates an action which is continuous and without
> interruption; or also because from the agent and the power
> received in the medium there is composed, as it were, one
> whole agent, which touches upon the distant part, and thus
> can act on it with all its power (§8¶23, 659).

The influx of the agent is necessary to the action of nearer, already effected, parts of the medium on more distant parts, and so its intensity will be determined by the nature of the power with which the agent acts.

3.2. Rectilinear transmission

A second general line of argument against the necessity of a medium consists in showing that in some cases an agent acts more intensely on more distant than on closer objects. That could occur only if the agent acts immediately on the more distant, because the quality it imparts to nearer objects is weakened (*remissa*) in the medium. Of the many examples brought forward to confirm this conclusion, one has an especial importance both in Suárez's treatment of distant causation and in the subsequent history of physics.

We know that the sun's light and heat proceed from it in straight lines. Suppose that the sun's luminosity affected remote objects only by way of illuminating nearby objects, which in turn passed the qualities of light on to the more remote. Then those nearer parts would impart the qualities bestowed on them by the sun equally in all directions, as if they were little suns themselves. It would follow that for a part that was on a line *L* from the center of the sun to that part, not only the succeeding part of the line would be illuminated but equally also the next parts to the left and right of the line—or rather all those in a sphere surrounding that part. That's not what happens. Hence the greater intensity with which

the succeeding part on the line *L* is owing to the immediate action of the sun alone. [8,]

How is it, then, that the sun and other agents like it (fire, candles, etc.) act more effectively along straight lines? Suárez refers first of all to his claim that sometimes an agent is conjoined with the medium so that the actual cause of change in a remote object is the sum of the two. I'm not sure how that is supposed to apply in the present case; Suárez, for his part, indicates some doubt whether the puzzle has a solution.[9]

One might say, for example, that parts of the air illuminated by the sun act by the sun's power [*in virtute solis*][10] in the direction away from the sun's center, but only by their own in other directions. But that, Suárez notes, is a gratuitous assumption, since there is no reason why a part of air acting by the sun's power should not act equally in all directions (§8¶32, 663). One can distinguish the illuminating power given to parts of air by the sun from similar

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8. "And this is confirmed by other examples; the sun more clearly illuminates parts of air which it reaches through a window or which it regards in a straight line, than those which are at the side or on an oblique line; this is a sign that it illuminates those which are outside the region [which is directly illuminated by the sun] by the intermediate parts of air alone, but immediately by itself. The consequence is evident, because in respect of the intermediate parts of air they [the sideways & oblique parts] are equally nearby and equally in contact with other parts of air, which are either outside the region of the sun or only at the side; if, therefore, the illumination of remote parts occurs only by the medium of nearer parts, those remote parts would be equally illuminated which were equally close to the nearer parts, even if with respect to the sun they have different relations; for this part [i.e. the nearer part] insofar as it is considered in itself, acts equally toward all the parts near it" (§8¶4, 651).

9. Nec mihi occurrit aliqua alia probabilis responsio aut evasio; non enim video cur præsentia solis per lineam rectam respectu hujus partis aeris remoti conducat ad majorem illuminationem ejus, nisi quia ipse sol cum aere sibi propinquiori simul in illam influit, in aliam vero partem aeris non ita e regione propositam, sed ad latus, verbi gratia, fenestræ, non potest ita influere, etiamsi respectu ipsius medii illa pars sit æque propinqua (§8¶32, 663).

10. "In virtute *X*-is": other examples are impetus (the body on which impetus is impressed acts *in virtute* of the agent that impelled it) and weight (the falling body acts *in virtute* of its generator).

powers given, for example, to objects heated by fire. An object heated by fire has the power to generate fire in its surroundings even if the fire that heated it no longer exists. The same cannot be said of air illuminated by the sun. If the sun were to disappear, the air would cease to have any power of illumination. This difference, nevertheless, does not provide any obvious grounds for supposing that the influence of the sun is transmitted along straight lines. Suárez concludes by repeating the assumption he earlier called gratuitous. The puzzle remains unsolved.

4. Conclusion

Suárez concludes from his four assertions that for efficient causes the natural mode of acting is "*quasi* by the continued line of its action from near to far" (§8¶20, 658). He recognizes that the arguments he has given are not decisive; more significantly, they are not grounded in the nature of efficient causes. But even if no sufficient reason can be given for their mode of acting, still experience shows us that this is how efficient causes act; we do "often judge […] the natures of things from what we experience, even if we are incapable of giving a deeper reason" for our judgments.

The object of vision, for example, "multiplies its species along straight lines" while the object of hearing also multiplies its species along oblique lines (and is thus capable of transmitting them through the pores of otherwise solid materials). This we know from experience, and we are justified in concluding that this is the natural way for such causes to act. Whether distant causation occurs turns out to be a stubbornly empirical question.

The puzzles I have mentioned—the difficulty of determining the subject of action, and thus the sphere of action, of material causes; the rectilinear propagation of the influence of light—were not trivial, nor were they easily resolved by the new science of the seventeenth century. It took the ingenuity of a Huygens, for example, to show why light seems to travel in straight lines. The

question of the sphere of activity is eventually replaced in physics by laws determining the force of gravity, the strength of magnetic fields, the intensity of light and so forth; and except in politics, the notion of a sphere of activity ceases to be used.