SPINOZA'S FORMAL MECHANISM

BY

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Abstract: I defend a new reading of Spinoza's account of causation that reconciles the strengths of the mechanist and formal cause interpretations by locating instances of nature's fixed and unchanging laws inside individual natures; natures are efficacious because that's where the laws are. God's necessity, for instance, follows from certain logical principles contained within God's nature. Causes between finite particulars likewise stem entirely from finite natures. They do so, I argue, because finite instances of nature's fixed and unchanging laws are inscribed within those natures. In each of these instances, effects follow from natures on account of laws contained within them.

Any complete account of Spinoza's conception of causality needs to reconcile a disparate set of competing and seemingly inconsistent positions. Perhaps best known is his claim that any change whatsoever is simply the way in which God's nature unfolds itself in the world – that God is the efficient cause of all things (E1p16cor1).[1] Spinoza elsewhere defers to fixed and unchanging laws as the proper explanation for finite causes (E3pref) despite arguing, again elsewhere, that only finite particulars can function as the causal source of change amidst particulars (E1p28dem). This latter claim is further complicated by other remarks where Spinoza seems to require not that finite particulars are causal relata but, more specifically, that causes between finite particulars are relations between their finite natures (E2p13addax1 & E2p16).

For many years the dominant reading of Spinoza's account of causation held that finite causes are points of intersection between a vertical chain of universal laws and a horizontal chain of finite particulars ('modes,' though I typically use 'particulars'); that finite causes include both infinite and finite constituents.[2] Since the laws are mechanical and operate alongside particulars, I refer to this as the 'mechanized concurrentist' reading of Spinoza. A more recent interpretation, drawing heavily on the emanative nature of God's self-causation and Spinoza's characterization of everything else as

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also following from God's nature, has proposed instead that Spinoza's conception of causality is formal; that Spinoza is rehabilitating the Aristotelian/Scholastic conception of formal causes.[3] Mechanized concurrentists are right to prioritize laws in finite causes but, I argue, fail to appreciate the efficacy of particulars and, what is more problematic for their view, Spinoza's restricting the cause of finite particulars to finite natures. The formal cause reading is right, then, to understand effects as always following from some nature(s), but in doing so they fail to accommodate the contribution of laws. One of the central challenges to any interpretation of Spinoza's conception of causality, then, is to reconcile the efficacy of nature's fixed and unchanging laws with his restriction of causality to entailments of individual natures.

I defend a new account of causality in Spinoza – what I call 'formal-mechanism' – that reconciles the restriction of causes to natures with the influence of nature's laws by locating instances of nature's laws within individual natures. Natures are causes, I argue, because that's where the laws are. God's existence, for instance, follows from certain logical principles contained within its nature. Likewise, while it is true that the vast array of particulars that follow from God also do so by following from God's nature, it is more accurate to understand them as following from mechanical laws contained within God's nature. (I argue that Spinoza conceives mechanical laws as continuations of the logical principles within God's nature.) Turning to causes between finite particulars, I argue that finite effects follow from the natures of the particulars that cause them (which is an important critique of the mechanized concurrentist reading) and furthermore that they do so because of the fixed and eternal laws inscribed within those natures (which includes the influence of laws in formal causes). I support this claim by arguing that eternal essences are instantiated in individual finite natures and that eternal essences include within them certain infinite and eternal laws. When eternal essences are instantiated in individual finite natures so too, then, are the laws inscribed within them. If God's self-causation, the causation through which particulars follow from God, and the causation through which they follow from other particulars all occur under a formal-mechanical model, then we have grounds to consider formal-mechanism as the fundamental conception of causation in Spinoza.

Though I cannot say whether it was intentional on Spinoza's part, the formal-mechanical model also provides a possible corrective on the Cartesian inclination to separate laws and their efficacy from particulars. Rather than fall into the clutches of Occasionalim as Descartes and many of his followers seem to have done, Spinoza shows instead how a Cartesian conception of laws, once instantiated in individual natures, permits a finite realm whose constituents are genuine agents of causal change.[4] We might even find in Spinoza, when read as a formal-mechanist, an early statement of scientific essentialism popular in contemporary discussions in the philosophy of science.[5] Though I do little more than raise the prospect here, if I am right

that Spinoza restricts causes to natures by locating instances of laws within them, then I think, particularly as regards his grounding of both laws and natures in an underlying rational fabric, that Spinoza may provide contemporary essentialists with an instructive albeit historic portrait of how they might better integrate laws as dispositional properties within finite natures.

1. Only finite particulars participate in finite causes

Curley's reconciliation, the most comprehensive concurrentist reading, explains that finite particulars depend on and follow from God both insofar as God is expressed through infinite and eternal laws and insofar as God is expressed through the preceding series of finite and determinate particulars.[6] Infinite and eternal laws are among the infinite and eternal modes that follow from God's nature (E1p21–23).[7] These laws follow immediately or mediately from their respective attribute, but what is important for our purposes is that they are infinite (meaning that they apply to the entirety of their attribute) and that they are eternal (meaning that they never change).[8] When Spinoza notes for instance that 'a body in motion will continue to move until it is determined to rest by another body, and a body at rest continues to be at rest until it is determined to move by another body,' he is identifying an eternal law that holds for all finite bodies, that is, for all finite modes of extension (E2p13addl3cor). This law of inertia, then, is an infinite mode of extension, and because it holds for all times it is also eternal.[9] Laws, however, are perfectly general, and as such are not sufficient to bring about specific finite effects. For this we turn to finite particulars, which are included in finite causes because they furnish the set of specific conditions on which universal laws act. Anticipating a kind of deductive-nomological account of causation, infinite and eternal laws define the nomological patterns of behavior for finite particulars while the particulars furnish the context and details upon which laws dictate present and future behaviors. Thus, when Spinoza notes that laws of nature are that 'according to which all things happen, and change from one form to another' (E3pref) he is identifying one constituent of a finite cause: the laws of nature that follow as infinite and eternal modes from God's nature; and when he elsewhere writes that finite particulars can neither exist nor affect one another unless they are made to do so by other finite particulars (E1p28), he is identifying another constituent, namely, the specific circumstances on which infinite and eternal laws act. In Curley's words, 'the singular facts which exist at any given moment are determined by the previously existing singular facts and by certain general facts … This is the metaphysical equivalent of the logical or epistemological claim that propositions describing the existence and actions of particular things can be deduced from the laws of nature, if and only if the laws are taken together with a statement of antecedent conditions.'[10]

The intuitive plausibility and ability of this reading to reconcile many (though as we will see not all) of Spinoza's competing remarks on causation is surely why so many commentators have subscribed to some version of it.[11] And while I agree that particulars (their natures, actually) and laws are vital to finite causes, I will also argue that Spinoza restricts finite causes to relations between finite natures and that this raises an important problem for including universal laws in finite causes. As we will see, concurrentists are right to include laws and particulars in finite causes, but because they neglect Spinoza's restriction of finite causes to relations between finite natures they miss entirely the decidedly novel way in which laws and particulars cooperate to bring about finite effects.

Let's start with Spinoza's restriction of finite causes to only finite constituents. While it is of course true, since God is the efficient cause of all things (E1p16cor1), that God is in some sense the cause of any finite effect, how God is responsible for finite effects is complicated. To see why, we need only consider the requirement that I believe prevents finite particulars from having anything other than other finite particulars in their immediate cause. This occurs near the outset of the *Ethics*, in E1ax3, where Spinoza asserts that 'from a given determinate cause there necessarily follows an effect.' The mere presence of a cause, in other words, necessitates its effect.[12] This problematizes the role God can play in finite causes since whatever follows from an infinite or eternal cause must also be infinite or eternal. As Spinoza argues in E1p21dem, where he explains the infinity and eternality of the so-called 'infinite modes,' God's nature is infinite and eternal, meaning that it exists everywhere and everywhen. Given E1ax3, the presence of a determinate (i.e. complete) cause everywhere and everywhen entails that its effects also exist everywhere and everywhen since, if they did not, there would then be a where or a when wherein a determinate cause was present but without necessitating its effect.[13] This means that the 'immediate infinite modes' (which is to say, whatever modes follow immediately from God's infinite and eternal nature) are necessarily infinite and eternal because their cause – God's nature – is infinite and eternal. For the same reason, whatever modes follow from other infinite and eternal modes – the so-called 'mediate infinite modes' – must also be infinite and eternal.[14] Now consider finite or durational particulars that as such do not exist at some where or some when. These modes cannot follow from God or its infinite modes as this would require a where or a when wherein an infinite and eternal cause exists but fails to entail its effect. Finite particulars, then, cannot follow in any direct sense from God or its infinite modes. This is essentially the argument Spinoza gives in E1p28dem, where he concludes that finite modes can follow only from other finite modes. It is furthermore telling, with this in mind, that in the one instance in the *Ethics* where Spinoza does acknowledge the influence of fixed and unchanging (i.e. infinite and eternal) laws in finite causes he specifies, in contrast to his language in E1p28 that finite particulars are

'determined to exist and to act' (*ad existendum et operandum determinetur*) by other finite particulars, that the existence and behavior of finite particulars occurs only 'in accordance with' (*secundum quas*) nature's infinite and eternal laws (E3pref).

It is clear, then, that neither God nor its infinite modes may be the direct cause of a finite particular, yet as Spinoza writes in E1p16cor1 and elsewhere, God is in some sense the cause of all things. Spinoza reconciles these commitments in E2p9, where he writes that 'the idea of a singular thing which actually exists has God for a cause not insofar as he is infinite, but insofar as he is considered to be affected by another idea of a singular thing which actually exists…' First, the 'idea of a singular thing' is a finite particular of the attribute of thought that is the idea presumably of some body in the attribute of extension.[15] Second, as Spinoza notes in E1p25cor, singular things are 'modes wherein the attributes of God find expression in a definite and determinate [finite and durational] way.' Shortly thereafter Spinoza equates any expression of God's nature (the attributes) with an expression of God's power.[16] Finite particulars, then, are finite and durational expressions of God's nature and power, and the idea of one such particular is simply God's nature and power expressed in a finite and durational way.[17] With this we can easily see how Spinoza means to reconcile God's being the cause of all things with his elsewhere restricting finite causes to finite particulars: we should understand God as a cause only because God is 'affected by another idea of a singular thing which actually exists' to mean that God is the cause only because the finite particular that is the cause does so as a finite and determinate expression of God.[18] And though Spinoza is not explicit about it, we should likewise expect (as I later argue) that infinite and eternal essences and laws are also expressed in finite and determinate ways when instantiated in finite particulars. Thus, finite particulars remain the only constituents of finite causes so long as we understand them as finite and determinate expression of God.

Following the lead of some proponents of the concurrentist reading, we might alternately retain the inclusion of God or its infinite and eternal laws in finite causes by reading E1p28 as arguing only for the inclusion of finite particulars in finite causes, not the exclusion of God or his laws.[19] The composite cause, because it requires both infinite laws and finite circumstances, is finite, and because the composite is finite, the prohibition I just discussed against finite effects following from infinite causes is not violated. While I agree that such a cause would be finite, I do not think we can attribute this reading to Spinoza. First, had he meant for finite particulars to follow from eternal laws working in concert with finite particulars he likely would have provided, as is needed, an explanation of the cooperative relation between them. We are told instead only that infinite modes can produce only infinite and eternal effects (E1p22) and that finite particulars can arise and change only through the behavior of other finite particulars (E1p28).[20] Spinoza

furthermore considers the possibility of God or his infinite modes producing finite particulars in E1p28dem and explicitly rejects it. Were they meant to somehow cooperate, Spinoza surely would have indicated as much here, or at least not written the causal restrictions on both infinite and finite particulars to imply precisely the opposite. A better reading, I will argue and following upon Spinoza's characterization of God's involvement in finite causes in E2p9, is to include only finite instances of God and its laws in finite causes.

Spinoza's conception of active and passive behavior provides strong evidence that he not only restricts finite causes to finite particulars but, more specifically, to relations between their individual natures. For starters, finite natures are sometimes the sole causal source of the behavior of their particular. Spinoza distinguishes between our being active and being acted upon, for instance, by stipulating that we act when our behavior follows from our nature alone, and are acted upon when our behavior is the result of something outside us: 'I say that we act when something happens, in us or outside us, of which we are the adequate cause, i.e. (by def. 1), when something in us or outside us follows from our nature, which can be clearly and distinctly understood through it alone' (E3def2). In the preceding definition Spinoza defined an adequate cause as a cause 'whose effect can be clearly and distinctly perceived through it' and a partial or inadequate cause as a cause whose effect 'cannot be understood through it alone' (E3def1). If active behavior can be understood through our nature alone, as E3def2 claims, then active behavior is behavior that follows from our nature alone (E3def1).[21] In short, we are active when our nature alone is the complete or adequate cause of our behavior. Our natures, furthermore, are finite since, as Spinoza notes in E4p39s, a body perishes when its nature, the ratio of motion and rest that defines it, is destroyed.[22] He also defines the essence of a thing as that 'which can neither be nor be conceived without the thing' (E2def2).[23] The latter clause ties the existence of the nature of a thing to the existence of the thing itself, meaning that the nature comes to be and perishes alongside it. Active behavior, then, is behavior that follows entirely (adequately) from a finite, individual nature.

Let's consider passive behavior. Continuing E3def2, Spinoza writes that '... we are acted on when something happens in us, or something follows from our nature, of which we are only a partial cause.' We act when our behavior stems entirely from our own nature and are acted upon when our nature is only a partial cause of that behavior. An axiom from the digression on bodies sharpens this by clarifying that it is the natures of other particulars that work with our own nature in causing passive behavior: 'All modes by which a body is affected by another body follow both from the nature of the body affected and at the same time from the nature of the affecting body, so that one and the same body may be moved differently according to differences in the nature of the bodies moving it' (E2p13addax1"). The same is

true, of course, for ideas (E2p16).[24] Passive behavior, then, occurs by a mode's own finite nature working in concert with some other finite nature(s) to bring about some effect.[25] Summarizing, a mode is active when its behavior follows entirely from its own nature and passive when its behavior follows from its nature working in concert with other natures. Because active and passive behaviors exhaust the behavior of any finite particular, and because finite natures are finite, finite behavior, of any kind, follows immediately only from individual finite natures.[26]

The concurrentist reading is right to include laws and therefore a kind of mechanism in their account of causality in Spinoza, but it falls short, in my estimation, in two important respects. First, given the causal restriction prohibiting infinite and eternal laws from directly producing finite effects, the concurrentist reading does not yet explain *how* laws influence finite causes. Second, I have argued that particulars and particularly their natures play a decisive if not exclusionary role in finite causes; until concurrentists explain what role natures play in finite causes, or why Spinoza seems to restrict finite causes to relations between these natures, they will have failed to reconcile Spinoza's inclusion of natures in their account of causation. The view that I ultimately defend – formal-mechanism – corrects these gaps by locating instances of nature's laws inside finite natures. Because laws are housed within natures, and because they are as such finite, my model better explains how laws influence finite causes and why Spinoza relies so heavily on finite natures. My hope is that concurrentists will welcome this as an important corrective on their view.

2. *Natures and finite causes*

With the above arguments in mind, I would like now to explore the merits of the more recent formal cause reading of Spinoza. Formal causes are causes whose effects follow from the essence or nature of the cause(s). While we find hints of this view in earlier commentators, Carraud, Viljanen, and Hübner have recently defended differing comprehensive articulations of this reading of Spinoza.[27] Hübner grounds much of her view on a review of Descartes's conception of formal causes in order to illustrate helpfully how Descartes or Spinoza may have easily retained the notion of a formal cause without the substantial forms attendant in so many Scholastic conceptions.[28] Hübner then argues that Spinoza may be read as generalizing Descartes's account of God's self-causation as a kind of formal cause to all causes being fundamentally formal.[29] Viljanen draws instead on Suarez as a historical precedent for Spinoza, and bases much of his interpretation on God's actuality following (emanating) from God's nature alone and Spinoza's claim in E1p25s that 'God must be called the cause of all things in the same sense in which he is called the cause of himself.'[30] Whether it be because God's

actuality emanates from God, or just that God's nature alone is capable of producing God (E1p6&7), God's self-causation is formal. And since God's self-causation is the precedent for the causality of everything else (E1p25s), whatever else exists should do so on account of a formal cause.[31] Spinoza's claim that the infinity of things that follow from God do so by following from God's nature (E1p16) would seem to confirm this. And though Viljanen does not argue in this way, my earlier argument that active and passive behavior exhausts the behavior of finite particulars and extends always from individual natures would further corroborate this reading.[32]

The formal cause reading is to be commended in particular for its inclusion of natures in causes of all kinds and its ability to fold the various causal relations – God's self-causation, the particulars that follow from God, and particulars following from other particulars – under a single causal banner. However, Viljanen and Hübner too quickly infer from the claim that effects are always produced by natures that all causes are formal.[33] I ultimately argue that though all causes extend from some nature(s), they do so on account of certain logical or mechanical structures contained within those natures, i.e. that Spinoza melds formal with logical-mechanical causes.[34] Before making this case however, I would like first to present a more immediate challenge to the formal cause reading, viz., that it fails to accommodate the influence of infinite and eternal laws in finite causes.

Spinoza appeals to the mechanical efficacy of nature's infinite and eternal laws throughout his works.[35] In his early *Treatise on the Emendation of the Intellect* he writes that essences of particular things are 'to be sought only from the fixed and eternal things, and at the same time from the laws inscribed in these things as in their true codes, which govern the coming into existence and the ordering of all particular things' (TIE 101).[36] A few years later Spinoza writes in his *Short Treatise* that 'the regulations imposed by God on Nature, according to which all things come into existence and continue to exist, these, if we will call them laws, are such that they can never be transgressed … [these laws] never change, and never had a beginning, but all things are subjected and subordinated to them' (II.24). And in his *Theological-Political Treatise*, which Spinoza completed in the midst of his work on the *Ethics*, he writes that 'the word 'law', taken in its absolute sense, means that according to which each individual thing – either all in general or those of the same kind – act in one and the same fixed and determinate manner…' (4) and, later, that 'By the right and established order of Nature I mean simply the rules governing the nature of every individual thing, according to which we conceive it as naturally determined to exist and to act in a definite way' (16). While the precise status and role of laws in finite causes is unclear, that Spinoza espouses in texts preceding and simultaneous with the *Ethics* a clear commitment to laws as somehow determining the behavior of finite particulars is, I think, indisputable; yet the formal account omits or seriously delegitimizes their contribution in finite causes.[37]

In addition to maintaining a commitment to laws and the universal order they impose on nature, Spinoza also casts his discussion of bodies in decidedly mechanical terms. The operations of simple and complex bodies are distinguished from one another, for instance, only by their motion and rest (E2p13addlem1). Spinoza also introduces a law of inertia that he defends by appealing to the idea from E1p28 that any change in a finite particular requires a change in its finite cause (E2p13addlem3cor). Simple bodies can be made to undergo change, in other words, only by the mechanical force of surrounding bodies. Composite bodies are defined by what Spinoza refers to as an unvarying relation of movement between their parts (E2p13adddef), and though Spinoza refers to this as the 'form' (*formae*) of the individual (lemmas 4–6), the ways in which a body sustains itself – by replacing lost parts with comparable new parts (lemma 4) or changing the direction of its individual parts when the body as a whole is made to change (lemma 6) – are mechanical. The same themes carry through Spinoza's letters regarding Boyle's experiments with nitre. Spinoza agrees that Boyle's experiments 'demonstrate that the puerile and frivolous doctrines of Substantial Forms and Qualities rests on a weak foundation', and notes in agreement with Boyle that he too subscribes to 'the mechanical principles of philosophy, and that all variations of bodies come about according to the laws of mechanics' (ep. 13).[38] Thus, not only does Spinoza espouse a commitment to laws as determinants of finite behavior throughout his works, he furthermore makes clear in his *Ethics* and letters that these laws operate, as Descartes had held, within a nomological and mechanical framework.[39]

Laws, furthermore, are infinite and eternal modes.[40] They are permanent and unchanging constants of nature that regulate and govern the flux within the order of finite particulars (E3pref). As such they do not come into being or expire, and are not susceptible to change. Furthermore, the laws that regulate the interactions between bodies are different from the laws that regulate the interactions between ideas. Spinoza's law of inertia for instance presumably applies only to bodies (E2p13addlem3cor), just as whatever laws govern and explain hatred, anger, or envy presumably apply only to ideas (E3pref). So when Spinoza writes that 'the body cannot determine the mind to think, nor can the mind determine the body to motion or rest…' (E3p2), I think we should understand the restriction to apply as much to laws governing finite bodies and minds as the minds and bodies so governed.[41] Laws, in other words, are attribute-specific, meaning that each attribute carries with it its own set of laws. And since these laws are unchanging constants of nature, that is, features of the attribute that are 'always and everywhere the same,' they must be among its infinite modes (E3pref). Whenever a particular acts in accordance with nature's laws, then, it is carrying out the dictates of one or more of its attribute's infinite modes. Finally, as expressions of God's nature these modes also express God's power or efficacy, which Spinoza equates with God's nature in E1p34. It is reasonable

to understand at least part of the efficacy of these laws as the force through which finite particulars are made to behave in certain ways.

This is a problem for the formal cause reading because laws and finite natures now stand in a kind of tug-of-war for determinant control over the causal effects of finite particulars. Laws, as infinite and eternal modes, exist apart from finite particulars, whereas finite natures exist within and only alongside their particulars (E2def2).[42] We should ask, then, whether finite effects are produced by individual natures or, instead, by independent and universal laws? Citing both would only further problematize whether Spinoza privileges mechanical over formal causation and, more worrisome, threaten him with causal over-determination. We can certainly imagine a compromise however. Viljanen for instance proposes that the formal and efficient causes are compatible so long as we understand the efficient or mechanical cause as the process or pattern through which a formal cause brings its effect about.[43] I understand Viljanen to be proposing that while it is the natures of particulars that actually produce effects, they do so in accordance with, and are therefore explicable in terms of, the nomological necessity of nature's universal laws. We might even appeal to Spinoza's characterization of laws as that 'according to which' finite things act and behave, or that the laws 'can never be transgressed' as evidence that Spinoza intends for the laws only to explain behaviors whose causal source resides elsewhere – in individual natures.

There are, alas, a few problems with such a compromise. First, the formal account has natures acting in accordance with laws but does not provide an apparatus to explain the connection between the two. This seems to saddle Spinoza with a kind of happy coincidence wherein finite natures align their dictates with the descriptions of nature's eternal laws. This is unlikely given Spinoza's aversion to brute facts. Second, I don't think we can relegate the role of laws so easily. Spinoza routinely appeals to them and only rarely appeals to finite natures when discussing finite causes, and his language, such as when he writes that all things are 'subjected and subordinated' to laws, or that laws 'govern' the behavior of all things, indicates that laws do considerably more than describe finite behavior (KV II.24 & TTP 16). Finally, as noted above, laws are expressions of God's nature and power, and from E1p36dem, 'whatever exists expresses God's power … in a definite and determinate way, and so some effect must follow from it.' There is something that laws create then; there is something that laws *do*. We might imagine that more general universal laws exercise their efficacy by producing more specific laws – such as when laws regarding the electrical conductivity of metal as a kind give rise to more specific laws regarding the different conductivities of different metals – but it is unlikely that laws continuously give rise to more specific laws; it is much more likely that there is a ground or bottom beyond which laws refer only to certain finite particulars. Spinoza's example of a law of inertia in E2p13addlem3cor, for instance, would seem to express its

efficacy only by determining the behavior of particulars falling under its dictate. Because these laws are infinite and eternal however, meaning that they exist outside and independent of finite particulars, their production of certain behaviors would overdetermine behaviors alleged to follow already from the individual natures of the agent(s) in question.

I earlier argued that the concurrentist reading is right to include laws in finite causes but fails to accommodate their influence given Spinoza's restriction of finite causes to relations between finite natures. Proponents of the formal cause seem to have the opposite problem: they restrict causes to individual natures but as such cannot accommodate the role and likely efficacy of infinite and eternal laws. I believe that this is profoundly instructive and that we should seek a model of causation that locates the determination and efficacy of nature's infinite and eternal laws within individual natures.

3. *Formal-mechanism: God's self-causation*

Carraud, Viljanen, and Hübner all understand Spinoza's conception of a formal cause as a cause whose effect follows from the nature or form of the cause.[44] It may surprise us to learn, however, that Aristotle understood them differently. He introduces formal causes by specifying that there are causes wherein the order or formula (*λόγος*) of an essence is a cause.[45] Though the cause stems from a nature, it is more accurately understood to follow from the order or formula within the nature (*τοῦτο δ' ἐστὶν ὁ λόγος*). When we understand a thing through its essence we are not typically grasping some one thing so much as comprehending a collection of things unified in a certain way. As Aristotle notes, flesh and bone alone do not constitute a human being – they need also to be appropriately organized.[46] Thus, per Aristotle, a formal cause is a cause whose effect follows from the order or feature(s) within a nature.[47] The formal-mechanical account I am defending adopts this Aristotelian line but replaces the *λόγος* within an essence with a kind of mechanism: formal-mechanism is the idea that natures are causally efficacious on account of certain logical and mechanical rules and laws contained within them.[48] Causes on this account are formal since their effects originate in certain natures, but they are also mechanical since how they originate from a nature is determined by its inner logical or mechanical laws. I provide an initial defense of my interpretation of Spinoza as a formal-mechanist by first arguing that his conception of God's self-causation adheres to this model.

Spinoza's second argument for God in E1p11dem2 relies on formal causes of the more refined sort. He first notes that the existence of a substance is like that of a square-circle and unlike that of some square or circle since a substance exists or fails to exist, like the square-circle whose very nature explains its nonexistence, by its nature alone.[49] Because God is a substance, God is

something whose nature alone can produce it, and unlike the nature of a square-circle, God's nature cannot involve something that would prevent God from existing. Spinoza asserts, without explanation or support, that it would be absurd for God's nature to involve a contradiction. Couple this with his explicit commitment to a principle of sufficient reason (hereafter 'PSR'), where a reason or cause must exist for the existence or nonexistence of every thing, and it follows, Spinoza thinks, that the absence of a reason for God's nature to not produce God is equivalent to a rational compulsion for its doing so; without a reason preventing God's existence God, Spinoza concludes, necessarily exists.[50] The argument is certainly controversial, but I think we can extract two important and reasonably uncontentious details. First, because God's existence or nonexistence can follow from its nature alone, whatever is responsible for God's necessity must be included in God's nature. Spinoza is appealing in part to the conceptual independence of substance defined in E1def3,[51] and as his analogy with the nature of a square-circle shows, the conceptual reasons causing or preventing God's nature from instantiating itself must be within the nature itself. Second, the PSR – that is to say, the logical principle it conveys – is an important component of the reason or cause of God's necessity.[52] The PSR, then, must be a feature of God's nature or, in a more Aristotelian fashion, the PSR (again, the principle it conveys) must be included in the order or formula of God's nature.[53] The same applies to the check for internal coherence, i.e. the insistence that God's nature not involve a contradiction; whatever else this is, it must be a feature of God's nature since if it were not, then whether God's nature instantiates itself or not would depend on something outside it. Thus, while God's existence follows from its nature and is therefore an instance of a formal cause loosely construed, there are important and more perspicuous features within God's nature – such as the demand that its producing or not producing God have a reason or cause, or that it does not involve a contradiction – that are essential to its producing God. So while we might define God's self-causation as an instance of a formal cause, a more accurate assessment would include the features within God's nature that necessitate God, and accordingly refer to God's self-causation as a formal-mechanical cause.

4. Formal-mechanism in finite causes

Recall that God's nature is responsible for God as well as the infinity of modes that follow from God in infinite ways. Commentators have proposed different rationales for a univocity of cause in Spinoza, but it may be as simple as noting that since one thing – God's nature – is the cause of both God and the infinity of modes, it stands to reason that it produces them in the same way, and therefore that the model which explains God's self-causation

should handily extend to finite particulars.[54] If I am right that God's self-causation embodies a kind of formal-mechanism then the particulars that follow from God's nature should likewise be determined by certain logical or mechanical features within God's nature. We can secure a first-pass at this by extending Spinoza's use of geometry to explain the necessity through which propria (essential properties) follow from a given nature to also explain which properties follow as propria from a nature and which do not. Given any triangle, we know that its interior angles equal 180° because their doing so is mandated by the triangle's nature (E1p17s). If the figure were a circle we might conclude instead that any line drawn from its center to its circumference will be equal to any other (TIE 95). If asked why the propria of the two figures are different we would reply by appealing to different features within their respective natures. We would seek to explain their different propria, in other words, by appealing to different orders or formulae within the nature of each geometrical figure. Indeed, as Spinoza argues in defense of his claim that 'Things could not have been produced by God in any other way or in any other order than is the case,' any difference in the particulars that follow from God's nature would require a difference in God's nature itself, which Spinoza thinks is impossible (E1p33dem). In other words, the particulars that follow from God's nature reflect its order or formula, and could have been different only if the order within God's nature were different. The propria that follow from God's nature are determined, we might say, by the *λόγος* within God's nature.

Now consider E1p16, where Spinoza argues that an infinity of modes (particulars) follow from God's nature, ran alongside Spinoza's important remarks regarding nature's fixed and unchanging laws in E3pref, which are as follows:

> In Nature nothing happens which can be attributed to its defectiveness, for Nature is always the same, and its force and power of acting is everywhere one and the same; that is, the laws and rules of Nature according to which all things happen and change from one form to another are everywhere and always the same. So our approach to the understanding of the nature of things of every kind should likewise be one and the same; namely, through the universal laws and rules of Nature.

The mechanical account of nature depicted in this passage, where particulars follow from fixed and unchanging laws, appears at first blush to be in tension with E1p16, where they follow instead from God's nature. But consider the scenario wherein the laws and rules of nature dictating the reality and change amidst particulars are extensions of the *λόγος* or order within God's nature. To see what I mean, consider the passage above once we replace 'Nature' with 'God' (a replacement Spinoza happily accepts).[55] So read, God's force and power, which are the laws and rules according to which all things happen and change, is everywhere the same.[56] The universal

mechanical laws, then, are how God's power expresses itself amidst the behavior of all things. Spinoza also maintains that God's power and God's nature are the same.[57] Thus, God's power, which is to say, God's nature, consists in part of a set of universal laws and rules that govern how all things happen and change. We find solid evidence of this in E1p17dem where, following on the heels of and clarifying E1p16, Spinoza notes that an infinity of things 'follow, absolutely, solely from the necessity of the divine nature, or – which is the same thing – solely from the laws of that same nature.' With this in place we can easily resolve the tension between E1p16 and E3pref: finite particulars follow from God's nature by being determined, more specifically, by a set of fixed and unchanging laws within it.[58]

There is, to be fair, an undefended slide in this suggestion. God's nature produces God, I argued, on account of certain logical principles and rules contained within God's nature, whereas the 'universal laws and rules' referred to in the preface seem clearly to be mechanical. However, while it may be a stretch for our ears, Spinoza seems to have held that mechanical laws are ultimately grounded in logical principles and rules. Consider his law of inertia, that 'a body in motion will continue to move until it is determined to rest by another body, and a body at rest continues to be at rest until it is determined to move by another body' (E2p13addl3cor). Spinoza defends this law by appealing to the PSR's requirement that a change in an effect requires a change in its cause. He writes that:

> [if] a body A is at rest and I give no consideration to other moving bodies, I can assert nothing about body A but that it is at rest. Now if it should thereafter happen that body A is in motion, this surely could not have resulted from the fact that it was at rest; for from that fact nothing else could have followed than that body A should be at rest.

The law of inertia follows, in other words, from the logical principle that any body must be in motion or at rest (E2p13addl1) and the requirement of the PSR that a change in any body's motion or rest can follow only from a change in its cause. Spinoza justifies his law of inertia – which we readily understand as a mechanical law – by deriving it from certain logical and rational principles and rules. He also casts causal relations in logical terms when stipulating that 'from a given determinate cause there necessarily follows an effect; on the other hand, if there be no determinate cause, it is impossible that an effect should follow' (E1ax3).[59] He likewise supports his claim in E1p28 that finite particulars require finite causes by drawing on the impossibility of a finite effect following from some but not all of an infinite cause.[60] Spinoza did not live long enough to complete a treatise on physics, but if he had I think its mechanical laws, grounded as they are in God's nature, would almost certainly have been derived from logical principles and rules.[61]

It may well be that the fixed and unchanging laws governing things are features of God's nature, and therefore evidence of a kind of

formal-mechanism as regards nature as a whole, but as I argued earlier, Spinoza restricts finite causes to relations between finite natures. So though we might locate a formal-mechanical account of causality within nature as a whole, this does not yet address the equally pressing question of whether the formal-mechanical model can also explain the causal interactions between finite particulars. I propose to extend the formal-mechanical account to finite causes by arguing that finite causes are produced by finite instances of universal laws inscribed within individual finite natures. I support this reading by defending a two-tiered ontology of essences wherein individual finite natures are instances of eternal essences that reside amidst the infinite modes. I then argue that laws, which are also infinite modes, are written into those eternal essences whose instances' behaviors they govern. When these essences are instantiated in finite natures, so too are the laws inscribed within them. Spinoza restricts finite causes to relations between finite natures, then, because that's where the laws are.

Before constructing an extended argument for this claim I would like briefly to review three passages where Spinoza seems to commit himself to such a view. The first is Spinoza's difficult but important claim in the *TIE* that the essences of particular things are 'to be sought only from the fixed and eternal things, and at the same time from the laws inscribed in these things as in their true codes, which govern the coming into existence and the ordering of all particular things' (TIE 101). Though the precise meaning of this passage is a matter of some dispute, I think we can reasonably conclude that Spinoza intends for laws governing the production and behavior of particulars to be included in the cause of their eternal essences, and possibly also written into the essences themselves.[62] Turning to a second passage, Spinoza also equates the nature of a thing with a set of laws in a well-known letter to Oldenburg where he discusses how parts relate to a whole. Different parts cohere as a whole, he writes, when 'the laws or nature of one part adapts itself to the laws or nature of another part in such wise that there is the least possible opposition between them' (ep. 32). Applied to his famous worm in the blood metaphor that follows, the laws within the nature of a worm living in blood align with the laws within the natures of the surrounding particles such that the interactions produced by the laws contained within the different natures never upset the order of the blood as a whole. The blood is orderly, in other words, on account of the alignment of the laws residing in the natures of each of its different constituent parts.[63] Finally, and perhaps most explicitly, Spinoza writes in E4p2dem that 'we are acted on when something arises in us of which we are only the partial cause (by E3def2), that is (by E3def1), something which cannot be deduced from the laws of our nature alone.' Spinoza is amending his earlier conception of active and passive behavior (where active behavior follows entirely from our nature alone whereas passive behavior follows only partially from our nature). Now, there are laws within out nature; we are active when these

laws alone determine our behavior and passive (recalling E2p13addax1" and E2p16 from before) when the laws within our nature work in concert with the laws of some other nature to produce our behavior.[64] These passages are strong indications of Spinoza's commitment to natures as in some way housing laws that dictate the behavior of their particulars.[65]

With these texts in hand, let's turn to the first portion of my defense for formal-mechanism in finite causes – Spinoza's two-tiered ontology of essences. The essences of finite particulars are sometimes characterized as having an eternal existence while at other times being characterized as having only a durationally finite existence. E2p8 for instance discusses the essence as it exists at those times during which the individual for which it is the essence does not.[66] 'The ideas of singular things, or of modes, that do not exist must be comprehended in God's infinite idea in the same way as the formal essences of the singular things, or modes, are contained in God's attributes' (E2p8). This passage espouses a clear commitment to finite particulars having eternal essences, but to see this we need first to briefly recall E2p7, where Spinoza introduces his famous parallelism thesis, and a remark on formal essences from Spinoza's *Short Treatise*. Parallelism is the claim that the order and connection of ideas mirrors the order and connection of bodies (things), which Spinoza understands to mean that for every existent body there is a correspondent idea in the attribute of thought that bears the same relations to other ideas as its body bears to other bodies. E2p8 is extending this thesis to now include the essences of non-existent ideas and bodies.[67] The idea of a non-existent mode is comprehended in God's infinite idea in the same way in which its formal essence is contained in God's other attributes. And as we learn from the *Short Treatise*, the formal essence is the essence of a thing conceived under the attribute of extension, which corresponds to the objective essence in the attribute of thought (KVapp2). The objective and formal essences, then, are correspondent essences of non-existent things in the attributes of thought and extension, and Spinoza's aim in E2p8 is to substantiate the existence of these essences as features of their attributes that are independent of the finite particulars that instantiate them. The objective essence, a permanent feature of the attribute of thought, surfaces again in part 5 of the *Ethics*. After noting that certain features of the mind persist only through the durational existence of its finite body (E5p21), Spinoza continues on to note that its essence is nonetheless an eternal mode of thought in God (E5p22). The essence as an eternal mode of thought is of course the objective essence which, again and in distinct contrast to the durational existence of the finite particular, is an eternal mode of thinking substance. In each of these instances Spinoza shows a clear commitment to the essence of a finite mode as an eternal feature of God's attributes.

Other passages take an entirely different tone however. Spinoza defines the essence of a thing for instance as 'that without which the thing can

neither be nor be conceived, and which can neither be nor be conceived without the thing' (E2def2). The latter clause characterizes the existence of the essence of a thing as corresponding precisely to the existence of the thing itself; the essence is conceivable, comes to be, and perishes only alongside its particular.[68] The essence of a finite particular is here cast, in obvious contrast with E2p8, as but a shadow of its particular's finite existence; once the particular ceases so too does its shadow. Spinoza elsewhere identifies this essence with the individual's "conatus," which is its personal striving toward a continued existence (E3p6–7). This striving for existence persists only so long as it is successful meaning, again, that this essence exists only alongside its durational particular. Spinoza confirms as much when he later writes that the destruction of the individual coincides with the destruction of its nature (E4p39sch). In each of these instances, and in sharp contrast to E2p8 and E5p22, the essences of finite particulars are durational shadows of their particular's finite existence. These remarks are no flub on Spinoza's part; we should instead ask how particulars have both eternal essences and finite natures, and what the relation between them might be.

For starters, we have good reason to think that eternal essences are infinite modes. Their permanent containment in their attributes entails that they exist apart from the finite particulars that might instantiate them. Better yet, since the comings and goings of finite particulars do not affect the existence of these essences, such essences exist independently of the order of finite particulars.[69] Like eternal laws, these essences are additionally attribute-specific; the objective essence in the attribute of thought is the thought-equivalent to the formal essence in the attribute of extension. Attribute-specific eternal essences that are permanent features of their attributes and, as such, exist apart from finite particulars, are best classified as infinite rather than finite modes.[70] The natures of finite modes, by contrast, are finite, which is to say, they are unique to their mode and persist only so long as the mode persists. It would seem, then, that individual finite modes have both a durational nature and an eternal essence. Though I will soon argue for an important amendment, this is an instructive first pass as what I refer to as Spinoza's two-tiered ontology of essences.

We can sharpen our understanding of this picture by looking carefully at two instances where Spinoza explains how eternal essences and finite natures are related. Consider the corollary to E2p8, which reads as follows:

> [S]o long as singular things do not exist, except insofar as they are comprehended in God's attributes, their objective being, or ideas, do not exist except insofar as God's infinite idea exists. And when singular things are said to exist, not only insofar as they are comprehended in God's attributes, but insofar also as they are said to have duration, their ideas also involve the existence through which they are said to have duration.

Spinoza is drawing a contrast between a nonexistent singular thing and its reality as an existent finite mode. As a nonexistent thing, it is real only

because its idea or objective essence is an idea in God. This essence – a fixed idea in God's infinite intellect – is a permanent feature of God's attributes; it is the eternal essence and, as such, an infinite mode. Contrast this with the reality of our singular thing as an existent or actual finite mode. When singular things exist not only because of their eternal essence, but 'insofar also as they are said to have duration, their ideas also involve (*etiam involvent*) the existence through which they are said to have duration.' The idea is the eternal objective essence, and Spinoza seems clearly to state that this essence, in addition to its eternality, is also capable of assuming a durational mode of existence. When a singular thing exists as an actual finite mode, then, its eternal essence involves or assumes, in addition to its eternality, a durational mode of existence.[71] This is echoed in E5, where Spinoza writes that 'We conceive things as actual in two ways: either insofar as we conceive them to exist in relation to a certain time and place, or insofar as we conceive them to be contained in God and to follow from the necessity of the divine nature' (E5p29sch). The eternal essence is contained in God and, like other infinite modes (E1p23), follows from the divine nature alone. Finite natures, on the other hand, come into existence, persist, and cease to exist, alongside their finite mode, and as such exist only in relation to a certain time and place. Crucially, and like the passage from E2p8cor, Spinoza is describing two ways of conceiving one thing: the essence that is an eternal truth is also capable of being expressed as the nature of a finite and durational particular, so when we conceive the eternal essence or its expression in a finite nature we are conceiving one essence under either of two different modes in which it exists.[72]

With this I would like to sharpen what I mean by a 'two tiered ontology of essences.' I showed that in different passages Spinoza describes the essences of particulars differently. In some passages they have an eternal existence, whereas in others they exist only alongside their finite and durational particular. If I have interpreted E2p8cor and E5p29sch correctly (and odd though they may seem, I believe that I have), then the finite nature is a finite and durational instance or expression of some eternal essence, meaning that the eternal essence and finite nature, while two distinct things (since one is eternal, the other not), are nevertheless expressing the same essence.[73]

This also helps us to better understand Spinoza's *conatus* doctrine. The *conatus*, or striving, is the force by which finite particulars persevere in their being, which Spinoza refers to as their 'actual essence' (E3p7). As noted earlier, this actual essence exists only alongside its finite particular. It makes sense, then, to identify a thing's conatus with its actual essence. But this isn't quite how Spinoza sees it. In E2p45sch, where he is introducing the two notions of existence we discussed earlier, Spinoza notes that the existence of a thing as regards its being in God and following from God's nature (that is, from before, the existence of a thing as regards its eternal essence), includes 'the force by which [the particular] perseveres in existing …' The *conatus*, in

other words, is a feature of the particular's eternal essence.[74] And in E3p8 Spinoza specifies that this conatus is not finite, but 'indefinite' in its striving. How, if its conatus exists indefinitely and is a feature of a particular's eternal essence, can we make sense of Spinoza's identifying this with a thing's actual, meaning finite and durational, nature? The answer, I believe, is that the striving within a finite nature is an extension of the power or striving within its eternal essence. Spinoza describes this striving as a force (*vis*) within the eternal essence, and notes that while particulars are determined to exist and act by other particulars, the force or power by which they persevere follows from their eternal essence (E2p45s).[75] If the finite nature is an instance or expression of its eternal essence then we should also expect to find within it an instance or expression of the essence's striving or power. This is indefinite because the eternal essence continuously exhibits a striving, but the expression of this striving in its finite nature can persist only so long as the finite nature is able to persevere amongst the competing forces outside it. Thus, the *conatus* is a feature of eternal essences and is as such instantiated in finite natures. This helps us to understand both what a conatus is and why it is indefinite rather than finite; we understand these things only once we identify the finite nature, or actual essence, as an instance or expression of an eternal essence.

There are, to be sure, many unanswered questions in this model, such as how Spinoza understands the reality of the essence apart from its expression as an eternal essence or durational nature, or how it is that the finite nature, presumably produced as it is through the common order of nature (E1p28), is nevertheless also an instance of an eternal truth, but I believe I have said enough to support my contention that eternal essences are instantiated in individual finite natures. In order to bring this back to the notion of formal-mechanism, we need now to determine how eternal laws relate to eternal essences and their instances in individual finite natures. I have suggested, as the extension of the formal-mechanical model to finite causes, that finite instances of eternal laws are inscribed in individual finite natures; that finite causes are relations between finite natures because that's where the laws are. Given the two-tiered ontology of essences wherein finite natures are rightly understood as instances of eternal essences, we need now to more carefully consider whether and if so how eternal laws governing the behavior of finite particulars might be written into eternal essences and thereby instantiated in individual finite natures. I provide four reasons for thinking that laws are inscribed within eternal essences before explaining how, as I understand it, they come to be so included.

First, there is strong textual evidence that laws are contained within individual finite natures. As noted earlier, Spinoza amends his claim in E3def2 that active behavior follows from our nature alone to specify more perspicuously that it follows 'from the *laws of* our nature alone' (E4p2dem); a claim he repeats in E4p35dem and E4p35cor1dem.[76] Spinoza's claim in ep.32 that

the behaviors of different particles in the blood are aligned by the laws within their natures corroborates this. If these natures are instances of eternal essences then we should accordingly understand eternal essences to somehow contain within them nature's fixed and unchanging laws.[77] Second, this secures consistency with the way in which God is self-caused since just as God's nature necessitates God on account of certain features within God's nature, so too does each finite effect follow from certain features – laws – instantiated in the individual finite natures comprising its cause. Formal mechanism, then, is supported by God's self-causation and Spinoza's claim in E1p25s that God's self-causation sets the precedent for every other causal interaction. Third, this seems an ideal way to include infinite and eternal laws in finite causes whilst restricting finite causes to relations between finite natures. Having argued that eternal essences are instantiated in finite natures, and recalling the need to somehow include infinite laws in finite causes, it seems only reasonable to include laws in the essences that, when instantiated in a particular, govern how that particular interacts with other particulars. Finally, Spinoza holds that a definition is a statement of the essence of a thing and, furthermore, that one of the requirements of a good definition is that it includes an account of the entity's proximate cause (TIE 96).[78] This would be a difficult task if the eternal essence did not include within it whatever laws are relevant to its instantiation being produced. Consider, as an illustration, the essence for particularly fluffy cookies. This essence, in order to include an account of the proximate cause of its instances, would need to include laws dictating how baking soda interacts with dough, or how much heat and time is required for the cookies to bake sufficiently. If we furthermore assume that an essence needs to include not just how its instantiation is produced but also how it acts once in existence, then we should expect to find within it laws governing these behaviors as well. Laws are included in essences, I submit, because this enables essences to dictate the production and behavior of their instances.[79] We have, then, four good reasons to think that Spinoza includes the laws that govern finite particulars in their eternal essences.

How laws are included in eternal essences is less clear, and because Spinoza nowhere explicitly addresses the issue, any account will be to some extent speculative. Fortunately, his remarks about how infinite modes follow from other infinite modes provide an important clue regarding how eternal essences include laws within them. Recall that eternal laws and essences are infinite modes. Additionally, laws are typically simpler than the total behavior of whatever essences they may be included in. Laws dictating how sugar absorbs moisture, or how heat is conducted between a warm pan and cold dough, help alongside other essences and laws to compose the essence of a fluffy cookie. We also know that infinite modes follow either immediately from their attribute or by further modifying prior infinite modes (E1p23) and, furthermore, from the TIE, that eternal essences are derived

from certain fixed and eternal things (TIE 101). Keeping with the cookie essence (meant only to illustrate how essences of things like you and I might be composed and produced), were we to derive the essence of a fluffy cookie from some attribute, we would presumably do so by first deriving the simpler laws and essences that inform and comprise it. These earlier laws and essences would as such be part of the cause of the cookie essence, meaning that the cookie essence would follow in part from these prior essences and laws. And as Spinoza notes in his important causal axiom, the idea of an effect involves the idea of its cause (E1ax4). If an eternal essence follows in part from prior essences and laws then given E1ax4, we should expect to find within that eternal essence an idea of these essences and laws. Laws are included in an eternal essence, then, when they are part of its cause.

This rationale for how laws enter into eternal essences, especially when read in conjunction with the need for essences to dictate the behavior of their instances, is, in my estimation, compelling. Matters become more complicated, however, when we ask what it means exactly for a law to be *included in* an eternal essence. We might understand E1ax4 to mean that if an eternal essence follows in part from some law then the essence includes that law within it meaning, I take it, that the law – an infinite mode – would be included within whichever eternal essences it helps produce.[80] This, however, would make for a confused and bloated hierarchy of infinite modes. More to the point, Spinoza does not seem to intend for E1ax4 to be read in this way. He employs E1ax4 in E2p6cordem and E2p45dem for instance to argue that since a particular follows from its attribute, by E1ax4, it involves the concept of its attribute.[81] It would be difficult to locate within any particular of some attribute the entirety of that attribute, and it seems much more likely that Spinoza means only to note that the effect includes a kind of representation of its cause – in this instance, its attribute – within it.[82] An effect involves its cause, then, because the effect maintains a kind of record or representation of its cause, but not the cause itself, within it. Another alternative is to understand laws not as infinite modes in their own right but, instead, as extensions of the logical principles that precede and produce the infinite modes of each attribute.[83] I earlier suggested that Spinoza's mechanical laws are extensions of logical principles such as the PSR. These logical principles, as features of God's nature itself, precede the infinite modes that follow (under each attribute). If laws are continuations of these principles then (our earlier argument that eternal laws are infinite modes to the contrary) laws too would precede and inform each attribute's infinite modes. As Spinoza notes in the TIE, laws are inscribed in the fixed and eternal things that produce eternal essences. We might understand this to mean that laws, like logical principles, are inborn features of their attributes that precede and produce its infinite modes. And as before, eternal laws are represented in eternal essences in virtue of their participating in the essence's cause.

Except to register my inclination against the first option (that laws are infinite modes existing in their own right as well as in every essence they partially inform), I will not here register a preference for laws as infinite modes that are represented in eternal essences or laws as extensions of their attribute's logical principles, as either model proffers a narrative on which the remainder of my argument can rest.[84] This is all quite contentious and, because of Spinoza's reluctance to address the issue directly, necessarily speculative, but I think I have provided enough of a picture to explain how eternal laws might be inscribed within eternal essences. Given my earlier arguments for including laws in eternal essences, we should conclude that while the details of their inclusion may as yet be hazy, laws are nonetheless in some form or other included in eternal essences.

This concludes the heavy lifting for my defense of formal-mechanism in finite causes. If we agree that laws are inscribed in eternal essences, and that eternal essences are instantiated in individual finite natures, then we should reasonably expect to find within individual finite natures instances of nature's fixed and unchanging laws. This would explain why Spinoza, who clearly subscribes to mechanical laws of nature and furthermore intends for them to have some causal influence in finite causes, nonetheless restricts finite causes to relations between finite natures. It does so, furthermore, by retaining and conjoining the strongest components of the concurrentist and formal cause readings; individual natures remain the sole causes, but they do so on account of the nomological principles inscribed within them.

There are two other aspects of this approach that, though they do not lend weight to my interpretation of Spinoza, do provide, I think, fertile ground for continued work on this model. First, speculating a bit, formal-mechanism may point toward a significant corrective Spinoza hoped to provide Cartesians, namely, how they might maintain a Cartesian conception of eternal laws while, by locating instances of their governance and efficacy within individual natures, retaining a genuine causal efficacy for finite particulars. It is unclear whether Spinoza ever carefully entertained Occasionalism, and his *Principles of Cartesian Philosophy* provides no indication that he read Descartes this way either, but he was almost certainly aware of the view, and if so, the model defended here would provide a contrast whereupon particulars, in virtue of instantiating certain eternal laws within themselves, are genuinely efficacious.[85] Second, switching the historical direction toward the future, Spinoza's locating nomological necessity and causal efficacy in the individual natures of finite particulars may provide a valuable historic precedent to the contemporary discussion of scientific essentialism championed most forcefully by Brian Ellis.[86] Spinoza's conception of infinite and eternal essences and laws having a certain hierarchical structure and being instantiated in ordinary particulars is particularly prescient of Ellis's brand of essentialism. Had Spinoza been more explicit or, better yet, lived long enough to complete a treatise on physics, I believe he would have more

clearly articulated the relation between God's nature and its infinite and eternal laws, as well as the relation between these laws and the eternal essences they inform. With Spinoza as a historic precedent, contemporary essentialists might speculate about the possibility of better intertwining essences and their instantiation of laws by understanding both kinds of entities as products of a shared underlying rational fabric. But even if I am mistaken about the corrective on Cartesianism, or flat-out wrong about the connection with essentialism (which I may well be), I think the formal-mechanical account of causation in Spinoza is worth further consideration.

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NOTES

[1] I use the following standard abbreviations: E–*Ethics*, TIE – *Treatise on the Emendation of the Intellect*, KV – *Short Treatise on God, Man, and his Well-Being*, TTP–*Theological-Political Treatise*, Ep. – Letter. Passages in the *Ethics* will be referred to as follows: def (definition), ax (axiom), p (proposition), dem (demonstration), cor (corollary), s (scholium), lem (lemma), and add (addendum). E2p13addax1, for instance, refers the reader to book two, proposition thirteen addendum, axiom 1. Citations from the *Short Treatise* will be referred to by the part and then chapter in which they appear; citations form the *Theological-Political Treatise* will be referred to by chapter; 'app' refers to an appendix. I have relied on Shirley (Spinoza, 2002) for translations of Spinoza, 1925.

[2] See Curley, 1969, pp. 62–73 and 1988, pp. 47–48; Bennett, 1984, pp. 112–113; Savan, 1986, pp. 104–05; Yovel, 1989, pp. 157–159 and 1991, pp. 92–93; Della Rocca, 1996, pp. 6–7; and Nadler, 2006, pp. 99–102. Mason offers an early critique of this view (2007, pp. 76–81). Though I am not concerned here with the nature of the relation between a cause and its effect, most proponents of this interpretation view it as a kind of logical necessity (see E1ax3).

[3] See Carraud, 2002, pp. 306–08 and 312–315; Viljanen, 2008 and 2011, pp. 33–53; and Hübner, 2015. The 'conceptualist' reading, which proposes that Spinoza's causal relations reduce to conceptual relations, constitutes a third interpretation that I will be dealing with only indirectly. For more on this interpretation see Della Rocca, 2003, pp. 76–82 and 2008, p. 44; Lin, 2007; and Newlands, 2010, esp. pp. 474–78. See also Melamed, 2013, pp. 105–11 and, for critiques of this reading, Lærke, 2011, pp. 446–54; Hübner, 2015, pp. 204–5; and Morrison, 2013.

[4] See Ott, 2009, pp. 64–78. For suggestions that Spinoza may be an Occasionalist see Huenemann, unpublished, and Mason, 1986, p. 208 and 2007, pp. 81–86.

[5] For a strong overview and defense see Ellis, 2002 and 2001 respectively.

[6] See Curley, 1969, pp. 55–74 and 1988, pp. 47–48.

[7] I defend this in my discussion of the formal cause reading. See also Curley, 1969, pp. 47–9 and 1988, pp. 42–7; Bennett, 1984, pp. 39–40; Yovel, 1989, pp. 161–64 and 1991, p. 83; and Martin, 2008, pp. 500–507. Also, while I prefer 'particular' to 'finite mode,' I retain the customary use of 'infinite mode' when referring to Spinoza's infinite and eternal modes.

[8] Spinoza explains their infinity and eternality in E1p21dem. For a helpful discussion of their infinity and eternality see Garrett, 1991, pp. 194–96; Yovel, 1991, p. 85; and Martin, 2010, pp. 39–42.

[9] I will show later why laws are attribute-specific.

[10] Curley, 1969, p. 66. See also Yovel, 1989, pp. 157–159.

[11] See note 2.

[12] This is an early instance of Spinoza's conception of causality as a kind of logical entailment. For more on this see Nadler, 2006, pp. 85–7 and Koistinen, 2002, p. 65.

[13] See also Bennett, 1984, pp. 112–13; Garrett, 1991, pp. 194–99; and Yovel, 1991, pp. 85–87.

[14] Schmaltz (1997, p. 214) defends an alternative reading of Spinoza's argument in E1p21dem. He contends that a finite effect cannot follow from an infinite cause because the cause, in order to restrict and thereby render its effect finite, must also be finite. Spinoza seems clearly to deny a finite effect, however, on the grounds that there would then be aspects or parts of the cause from which the effect would not follow. This is most evident, I think, in his argument for the eternity of effects of eternal causes, which runs as follows: if eternal Thought were to produce a durational idea of God then 'outside the bounds of the duration of the idea of God (for this idea is supposed at some time not to have existed, or will at some point cease to exist), Thought will have to exist without the idea of God' (E1p21dem). Because Thought is supposed to produce the idea of God necessarily, it is impossible for there to be moments of eternity where the idea does not follow.

[15] E2p9 follows closely on the heels of Spinoza's parallelism doctrine in E2p7, where he argues that the order and connection of ideas is the same as the order and connection of things. He also frequently refers to ideas as the ideas of certain objects, e.g. E2p11.

[16] 'Whatever exists expresses God's nature or essence in a definite and determinate way (E1p25cor); that is (E1p34), whatever exists expresses God's power…' (E1p36dem).

[17] This is reinforced in E4p4dem, where Spinoza identifies the power of individual modes with God's power 'not insofar as it is infinite, but insofar as it can be explicated through actual human essence … therefore, the power of man insofar as it is explicated through his actual essence is part of the infinite power of God…' (see also Melamed, 2013, p. 18). This may also explain why Spinoza specifies that, compared to the infinite modes that follow immediately or mediately from God's nature, God is a kind of 'remote' cause of finite particulars (E1p28s). God remains the immanent cause of finite effects (E1p18) since their finite causes express both God and God's power, but this power can be expressed only through the intermediation of other finite modes.

[18] Koistinen similarly suggests that God is the cause only because the cause in question is a 'state' or 'event' of God (2002, p. 68). Because Spinoza refers to these states of God as 'individuals' (E2def7) and conceives individuals (as opposed to states) as causes, I prefer to designate the causal individual as an 'expression' of God.

[19] See Curley, 1988, p. 48; Bennett, 1984, p. 113; Yovel, 1989, p. 160; and Nadler, 2006, p. 100.

[20] Curley (1969, p. 61) rightly points out that a passage in the *Short Treatise* (KV I, viii) briefly characterizes universal modes (apparent predecessors for the infinite modes of the *Ethics*) as causally responsible for particulars (the finite modes). It is unclear however whether Spinoza means to say that the totality of particulars follow from the universal modes or that universal modes are the immediate cause of individual particulars. If Spinoza intended the latter while working on the *Short Treatise*, I am convinced that he gave this view up while completing the *Ethics*.

[21] For more on adequate ideas and their role in active behavior see Nadler, 2006, pp. 193–94 and Marshall, 2008, pp. 81–83.

[22] '… I understand the body to die when its parts are so disposed that they acquire a different proportion of motion and rest to one another' (E4p39s). For the equation of a body's proportion of motion and rest with its nature or form see E2p13adddef and E2p13addlem4–6.

[23] Though Spinoza uses 'essence' and 'nature' interchangeably (see E1p16dem and E1p19dem) and even explicitly equates the two terms (E1p36dem), I will use 'nature' to refer to the finite and duration nature of a thing and 'essence' to refer to its eternal essence. I discuss the relation between these later, but for a discussion of different issues concerning these entities see Martin, 2008; Garrett, 2009; Ward, 2011; and Hübner, 2016.

[24] 'The idea of any mode in which the human body is affected by external bodies must involve the nature of the human body and at the same time the nature of the external body'

(E2p16). As the demonstration shows, this claim is simply the marrying of E1ax4 with E2p13addax1".

[25] See also ep. 32, where Spinoza also notes that finite interactions occur through the compatibility of laws contained in the natures of the involved particulars. I discuss this in further detail later in the article.

[26] This argument raises another problem with the concurrentist reading, which is that given the contribution of laws, particulars will contribute only the details upon which laws act – things like their location, speed or mass. Yet as we have just seen, Spinoza explicitly and on numerous occasions includes individual natures in finite causes. If particulars contribute only superficial details, then what could their natures possibly contribute? Without an account of the contribution of individual finite natures, concurrentists have a ways to go before claiming a legitimate reconciliation of Spinoza's disparate remarks on causation. Mason (1986, pp. 202–04) argues along similar lines.

[27] Joachim (though he later favors a logical reading of causality (1901, p. 53 n.1 and pp. 80–82)), equates formal with efficient causality (1901, p. 12). So does Gueroult (1968, pp. 293–99), who also discusses God's emanative cause as a kind of formal cause (1968, pp. 249–51 and 258). Wolfson suggests that Spinoza dismisses formal causes or, perhaps, includes them as a kind of efficient cause (1934, pp. 302–3). Carraud's reading (2002, pp. 306–08 and 312–315) is more specific and intentional than earlier commentators, but is not as systematic of a defense as we find in Viljanen (2008 and 2011, pp. 33–53) or Hübner (2015). I draw principally on Carraud, Viljanen (2011), and Hübner.

[28] Hübner refers to Descartes's model as a 'stripped-down, mathematical, and inferential reconception of formal causality' (2015, p. 207). Viljanen also moderates the role of substantial forms by suggesting that Spinoza may have been influenced by Suarez, who conceived of formal causes more simply as emanative effects from an agent's nature. (See also Pasnau, 2004, p. 38.)

[29] Hübner writes that Descartes's notion of a formal cause is the 'prototype of Spinoza's notion of cause' before illustrating how Spinoza may have altered and expanded it to encompass all causes (2015, pp. 212–16).

[30] Viljanen appeals specifically to Suarez's account of emanation and its suggestive parallels in Spinoza and shows with great skill how Spinoza's embrace of geometrical examples illustrates a commitment to intrinsic formal causes (2011, pp. 37–45).

[31] This is similar to Carraud, who also argues that God's self-causation is the precedent for every other cause in Spinoza, though Carraud emphasizes the *causa sui* aspect more, in comparison, than the rootedness of causes in natures (2002, pp. 312–15).

[32] Viljanen (2008, pp. 425–426) thinks that because particulars follow at least in part from external causes, formal causes need to be qualified when extended to the causal relations between particulars. Hübner is right in my opinion to correct Viljanen's initial statement on this point (2015, p. 213 n.63) since, as argued earlier, Spinoza believes that finite effects follow from the collection of finite natures involved in their cause. Viljanen does modify his earlier view so as to better accommodate formal causes between finite particulars (2011, p. 49) however, so while Hübner's criticism is instructive and important, it should be understood as referencing Viljanen's initial but not final statement on the issue.

[33] Viljanen writes that 'causation has fundamentally to do with the fact that as things are what they are – that is, as they have the kind of essences they do – certain properties follow or flow from their essences' (2011, p. 45). Hübner writes that 'however we further qualify causal relation in Spinoza's framework … in each case we shall be dealing at bottom with a formal-cause relation' (2015, p. 215).

[34] Though it is only tangentially pertinent to my argument here, I agree with Wolfson (1934, pp. 302–3) that in Spinoza's mind, any cause involves at bottom some entity doing something to produce an effect; that all causes are ultimately efficient. I would point as one important piece of evidence Spinoza's catalog of causes in KV I.3, where he identifies eight types of efficient cause, the first of which, emanation, corresponds to the formal cause under discussion here. It may be

the case, as Joachim (1901, p. 12) and Gueroult (1968, pp. 43–4) suggest, that Spinoza simply equates formal and efficient causes. See also Carraud, 2002, pp. 305 and 314; Hübner, 2015, p. 215; and Viljanen, 2008, p. 425, for similar moves that nevertheless privilege formal over efficient causes.

[35] By 'mechanism' I mean only that all effects are determined in part by universal rules or laws. Viljanen characterizes mechanism as the view that causality is reduced to 'impacts through which motion is transferred from one body to another' (2011, p. 37). Hübner likewise notes that 'mechanism is by definition an essentially physical model of causality' (2015, p. 202). My reading is more in line with Carriero's suggestion that Spinoza knowingly and intentionally extends the lessons of the new physics to human minds and God via a single set of universal rules and laws (1991, p. 59). I would add only that Spinoza intends also to ground the laws of the new physics ultimately in logical terms, of which I take his defense of a law of inertia in E2p13addlem3cor (discussed later) to be a prime example (see also Yovel, 1991, p. 88).

[36] *Haec vero tantum est petenda a fixis atque aeternis rebus et simul a legibus in iis rebus, tanquam in suis veris codicibus, inscriptis, secundum quas omnia singularia et fiunt et ordinantur*. I say more about the relation between essences and laws later.

[37] Hübner suggests that proponents of a mechanist reading of Spinoza fail to specify how mechanical causes work, and also that extending mechanism to the relations between ideas would prohibit genuine thinking in Spinoza (2015, pp. 199–200 and 202). I think the second concern is already entailed by Spinoza's acceptance of universal laws of nature (E3pref) and his parallelism of modes in extension and thought (E2p7). Hübner also thinks the formal cause model is parsimonious on account of essences housing within them whatever effects follow (2015, p. 217). However, as these passages suggest, Spinoza requires in addition to essences a host of laws to determine how individuals behave. I agree that how we include laws in finite causes is a serious challenge, but I think we can address this challenge best by trying to somehow place them within these causes – hence formal-mechanism.

[38] Spinoza earlier criticized Boyle (ep. 6, via Oldenburg) for attempting to establish mechanical principles empirically and referred him to what he believed were stronger defenses of mechanism in Bacon's *New Organ* and Descartes's *Principles*. That he does not wish to secure mechanism empirically corroborates a logical-mechanical conception of laws, i.e. laws as discoverable via reasoning.

[39] Descartes, 1985, pp. 240–43.

[40] For other supporters of this reading see note 7.

[41] Nadler rightly identifies the laws of any attribute as expressing one and the same power (God's) before recognizing that they are nonetheless distinct expressions in each attribute (2006, p. 192).

[42] I discuss E2def2 and this aspect of finite natures in greater detail below.

[43] 2011, pp. 47–48. Viljanen hopes with this to draw Spinoza's remarks regarding efficient and mechanical causes into the formalist fold. Hübner (2015) does not address the role of laws in finite causes which. Given the passages discussed earlier, I think this is a problem for her interpretation.

[44] Viljanen, drawing instructively upon Suarez's close relation between formal causality and emanation, regards formal causes as causes whose effects emanate from the agent's nature or form (2011, p. 40). Hübner (2015, pp. 206–7) draws instead on Descartes, whose conception of formal cause entails only that the effect is entailed by the agent's own nature (2015, pp. 206–7). See also Carraud, 2002, p. 308.

[45] '*τὸ εἶδος καὶ τὸ παράδειγμα, τοῦτο δ' ἐστὶν ὁ λόγος ὁ τοῦ τί ἦν εἶναι καὶ τὰ τούτου γένη*' (Aristotle, 1950, 194b26–7). See also Lear, 1988, pp. 28–29.

[46] 1950, 193a36–194b2.

[47] Aquinas, echoing Aristotle, also identifies formal causes as arising from the order of the parts of a thing (1975, p. 88).

[48] As I discuss later, I think Spinoza hopes to ground his mechanical laws in logic; hence the inclusion of logical and mechanical laws in formal-mechanism. Also, Pasnau (2004, pp. 38–41)

discusses how the formal cause became increasingly efficient over the course of the scholastic era. We might understand Spinoza as putting a decidedly mechanistic gloss on this trend.

[49] See also E1p6and7, where Spinoza argues that since a substance cannot be produced by anything else, and must have some reason or cause for its existence (implicit premise), its existence can follow from its nature alone.

[50] '… a thing necessarily exists if there is no reason or cause which prevents its existence … neither in God nor external to God is there any cause or reason which would annul his existence. Therefore God necessarily exists' (E1p11dem2).

[51] 'By substance I mean that which is in itself and conceived through itself; that is, that the conception of which does not require the conception of another thing from which it has to be formed.'

[52] Spinoza repeatedly equates 'cause' and 'reason' (*causa seu ratio*) in this argument. I forego a discussion of how he understands these terms elsewhere in his text. For a particularly illuminating discussion of Spinoza's understanding of '*causa seu ratio*' see Carraud, 2002, pp. 302–326, esp. pp. 311–318.

[53] Lin (2007, pp. 276–79) and Della Rocca (2008, p. 52), who provide powerful reconstructions of Spinoza's argument for God that rely heavily on Spinoza's commitment to the PSR, recognize that God can follow from God's nature alone and furthermore that the internal consistency and PSR are both crucial factors in its necessitating God. I am confident that both, if pressed, would agree that its rational consistency and the dictates of the PSR should accordingly be understood as features of God's nature in E1p11dem2.

[54] Della Rocca (2003, pp. 75–82) argues that Spinoza's notion of causality is grounded in conception; Viljanen (2011, pp. 41–45) proposes that Spinoza's conception of geometry and emanation help us understand how God and God's modes are produced by God's nature; Hübner (2015, pp. 212–14), focusing on finite modes instead of God's nature, suggests that Spinoza universalizes Descartes's notion of a formal cause by extending it to encompass finite causes as well; and Carraud (2002, pp. 319–26 and 340), who may be the catalyst for recent formal accounts of causality in Spinoza, grounds all of Spinoza's notions of causality in God's being its own cause. My brief proposal is of course indebted to Carraud.

[55] Spinoza twice identifies 'God' with 'Nature' in E4pref.

[56] This is reminiscent of the *Theological Political Treatise,* where Spinoza equates the laws of nature with God's decrees before specifying that 'the power of Nature in its entirety is nothing other than the power of God …' (ch. 3). For a helpful discussion regarding the relation between God's decrees and laws of nature see Yovel, 1991, pp. 79–81.

[57] 'God's power, by which he and all things are and act, is his essence itself' (E1p34).

[58] For other readings of God's nature as a set of laws see Curley, 1969, pp. 48–49 and Donagan, 1989, p. 91.

[59] For more on Spinoza's notion of causal necessity in E1ax3 see Garrett, 1979, p. 208, and Lin, 2007, p. 276.

[60] E1p28dem, but see also E1p21dem and the discussion of this issue earlier in the article.

[61] Spinoza notes in a letter to Tschirnhaus (ep. 83) that he would like to complete an extended work on physics; he died seven months later.

[62] For more on this issue see Matson, 1990, p. 87; Yovel, 1991, p. 82; and Garrett, 2009, p. 290 (though Matson and Garrett do not discuss this particular passage, they do suggest that essences are informed if not produced in part by laws).

[63] Spinoza adds that another layer of reciprocal relations exist between the blood regarded as a part working in concert with other parts to compose a greater whole (a human being, for instance).

[64] Spinoza reiterates this claim in E4p35cor1dem ('[W]hat is most useful to man is what most agrees with his nature … But a man acts entirely from the laws of his own nature when he lives according to the guidance of reason (by E3def2) …') and E4p35dem. See also E4p19, 'From the laws of his own nature, everyone necessarily wants, or is repelled by, what he judges to be good or evil.'

[65] Hübner (2015, p. 221) presciently suggests that the formal cause is what underlies and makes Spinoza's conception of physics possible. I like this way of putting it but would reverse the ordering. I propose that laws underlie the natures they are written into; that natures are causes only on account of the laws contained within them.

[66] Viljanen (2008, pp. 8–16) has a helpful discussion, particularly as regards the epistemic role essences play in Spinoza's early work. Martin (2008, pp. 497–507) and Garrett (2009, pp. 285–292) discuss their role in the *Ethics*. Gueroult argues instead that formal essences are finite rather than infinite modes (1974, pp. 102, 115–17, and 547). Newlands (forthcoming) and Hübner (2016) argue for mind-dependent universals (including essences). See also Haserot, 1950; Matheron, 1991, pp. 33–4; and Matson, 1990, pp. 88–90.

[67] Bennett (1984, pp. 357–8) concurs, except that, siding with Donagan (1973, p. 249), he suggests we regard essences as eternal possibilia. It is unclear to me how Bennett and Donagan conceive the reality of these possibilia. Matson amends Bennett and Donagan (in my opinion rightly) so as to specify that essences defining possible durational entities are themselves eternally actual (1990, p. 88).

[68] For more on this see Bennett, 1984, p. 61.

[69] Koistinen, drawing on the need for formal essences to serve as the objects of truths about finite modes, provides another argument for why certain essences are eternal (1998, pp. 71–73).

[70] Nadler (2012, pp. 228–235) suggests that the formal and objective eternal essences are finite rather than infinite – that the *totality* of these essences in each attribute comprises one of its infinite modes. For an argument that eternal essences are individually infinite see Martin, 2010, pp. 34–42. Gueroult (see note 66) argues instead that formal essences are properly understood as finite modes.

[71] Spinoza uses '*involvit*' in E2p8cor to mean 'possesses' or 'has the property of,' so an idea 'also involves a durational existence' when the idea possesses or otherwise has the property of existing durationally. See also E1p7dem where Spinoza uses '*involvit*' and '*pertinet*' interchangeably. In both instances (as well as their use in E1def1, E1ax4–5and7, E1p7 and E1def2) the 'x involves (*involvit*) y' locution, like the 'y pertains (*pertinet*) to x' locution, means that x has the feature of y, or that it includes y within it.

[72] Joachim similarly argues that an eternal essence 'shows itself' and 'expresses itself' as an imperfect durational finite nature (1901, pp. 80–81). Yovel, whose view here closely resembles my own, understands the eternal essence and its finite nature as 'two faces, logical and mechanically causal, of one and the same metaphysical reality' (1991, p. 93).

[73] This bears a resemblance to Aquinas and Scotus on common natures. Whether Spinoza was directly influenced by Aquinas or Scotus on this issue, while intriguing, I set aside for another day. See Aquinas (1968, pp. 45–50) and Scotus (1994, pp. 59–65). My thanks to an anonymous referee for prompting me to clarify this notion

[74] My thanks again to an anonymous referee for calling my attention to this issue and reference.

[75] Spinoza says only that this force 'follows from the eternal necessity of God's nature,' but as argued earlier, this occurs in the context of his describing the existence a thing has with respect to its eternal essence, so it is reasonable to attribute the force to the eternal essence contained within God's nature.

[76] See also E4p19.

[77] My aim at present is only to support the claim that laws are written into eternal essences. I follow this with a discussion of how laws come to be so inscribed.

[78] 'For a definition to be regarded as complete, it must explain the inmost essence of the thing …' (TIE 95). See also E1p8s2.

[79] See also Yovel, 1991, pp. 82–4. Nadler likewise suggests that laws comprise the immediate infinite mode of their attribute, i.e., that laws are the very first or immediate modal expressions of each attribute (2006, pp. 93–4). It is reasonable to suppose that, so construed, laws will inform if not participate in more mediated infinite modes.

[80] See note 71, where I note that 'x *involvit* y' may mean that x includes y within it; though not also that it may also mean only that x has the *feature* of y within it.

[81] '... because (by E2p6) [finite particulars] have God for a cause insofar as he is considered under the attribute of which the things are modes, their ideas must involve the concept of their attribute (by E1ax4) …' (E2p45dem). See also E2p6cordem.

[82] Bennett (1984, p. 127) and Wilson (1991, pp. 139–141) defend this reading of E1ax4.

[83] This is an adaptation of Curley's suggestion (1988, pp. 45–47) that laws of extension are features of the attribute itself and that these precede and produce the general laws of motion (immediate infinite mode) which in turn precede and produce more particular laws (mediate infinite mode) (see also 1969, pp. 59–61). The same would be true, via parallelism, for thought.

[84] Spinoza, had he completed a treatise on physics, would almost certainly have grappled more seriously, and explicitly, with this issue. My suspicion, which I hope in future work to pursue further, is that conceiving of laws as extensions of logic and therefore prior to infinite modes is a more promising path.

[85] For two commentators who suggest Spinoza may have embraced Occasionalism see note 4. Though I think Huenemann underappreciates the way in which God's being and power are allocated to finite particulars, I find his exploration of Occasionalism in Spinoza insightful (unpublished manuscript).

[86] See Ellis, 2002, pp. 36–38 and 81–88 (see also Ellis, 2001, pp. 19–22 and 67–76). Viljanen (2011, p. 52) notes Spinoza's possible connection with contemporary essentialism as well.

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