Spinoza's Simplest Bodies

DAVID HARMON

Abstract
In the entirety of his corpus, Spinoza uses the phrase 'simplest bodies' [*corporibus simplicissimis*] exactly twice and never offers an explanation of what it means. That said, it appears to play a fundamental role in his thought. This paper evaluates two twentieth-century readings of Spinoza in order to present a new original theory of simplest bodies. Ultimately, I present a reading of Spinoza which accepts a nuanced amalgamation of these accounts. I argue that the right understanding of Spinozistic simplest bodies is something like the following: simplest bodies are portions of extension featuring motive homogeneity among their necessarily infinite parts. For Spinoza, simplest bodies thus feature no mereological simplicity at all, but rather only motive simplicity, in that they are properly characterized by a single ratio of motion and rest.

Throughout his corpus, Spinoza uses the phrase 'simplest bodies' [*corporibus simplicissimis*] exactly twice but does not explain what it means. That said, it appears to play a fundamental role in his philosophy, as it helps form the point from which he jumps into a discussion of the features of the human mind and their physical correlates. The first instance of 'simplest bodies' occurs at EIIa2″,[1] where Spinoza says that his discussion of physics up until that point is 'sufficient concerning the simplest bodies, which are distinguished from one another only by motion and rest, speed and slowness'. Accordingly, we can take the preceding discussion of issues in physics as applying to simplest bodies, and the proceeding as applying to 'composite' [*composita*] bodies. This suggests a method for pinpointing what belongs to this concept: by examining

[1] References to Spinoza' *Ethics* are to Curley's translation and take the following form: roman numeral = part of the *Ethics*, a = axiom, d = demonstration, L = lemma, p = proposition, s = scholium, def = definition, ps = postulate. There are several instances in EII where Spinoza offers axioms labeled 'axiom 2.' I follow Curley in distinguishing them: the first is EIIa2, the second EIIa2′, and the third EIIa2″.

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what is going on prior to this passage from EIIa2″, we should be able to glean some information about Spinoza's simplest bodies. Further, this information can be measured against what proceeds EIIa2″, ensuring that the resulting understanding of simplest bodies is compatible with the role they play in the constitution of composite bodies.

Though there has been unfortunately little discussion of this subject in Spinoza, Deleuze (1968) and Gueroult (1974) both offer accounts that explicitly develop simplest bodies. Respectively, they propose that simplest bodies are the results of extension being actually infinitely divided or that they are best understood as portions of extension exhibiting motive homogeneity.[2] In this paper, I examine these readings and present a new hybrid view. I contend that, while the metaphysical structure of Deleuze's interpretation is right, it misidentifies simplest bodies. Gueroult's view of simplest bodies as portions of extension exhibiting motive homogeneity is more compatible with Spinoza's claims about persistence through consistency of motion and rest. Gueroult presents a more robust understanding of simplest bodies that is compatible with further Spinozistic commitments, but which can be complemented by Deleuze's insights about the structure of modal extension.

§1 sets the stage by presenting an overview of the stakes, establishing why this is an issue that matters for ensuring the viability of a Spinozist metaphysics and delineating some reasons for focusing on Deleuze's and Gueroult's contributions. In §2, I explain Deleuze's reading and discuss one of its problems: it appears to be at odds with a strict reading of the text. In §3, I outline Gueroult's view and explain its advantages. I move on in §4 to vindicate certain features of Deleuze's reading. Ultimately, the weakness in Deleuze's view comes not from the underlying metaphysics but from the way it identifies simplest bodies within that metaphysics. Thus, I show that a possible shortcoming in Gueroult's view can be sidestepped by adopting the metaphysical structure of Deleuze's reading.

1. The Problem and The Approach

Probably the most famous objection against Spinoza's metaphysics involves the accusation that it is unable to accommodate the existence of finite things. The self-explaining, first member of basic

[2] Lachterman (1977, n. 49) characterizes them similarly.

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ontology in Spinoza's system is infinite substance (God), and, because everything else that exists is a mode of that substance, it is admittedly difficult to understand why anything should be finite at all. The logical gap between infinity and finitude might seem to preclude God from having finite features. One way to deal with this problem is to read Spinoza as an idealist about finite bodies: on such a view, finite bodies either do not exist or belong to some category of being with less ontological significance than is generally afforded to everyday objects.[3] Smith and Nelson (2010) offer an interpretation of Cartesian extension on the basis of Spinozistic concerns that ultimately understands the indivisibility of extension to imply that finite things can only be ideally distinct from one another, rather than really distinct. This has the implication that both Spinoza and Descartes are committed to the ideality of finite bodies.[4] There are problems with this reading, however. If Spinoza really was an idealist about bodies, we should expect for that to be more explicit in the text than it is. Further, Spinoza very clearly writes about certain finite bodies as if they are real (for instance, the human body at EIIp11).

An alternative is to read Spinoza as a realist about finite bodies by attributing the distinctness of finite bodies to differences in motion. On this view, finite bodies are not ideal: modal extension is populated by diverse bodies in virtue of their being capable of exhibiting differences in motion.[5]

One challenge to this alternative is that Spinoza's extant works say little about the nature of motion. Since motion plays a key role in his philosophy, this has led to interpretive frustrations dating back to Spinoza's contemporaries. In a letter, Tschirnhaus directly addresses this: 'If you have the time and the opportunity, I humbly ask you for the true definition of motion and its explanation. . .' (Ep. 59). Spinoza declines to answer: 'As for the other things, concerning motion and method, because they aren't yet written out in an orderly fashion, I reserve them for another occasion' (Ep. 60). The situation is not entirely bleak though, as there is a bit of discussion of motion in Spinoza's correspondence and more in his *Principles of*

[3] For a summary of such views, see Newlands (2011a and 2011b).

[4] See Peterman (2015, 2017) for different arguments to similar conclusions in Spinoza.

[5] I follow the reading offered by Nadler (2012) here. Other accounts have also made progress on the reality of finite bodies in Spinoza. For instance, see Melamed (2010, 2012) for a conceptual gloss and Shein (2018a, 2018b, 2019) and Hübner (2015) for accounts of the metaphysics.

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Cartesian Philosophy. Though Spinoza overtly derides some aspects of Descartes' understanding of motion,[6] his discussion of Descartes on motion is illuminating about his own view.

According to Descartes, the differences between two parts of matter should not be understood as a consequence of 'some void between them: rather, let us regard the differences he creates within this matter as consisting wholly in the diversity of motions he gives to its parts' (*Le Monde* VI, AT XI 34).[7] Elsewhere, Descartes defines motion as 'the transfer of one piece of matter, or one body, from the vicinity of the other bodies which are in immediate contact with it, and which are regarded as being at rest, to the vicinity of other bodies' (*Principles of Philosophy* II 25, AT VIIIA 53). These passages imply that material diversity results from motion, since bodies can only be distinct from one another insofar as they stand in varying spatial relations to the bodies immediately surrounding them. Descartes confirms this in the following:

> The matter existing in the entire universe is thus one and the same, and it is always recognized as matter simply in virtue of its being extended. All the properties which we clearly perceive in it are reducible to its divisibility and consequent mobility in respect of its parts, and its resulting capacity to be affected in all the ways which we perceive as being derivable from the movement of the parts (*Principles of Philosophy* II 23, AT VIIIA 52)

We should thus understand Cartesian motion as relative and as the source of objective numerical individuation (Nadler 2012, p. 234). Spinoza follows Descartes in this at EIIp13s: '[b]odies are distinguished from one another by reason of motion and rest, speed and slowness, and not by reason of substance'. Nadler (2012, p. 234) understands this to mean that '[a]ny particular body is the body that it is, and is distinct from other bodies, because some matter is moving (or resting) in a certain way, different from the way in which surrounding matter is moving (or resting)' for Spinoza. So, Spinoza operates with a largely Cartesian understanding of the role that motion plays in characterizing extension.[8]

[6] See Ep. 30 and Ep. 81.

[7] Translations of Descartes are due to Cottingham, et al. (1985).

[8] Though, Spinoza and Descartes disagreed on whether or not extension could be conceived without motion. See Ep. 80–83 and Peterman (2012).

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This understanding of motion plays a key role in deriving the finite from the infinite. In the following propositions (without corresponding demonstrations), Spinoza introduces the infinite modes:

> EIp21: All things which follow from the absolute nature of any of God's attributes have always had to exist and be infinite, or [*sive*] are, through the same attribute, eternal and infinite.
>
> EIp22: Whatever follows from some attribute of God insofar as it is modified by a modification which, through the same attribute, exists necessarily and is infinite, must also exist necessarily and be infinite.
>
> EIp23: Every mode which exists necessarily and is infinite has necessarily had to follow either from the absolute nature of some attribute of God, or from some attribute, modified by a modification which exists necessarily and is infinite.

These passages suggest an ontological structure wherein substance (conceived under a certain attribute) causes an infinite mode, this infinite mode causes some other infinite mode, and anything that follows directly along this causal chain must also be infinite.[9]

In correspondence, Spinoza explains what he is referring to when he invokes these infinite modes:

> Finally, the examples [of infinite modes] which you ask for: examples of the first kind [i.e., of things produced immediately by God] are, in Thought, absolutely infinite intellect, and in Extension, motion and rest; an example of the second kind [i.e., of those produced by the mediation of some infinite modification] is the face of the whole Universe, which, however much it may vary in infinite ways, nevertheless always remains the same. (Ep. 64)

Substance is extended, and motion (an infinite mode) necessarily follows from the nature of extension. Thus, we can take Spinoza's Cartesian understanding of motion to be the bridge from the infinite to the finite. Nadler explains: 'what you necessarily get when you introduce motion and rest into extension are individual bodies. And infinite motion and rest necessarily make possible the division of infinite extension into infinitely many finite parcels of extension' (Nadler 2012, p. 234). The point is that the introduction of motion

[9] This is roughly the standard reading. For example, see Melamed (2013, Ch. 4).

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to extension necessitates that modal extension must be infinitely divided into finite parcels, since any given one of these parcels must be capable of taking on some motion distinct from surrounding parcels. Thus, motion is the mechanism by which we can understand how the finite follows from the infinite. The nature of extension just is that, when introduced to relative motion, a real and objective feature of reality, it is divided into infinitely many bodies.

While this strategy for reading Spinoza as a realist about finite bodies has a lot going for it, an underappreciated problem underlies it. Spinoza explicitly identifies simplest bodies as those bodies 'which are distinguished from one another only by motion and rest, speed and slowness' (EIIa2″). If the realist interpretation is right that finite bodies are explainable in terms of differences in motion and rest, something needs to be said about why there are any bodies *but* simplest bodies, since Spinoza holds simplest bodies to be those distinguished from one another only by motion and rest. Further, Spinoza holds that simplest bodies join together in mereological and motive relations to compose individuals, which he defines thusly:

> When a number of bodies, whether of the same or different size, are so constrained by other bodies that they lie upon one another, or if they so move, whether with the same degree or different degrees of speed, that they communicate their motions to each other in a certain fixed manner, we shall say that those bodies are united with one another and that they all together compose one body or individual, which is distinguished from the others by this union of bodies (EIIdef).[10]

Following this, Spinoza goes on to explain that we can understand composition among bodies as hierarchical: at the bottom of the mereological ladder, simplest bodies join together in the relevant ways and communicate their motions in a certain fixed manner, thus constituting an individual. This individual joins up with other individuals, composing more complex individuals. These more complex individuals do the same, and so on until 'we shall easily conceive that the whole of nature is one individual, whose parts, that is, all bodies, vary in infinite ways, without any change of the whole individual' (EIIL7s).

[10] This definition is not among those at the beginning of EII, but in the middle of the Physical Digression between EIIp13 and EIIp14. Spinoza leaves it unnumbered.

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Individuals, for Spinoza, are defined in terms of both the mereological and motive relations that hold between their parts. Mereology does not appear to be playing a role in distinguishing simplest bodies, given that Spinoza holds them to be distinguished 'only' by motion and rest. This requires explanation, as the hierarchical composition of extension seems to rely on first-order individuals being composed by simplest bodies. Since Spinoza is committed to the notion that 'the whole of nature' takes this structure, Spinoza's understanding of extension ultimately relies on the disposal of such an explanation. So, some account of simplest bodies must be given if there is any hope of achieving a secure understanding of Spinozistic metaphysics on which bodies are real.

Despite their seeming important to the idealist/realist debate, there is scant literature on simplest bodies in Spinoza; much of what exists has been unsystematic and usually serves to brace up a more wide-ranging interpretation of Spinoza's greater philosophy, but there have nonetheless been some attempts. It is thus worth saying something about why I focus on Deleuze and Gueroult in what follows. One reason is that other available interpretations falter in major ways. I have two views in mind: those that take simplest bodies to reveal a commitment to subtle matter and those that understand simplest bodies to be a status conferred to bodies only as they are conceived under certain reference frames.

First, some thinkers have interpreted Spinoza's simplest bodies as corpuscles of Cartesian subtle matter.[11] Descartes understands subtle matter to be the kind of matter that composes the sun and stars (*Principles of Philosophy* III 52, AT VIIIA 105), occupies the smallest spaces between parts of all types of matter (*Principles of Philosophy* IV 10–12, AT VIIIA 207), and composes celestial vortices, which are the basis of Descartes' theory of gravity (*Principles of Philosophy* III 52, AT VIIIA 105 and IV 20–23, AT VIIIA 212–213). Descartes relies on subtle matter to, among other things, maintain his understanding of the plenum and to explain the movement of light (*Optics* AT VI 86–87 and *Principles of Philosophy* III 49–50, AT VIIIA 104). Given that Spinoza was a committed Cartesian in many other respects, it is perhaps reasonable to think

[11] One such reading is offered by von Dunin Borkowski (1933), who held that Spinoza understood extension to be populated by corpuscles of ethereal matter at the mereological bottom, which follow a set of natural laws distinct from those that govern composite bodies. Von Dunin Borkowski heavily (over-)emphasizes the influence of Lambertus van Velthuysen's radical theory of subtle matter on Spinoza.

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that Spinoza understood matter to be characterized this way as well. The problem with a reading like this, however, is that Spinoza himself does not provide any reasons to suggest that he is committed to the existence of subtle matter, nor any fundamentally distinct kinds of matter.[12] A reading like this would require a robust positive case, and I do not see that one can be made from Spinoza's works alone.

Another possible reading might be developed from some recent work on Spinoza's mereology. Mátyási (2020) builds on the theory of Spinozistic individuation offered by Sacksteder (1977) in order to show that Spinoza understands certain mereological properties to be indexed to reference frames. That is, while there are objective compositional facts (*x* composes *y*, *p* is composed by *q*, etc.), whether or not some given body is a part or whole is a function of the reference frame under which it is conceived. If *x* composes *y* and *y* composes *z*, then *y* can be understood both as a part and as a whole, depending on whether or not *y* is conceived in relation to *x* or *z*. This helps to make sense of passages where Spinoza asserts that 'part' and 'whole' are beings of reason. There are facts about which objects compose others, but there are no absolute facts about whether a particular object is a part or whole. These terms only make sense with reference to some external frame. On the basis of such a reading, one might think something similar about simplest bodies: whether or not an object is a simplest body is simply a function of how it is conceived. If conceived in virtue of its parts and the relations they stand in, then it is not a simplest body; if it is conceived instead in relation to the things it composes, rather than in terms of what composes it, then it is a simplest body.[13]

I see two reasons for rejecting this. First, if Mátyási's reading is right about Spinoza's mereology, understanding simplest bodies in this way offers no interpretive or theoretical advantage. Anything one could describe in terms of simplest bodies could be just as well described by parts and wholes. Second, this reading is not obviously compatible with the text. When Spinoza notes that everything in the Physical Digression up until EIIa2″ is 'sufficient concerning the simplest bodies', he seems to be saying that the physical

[12] This problem is only exacerbated on a reading like von Dunin Borkowski's, since he reads Spinoza as committed to an unintuitive, extravagant theory of subtle matter on the basis of Spinoza's ownership of texts espousing such views. Of course, the more radical the view, the more textual evidence should be expected in support of it.

[13] I thank an anonymous reviewer for suggesting this view.

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laws pronounced up until that point can adequately describe the behavior of a certain class of bodies. What follows is an explication of physical laws that help to explain the behavior of bodies falling outside that class. Thus, simplest bodies follow a subset of the physical laws that composite bodies do. If this is right, then it makes little sense to say that something's being a simplest body is a function of reference frame. This would imply that there are some reference frames under which a given body behaves according to some particular physical law and others where it does not. Without also committing Spinoza to some hefty metaphysical and ontological claims, which the text does not directly support in this context (e.g. ontological relativism), such a reading would either be incoherent or extremely hard to understand. As such, I think it is wrong to commute to simplest bodies Mátyási's understanding of parts and wholes.

Deleuze's and Gueroult's respective treatments can be contrasted with such other attempts. While I offer critiques of both of their views below, both get something fundamentally right: they address exactly the concerns I outline above about situating simplest bodies in an interpretation of Spinoza's philosophy that holds bodies to be real things engaging in motive and mereological relations. For this reason, I think piecing together a defensible understanding of simplest bodies from their contributions is a winning approach.

2. Deleuze's View: A Limit Concept for Division to Infinity

Deleuze understands extended modes to be fundamentally mereological structures. Since substance is the only constituent of Spinoza's ontology to which existence belongs essentially (EIdef1, EIdef3, EIp7), the essence of any given mode does not involve existence (EIp24). So, in order to account for the existence of modes, Deleuze turns to Spinoza's infinite chain of finite causes. Spinoza says at EIp28 that 'every singular thing… can neither exist nor be determined to produce an effect unless it is determined to exist and produce an effect by another cause… and so on, to infinity'. Deleuze takes this to mean that we must understand any given mode as depending for its existence on many others.

> If… it be true that an existing mode 'needs' a great number of other existing modes, this already suggests that it is itself composed of a great number of parts, parts that come to it from elsewhere, that begin to belong to it as soon as it comes to exist

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> by virtue of an external cause, that are renewed in the play of causes while the mode exists, and that cease to belong to it when it passes away. So we can now say in what a mode's existence consists: *to exist is to actually possess a very great number* [*plurimae*] *of parts*. These component parts are external to the mode's essence, and external one to another: they are extensive parts. (Deleuze 1992, p. 201)[14]

Deleuze does not make explicit why he thinks the existence of an infinity of extended modes implies the existence of parts, though it is not difficult to reconstruct some reasons. Spinoza explains in Ep. 12 that extended modes are divisible as a result of their modal essence, not as a result of their being extended, implying that modal extension must be infinitely divisible. This point is further implied by EIp12d, EIp13s, and EIp15s, which all hold that the indivisibility of substance follows from its infinity and self-sufficiency: features which finite bodies lack. So, extended modes, for Deleuze, are necessarily composed: '[t]here are no existing bodies, within Extension, that are not composed of a very great number of simple bodies'.[15]

Spinoza's Ep. 12 also provides grounds for understanding 'a very great number' in this passage from Deleuze. In this letter, Spinoza identifies important distinctions relevant to his understanding of infinity. Particularly vital to Deleuze is the distinction between 'what is called infinite because it has no limits and that whose parts we cannot explain or equate with any number, though we know its maximum or minimum' (Deleuze 1992, p. 201). The first kind of infinity applies to something like the set of all natural numbers, while the second applies to something like the set of all real numbers between 1 and 2. The first set is infinite because, for any number n, there is some other member of the set $n + 1$. This is untrue of the second set, due to the imposed limits: there is some member n of the set, such that no member of the set is greater than n (2), and another n, such that no member of the set is less than n (1). However, since the domain is the real numbers, for any two members of the set n_1 and n_2, there is always some third member of the set n_3 whose value falls somewhere between those of n_1 and n_2. The first set is infinite in

[14] Citations of Deleuze are to Martin Joughin's English translation of Deleuze (1968).

[15] Since the simple bodies posited by the statement are bodies, the statement quantifies over them, meaning that they are not mereologically simple. Perhaps a better reading is to take 'simple bodies' as 'simpler bodies' here.

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breadth, while the second is infinitely dense.[16] Though he does not explicitly use these terms, Deleuze thinks that the 'very great number' that enumerates the parts of a finite mode corresponds to this latter type of infinity. The limits imposed on this infinity are simply the physical edges of the mode in question, but the mode is constituted by parts within parts to infinity in the same way that there are infinitely many values between n_1 and n_2. So, the parts that necessarily constitute an extended mode 'exceed every number that can be given' (Deleuze 1992, p. 201).

According to Deleuze, Spinoza conceives these dense infinities as of different sizes. Though the parts constituting a tree and the parts constituting a blade of grass both 'exceed any number that can be given', there is a sense in which the tree has straightforwardly more parts than the blade of grass. Spinoza says in Ep. 81:

> For in the whole space between two circles having different centers we conceive twice as great a multiplicity of parts as in half of the same space. Nevertheless, the number of parts, both in the half and in the whole space, is greater than every assignable number.

Spinoza posits two nested nonconcentric circles and asserts that there is a dense infinity of orthogonal lines that can be drawn between the two circles. This implies that the space between the two circles is constituted by an infinity of parts. And according to Deleuze, this infinity of parts is 'necessarily conceived as greater or less. But... it is not strictly speaking "unlimited": for it relates to something limited. There is a maximum and a minimum distance between two nonconcentric circles' (Deleuze 1992, p. 202). Though the edges of the circles delimit finite objects, they have infinite parts nonetheless. But the larger has more parts than the smaller, since the larger incorporates all the parts of the smaller (and more).

But what are these parts? Deleuze thinks they are the result of modal extension's being actually infinitely divided. 'The ultimate extensive parts are in fact the actual infinitely small parts of an infinity that is itself actual' (Deleuze 1992, p. 205). Deleuze's proposed parts are actually infinitely divided, exhaustively: 'there is no

[16] While this is a classic example for illustrating the difference between countable and uncountable infinities, Spinoza's work predates this convention and the conceptual distinction it represents. It is not clear that Spinoza's system can accommodate different cardinalities. Deleuze thinks that the distinction allows Spinoza to invoke infinities of differing size, if not differing cardinality.

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contradiction between the idea of absolutely simple ultimate parts and the principle of infinite division, as long as this division is *actually infinite*' (Deleuze 1992, p. 205).[17]

The phrase, 'ultimate parts', may suggest that Deleuze understands Spinozistic extension as composed of indivisible parts. This cannot be right; such parts would necessarily have either finite magnitude or no magnitude. If they have finite magnitude, they must be further divisible.[18] If they have no magnitude, they cannot compose modal extension, since unextended parts cannot compose extension. So, how should we understand Deleuze's position in light of this tension? When Deleuze puts forward this notion of 'ultimate parts', I take him not to be accepting the existence of atoms while arbitrarily eschewing the consequences, but instead to be accepting the infinite division of extension and using a limit concept to develop the mereological consequences. Just as we are able to talk about the totality of extended modes despite extension being infinite in breadth and as consisting of more modes than can be represented by a finite number, Deleuze introduces this 'ultimate extensive part' concept in the interest of allowing us to talk about the inverse: any divisions represented by a finite number will not properly characterize extension.

But Spinoza's mereology can still be made intelligible in the face of infinite division. We must understand the result of actually infinite division as some infinitesimal portion of extension of which no further divisions can be made, as the division is exhaustive; we must conceive this part of extension as 'ultimate', as having no parts, even though the concept is only representative and actually impossible. Deleuze allows himself to speak of ultimate parts as a limit concept, even though there are none. Accordingly, on Deleuze's reading of Spinoza, extension is doubly infinite: it extends in all directions to infinity and it is divided into an infinite number of parts, such that any given parcel of extension is composed by an infinite number of parts, the infinity of which might be lesser or greater in size than the infinity of parts that composes some other parcel of extension.

[17] It is worth noting that the issue of actual division also arises in literature on Descartes, and whether his system can accommodate actual division is what leads some commentators to conclude that bodies must be ideal for him. See again Smith and Nelson (2010).

[18] Ep. 12 is clear that it is possible for something to be extended and indivisible: substance. But this follows from the self-sufficiency of substance. Since there are no self-sufficient modes, such indivisibility is unavailable to them.

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> As a whole, and in all their relations, they form an infinitely changeable universe, corresponding to God's omnipotence. But in this or that determinate relation they form greater or lesser infinite wholes, corresponding to this or that degree of power, in other words, to this or that modal essence. (Deleuze 1992, p. 205)

It is this limit concept representing the infinite division of extension that corresponds to simplest bodies for Deleuze. Unfortunately, there are some problems with identifying Deleuze's limit concept with Spinoza's simplest bodies.[19]

Most importantly, it is impossible on Deleuze's view for simplest bodies to survive collisions. This is because of Spinoza's commitment to the rule that '[b]odies are distinguished from one another by reason of motion and rest, speed and slowness, and not by reason of substance' (EIIL1).[20] Note that Spinoza asserts this before moving on to discuss composite bodies, so there is no doubt that it applies to simplest bodies. Deleuze's understanding of simplest bodies requires that they must be conceived as having no internal parts (they are representatively 'ultimate'). Thus, to identify simplest bodies, we cannot look for any relation of motion and rest among their parts, as they have none. If bodies are distinguished by reason of motion and rest, then the only available candidate for grounding distinctions between Deleuze's simplest bodies is their external motive relations. Simplest body x is distinct from simplest body y because x is moving in some direction at some speed, while y is moving in some other direction and/or at some other speed. This implies that the identity of any simplest body is solely the product of its motive state relative to external bodies. Thus, diachronic numerical identity of a simplest body is possible only so long as its state of motion is unchanged. When it interacts with anything else, its

[19] The problem below is perhaps not the only one. One might also deny Deleuze's reading on the grounds that simplest bodies in Spinoza seem to have determinate extension, which is incompatible with their being a representative limit concept. This may be right – I do not claim my objection is the only worthwhile one. I do, however, think it is sufficiently decisive.

[20] Though Curley elsewhere prefers 'ratio', here he opts to translate '*ratione motus et quietis*' as 'reason of motion and rest', perhaps to maintain mirrored phrasing with '*ratione substantiæ*.' If the text is better read as 'ratio' my point is further supported: this 'ratio' is a description of the body's internal and external motive relations. Thanks to Daniel Garber for pointing this out.

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external motive relations change, and so must its identity. Given the ubiquity of collisions in the world, there must be a severe shortage of diachronic identity among simplest bodies.

This is a problem for Deleuze's interpretation, since Spinoza explicitly treats simplest bodies as able to survive collisions.

> When a body in motion strikes against another which is at rest and cannot give way, then it is reflected, so that it continues to move, and the angle of the line of the reflected motion with the surface of the body at rest which it struck against will be equal to the angle which the line of the incident motion makes with the same surface (EIIa2″).

This too comes before Spinoza's resolution to move on from discussion of simplest bodies. Note that Spinoza refers to the representative body striking another, being reflected, and continuing to move along a different line. In this passage, the simplest body persists through changes in its external motive relations. And since Deleuze's account requires that persistence of simplest bodies is a matter of maintaining external motive relations, this case cannot feature Deleuze's simplest bodies. We must conclude that Deleuze's simplest bodies are not Spinoza's simplest bodies.[21] Deleuze's understanding of simplest bodies is incompatible with EIIa2″ and I thus reject it.

I return to Deleuze in §4 for a vindication of the underlying metaphysical structure of his interpretation. In the next section, however, I turn to Gueroult to examine a final account of simplest bodies, one which does not suffer from the problems discussed thus far.

[21] One might judge this an idle concern: is there anything of consequence that rides on Spinoza's thinking simplest bodies survive collisions? If not, then it is not devastating for an interpretation to depart from the text here. This is fair, but I think Spinoza's commitment to simplest bodies surviving collisions is a necessary consequence of deeper principles. For instance, EIIL3 states that a 'body which moves or is at rest must be determined to motion or rest by another body'. It is not clear how a Deleuzian simplest body could be determined to motion by another body, since at the moment it is determined, it becomes a different simplest body. This concern is not idle, since it rests on a fundamental principle of Spinoza's system: that changes in motion always result from collision. Deleuze intends to offer an interpretation of Spinoza's text, so it ought to cohere with the text's explicit commitments.

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3. Gueroult's View: Homogenous Parts of Modal Extension

This final view enjoys more life in the literature than others. Versions of it feature in Bennett (1984) and Garrett (1994),[22] for instance, which perhaps illustrates its versatility. Gueroult (1974) describes the view as one of several results of Huygens' influence on Spinoza. In fact, Gueroult's explication of simplest bodies treats them as individual instances of Huygens' simple pendula: a simple pendulum is best understood as an oscillation of some body at a given frequency. At its core, Gueroult's view is that simplest bodies are bodies which exhibit a particular internal frequency of motion and rest, understood as a direct analogue of Huygens' simple pendula. I elect to focus here on the content of Gueroult's interpretation, rather than on the historical context which makes it a plausible interpretation of Spinoza. This is because I think (i) the text of the *Ethics* is sufficient for a fruitful discussion, (ii) Huygens' conception of simple pendula is more intricate and difficult than is necessary for an understanding of the view in Spinoza, and (iii) subsequent literature on the view is unconcerned with Huygens. Thus, though it is noteworthy that Gueroult's understanding of simplest bodies is informed by Huygens, this influence is presently extraneous.

Putting aside simple pendula, what then is the view? Gueroult is interested in offering a theory of simplest bodies 'which, while grounding the identity of each body in relation to motion and rest, ensures the permanence of its identity through the various changes in speed which can be affected by the action of others' (Gueroult 1974, p. 159).[23] Gueroult therefore sees that his theory must provide identity conditions for simplest bodies which do not rely on frequently changing external relations. On Gueroult's view, each simplest body has an internal principle of motion and rest, the maintenance of which grounds the identity of the body over time:

> each *corpus simplicissimum* would be characterized by a certain [motion], invariable. . . whether the body is transferred from one

[22] While I do not discuss Bennett's view in any detail, Viljanen (2007) shows how Gueroult's view of simplest bodies is contained in Bennett's field metaphysic reading.

[23] Translations of Gueroult are mine. '. . .*qui, tout en fondant la singularité de chaque corps par rapport au mouvement et au repos, assure la permanence de sa singularité à travers les divers changements de vitesse dont il peut être affecté de par l'action des autres*.'

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> place to another with any speed, whether it is put at rest or it is set in motion. In short... each of these different bodies would have a... motion which would be proper to it and which would distinguish it from all the others. (Gueroult, 1974, p. 160)[24]

By suggesting that the identity of a given simplest body is the product of some internal relation within the body, Gueroult avoids the problems of Deleuze's view. So long as the internal principle of motion and rest remains the same through whatever interactions the simplest body undergoes, it remains the same simplest body. However, it cannot then be the case that Gueroult's simplest bodies are the 'ultimate' product of actually infinite division of extension as they are in Deleuze. Gueroult's simplest bodies have internal relations and thus must have parts. This leads to the puzzling implication that simplest bodies are not mereologically simple. This requires explanation.

Gueroult relies on the crucial assumption that composite bodies have simplest bodies as parts, as well as Spinoza's EIIdef1: 'By body I understand a mode that in a certain and determinate way expresses God's essence insofar as he is considered as an extended thing'. He concludes that simplest bodies are parts of extension but denies that they are absolutely simple.

> Although 'very simple,' they are not absolutely simple, but only the simplest with regard to compound bodies or aggregates: they are the last elements of compound bodies of the first degree, that is to say of those which are not themselves composed of compound bodies. In short, they are component parts which are not in turn comprised by component parts. If they are not

[24] '...*chaque* corpus simplicissimum *se caractériserait par une certaine vibration isochrone, invariable quelle que soit son amplitude et quelles que soient les circonstances, que le corps soit transféré d'un lieu à un autre avec une Vitesse quelconque, qu'il soit mis au repos ou qu'il soit mis en mouvement. Bref, comme chaque pendule différent, chacun de ces corps différents aurait de son mouvement oscillatoire une raison qui lui serait propre et qui le distinguerait de tous les autres*.' I have rendered '*vibration isochrone*' as '[motion]', rather than as 'isochronous vibration', since I think this phrasing is an artifact of association with Huygens' simple pendula, which I endeavor to avoid. Briefly, the use of '*vibration isochrone*' reveals that Gueroult thinks of simplest bodies as exhibiting some particular intrinsic vibration. This coheres with my more general way of explaining this below, which concludes that Gueroult's simplest bodies are homogenous with regard to their internal principle of motion and rest.

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> absolutely simple, it is because, like any extended mode, they are divisible into parts, without however being aggregates of parts, being *composita idealia*, not *composita realia*; in short, they are parts of extension and therefore divisible, not atoms, which are absolutely indivisible and hence unextended. (Gueroult 1974, pp. 160–161)[25]

There is a tremendous amount to unpack in this passage. Note that Gueroult maintains the infinite divisibility of modal extension: even simplest bodies themselves can be further divided. They are not actually divided, but they are further divisible. There is a difference between being *composita realia* – being composed of parts into which the body is actually divided – and being *composita idealia* – having parts into which the body has not been divided but could be. Simplest bodies, on Gueroult's view, have parts only in the sense that they can be, but have not been, divided. It seems that this is where Gueroult finds the conceptual space to allow for some internal relation of motion and rest. Whatever relation holds between these parts is the internal principle of motion and rest that characterizes the body in question.

Gueroult's simplest bodies can be of varying size and shape (Gueroult 1974, p. 161),[26] since they are characterized by a unique relation of motion and rest between a specific kind of parts, rather than by any other physical characteristic. So, not only can a simplest body differ from other simplest bodies in its shape or size, but it could also diachronically differ from itself in the same respects, so long as its internal relation of motion and rest remains the same. Gueroult points to the following passage as evidence that Spinoza intended for this shape/size variability to feature among simplest bodies:

[25] '*Quoique étant «très simples,» ils ne sont pas absolument simples, mais seulement les plus simples au regard des corps composés ou des agrégats: ce sont les éléments derniers des corps composés du premier degré, c'est-à-dire de ceux qui ne sont pas eux-mêmes composés de corps composés. Bref, ce sont des parties composantes qui ne comprennent pas à leur tour de parties composantes. S'ils ne sont pas absolument simples, c'est que, comme tout mode étendu, ils sont divisibles en parties, sans pourtant être des agrégats de parties, étant des* composita idealia*, non des* composita realia*; bref, c'est que, étant des parties de l'étendue et de ce fait divisibles, ils ne sont pas des atomes, lesquels sont absolument indivisibles, dont inétendus*.'

[26] Viljanen (2007, p. 408) notes that this feature of the theory carries into Garrett's account: evidence that Gueroult's view of simplest bodies is shared by Garrett.

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> As the parts [of a composite body] lie upon one another over a larger or smaller surface, so they can be forced to change their position with more or less difficulty; and consequently the more or less will be the difficulty of bringing it about that the Individual changes its shape (EIIa3″).

This axiom establishes that the parts of composite bodies need not be the same size, as they 'lie upon one another over a *larger* or *smaller* surface'. If the surfaces of the parts can be larger or smaller, then the magnitude of the parts can vary in some scope. And since we know that composite bodies have either simplest bodies or further composite bodies as parts, this is good – but not decisive[27] – evidence that Spinoza intended for simplest bodies to vary in size and shape.[28]

This presents us with the conceptual framework for explicating Gueroult's simplest bodies: they are continuous regions of extension of varying size and shape which feature motive homogeneity among their parts. The parts that make up Gueroult's simplest bodies maintain a constant ratio of motion and rest to all the other parts of the simplest body. If some part of the simplest body for any reason ceases to hold this ratio of motion and rest, it would cease to belong to the same simplest body. This is what it means for these bodies to be both 'simplest' and not 'absolutely simple'. They are not absolutely simple in the mereological sense: they have parts as a result of their being extended modes. What makes them 'simplest' is that they are properly characterized by only one internal principle of motion and rest. This suggests that, in Spinoza, there are different ways of being a composite body.

There is the common meaning of 'composite' that has to do with mereology: to be composite is to have parts. Spinoza invokes this sense of 'composite' when he says that '[t]he human Body is composed of a great many individuals…' (EIIps1). This sense of 'composite' presumably applies to any extended mode because of modal extension's infinite divisibility. But, for Gueroult's account of simplest bodies to work, there must also be a different sense of 'composite' which does not apply to simplest bodies. While the first

[27] Since this axiom comes after what 'will suffice for the simplest bodies,' it might only apply to composite parts.

[28] Viljanen (2007, p. 408) asserts that Gueroult's simplest bodies must generally be extremely small. This is because of the motive heterogeneity of the physical world: any large region of extension featuring a consistent internal principle of motion and rest is likely to be disturbed by external forces until it is divided.

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sense has to do with internal *mereological* heterogeneity, the second has to do with internal *motive* heterogeneity. For a body to be composite in this second sense, it must be the case that the body is properly characterized by several different ratios of motion and rest. For Spinoza, a body's identity and persistence conditions are tied up with the motion and rest of its parts (EIIL5, EIVp39d, etc.). For any bodies that have composite bodies for parts, the identity and persistence conditions of the parts are tied up with some further ratio of motion and rest. Thus, a body might be considered composite, not only in the sense that the body has parts, but in the further sense that the body has parts which are themselves characterized by a different ratio of motion and rest. Spinoza gestures at this second sense of 'composite' in the following: 'Some of the individuals of which the human Body is composed are fluid, some soft, and others, finally are hard' (EIIps2). Since fluidity and hardness must be reducible to different ratios of motion and rest, we can infer that the parts of the human body are properly characterized by different ratios.

Given these two senses of 'composite', it is clear that Gueroult's simplest bodies are composite in the first sense, but not the second. For Gueroult, a simplest body has parts (it can be divided), but its parts are not characterized by a different ratio of motion and rest from the simplest body itself. Simplest bodies do not enjoy mereological simplicity, but motive simplicity.[29]

To my eye, Gueroult's view agrees with all that Spinoza says about simplest bodies. For instance, EIIa1″ says that:

> [a]ll 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 bodies moving it.

This comes prior to EIIa2″, so there is no doubt that it applies to simplest bodies. On Gueroult's view, the essence of any given distinct body will directly correspond to its internal principle of motion and rest. Since there are presumably an infinite number of different possible internal principles of motion and rest, there are also an infinite number of possible simplest bodies. This means that the

[29] I call this motive simplicity a 'ratio' in order to be consistent with Spinoza's vocabulary, but it is perhaps right to instead say that Gueroult's simplest bodies are more specifically characterized by a 'value' of motion and rest, since the motion described by it is homogenous.

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passage expresses a rule about the interaction of these different internal principles: an interaction of two simplest bodies can differ on account of *which two* simplest bodies are interacting.

Gueroult's account of simplest bodies also coheres well with the following, which concern consistency of identity through alterations in motion:

> If certain bodies composing an Individual are compelled to alter the motion they have from one direction to another, but so that they can continue their motions and communicate them to each other in the same ratio as before, the Individual will likewise retain its nature, without any change of form. (EIIL6)

> Furthermore, the Individual so composed retains its nature, whether it, as a whole, moves or is at rest, or whether it moves in this or that direction, so long as each part retains its motion, and communicates it, as before, to the others. (EIIL7)

These appear after EIIa2″, so simplest bodies need not conform to them. But a possible advantage of Gueroult's view is that simplest bodies are not exceptions to these rules. Since a given body is simple on account of its motive homogeneity (rather than its mereological simplicity), it is perfectly reasonable to talk about simplest bodies losing, gaining, and exchanging parts.

It is for this same reason that Gueroult's view overcomes the difficulty that defeats Deleuze's view. Recall that Deleuze's view is unable to account for diachronic identity of simplest bodies through interactions with other bodies – something EIIa2″ requires. Gueroult's view, however, can account for simplest bodies retaining identity through collisions with other bodies. When two simplest bodies collide, it is possible that they change something about one another (size or shape), but neither is prone to be annihilated. If a simplest body collides with some other body, it will reflect away from the collision at an angle equal to the inverse of the angle of incidence (EIIa2″), but so long as its internal principle of motion and rest remains the same, so does its identity.[30] The parts of a simplest

[30] One might worry that, unless Gueroult's simplest bodies are perfectly inelastic, then upon collisions, their parts will change their external motive relations at differing rates. Thus, at least during the duration of the collision, the simplest body will not persist. Of course, Cartesian collision laws describe interactions between perfectly inelastic bodies, but this is only an idealization. In the real world, simplest bodies may themselves be elastic. I see two possible replies: first, simplest bodies may indeed by perfectly

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body, on the other hand, are prone to change their external motive relations on any given collision, meaning they do not preserve a stable diachronic identity. Simplest bodies, then, are the most basic unit of diachronic identity in Gueroult's reading of Spinoza: it is because of simplest bodies persisting through collisions that the instability of the world at the small extremes of the mereological spectrum can give rise to the stability of the world at the other extreme.

4. Some Truth Still in Deleuze

As I mention in §2, Deleuze gets the overall picture of modal extension quite right, but simply misidentifies his limit concept with simplest bodies. The final task to be done here is to examine whether the metaphysical structure of Deleuze's reading is compatible with the theory of simplest bodies offered by Gueroult, and subsequently to ameliorate a limitation of Gueroult's view. The limitation to which I refer is that Gueroult's view may commit Spinoza to a form of idealism or acosmism about physical ontology – something incompatible with the framing of modal extension outlined in §1 above. This is because Gueroult thinks that simplest bodies are *composita idealia*. This means that simplest bodies are, strictly speaking, not divided into parts, but could be. It is these ideal parts that maintain motive relations to one another, which Gueroult thinks is sufficient for grounding the identity of the simplest body. However, this means that Gueroult's simplest bodies, which are the basic unit of diachronic identity in Spinoza's physical ontology, rely for their identity and persistence on something ideal. It seems to follow that the identity of a simplest body is itself ideal. And given that Gueroult's simplest bodies determine the identities of more complex bodies, the whole system might then collapse into idealism.[31]

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inelastic (elasticity would need to be explained by some internal motive status, but Gueroult's simplest bodies exhibit motive homogeneity, as is shown below) and second, there is debate in Spinoza scholarship over how rigidly an object's ratio of motion and rest must be maintained in order for the object to persist. See Bennett (1984, pp. 231–233), for instance. If there is a degree of leeway, then the elasticity may not cause persistence problems in collisions.

[31] One might think such collapse is prevented by EIIL4: the identities of the parts of a composite body are irrelevant to the identity of the composite body. But the problem remains that simplest bodies have identity

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I think we can keep the classification of simplest bodies as continuous portions of extension featuring internal motive homogeneity while also rejecting the notion that these simplest bodies are *composita idealia*. Instead, we should take simplest bodies to be *composita realia*, thereby grounding the identity of a given simplest body in real parts of extension that are actually divided from one another. Thus, these parts maintain a consistent motive relation to one another that is not ideal, but real. To my eye, the view suffers no detriments on this alteration, so there are no obvious reasons to be attached to understanding parts of simplest bodies as *composita idealia*. That said, for simplest bodies to be non-arbitrarily divided into real parts, they must be infinitely divided into an infinity of real parts.[32] In that case, it seems that we have arrived back at the metaphysical structure of Deleuze's view: extension is actually divided to infinity.

Fortunately, I think there is compatibility here. After all, the relevant portion of Deleuze's theory is about the fundamentally mereological structure of Spinozistic extension: any portion of extension, no matter its size, has parts within parts to infinity. The relevant portion of Gueroult's theory of simplest bodies, on the other hand, has very little to do with mereology: simplest bodies are simple with regard to their internal motive relations, not with regard to their mereological structure. So, there is no transparent reason to suspect that the theories are incompatible, as they are theories about different (though related) aspects of Spinoza's ontology.

I propose thus that we think of Gueroult's simplest bodies as actually divided into smaller bodies that approach the limit of Deleuze's simplest bodies. Though the limit is itself ideal, the infinite parts *approaching* the limit can be fully real if, as Deleuze proposes, extension is actually infinitely divided. This means that any given simplest body is composed of infinitely many parts, all of which remain in constant motive homogeneity with respect to one another (and which have parts of their own, which also have parts, and so on). Any time a simplest body interacts with some other body, some of the external motive relations of its parts will change, meaning that the parts might not survive the collision. This is only a problem on Deleuze's view because he identifies the limit concept representing 'ultimate

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only ideally. Thus, any simplest bodies composing a composite body will do so ideally. So even if composite bodies can have identity, they can only have identity grounded in ideal motive relations.

[32] Otherwise, they must be divided into some arbitrary finite number of parts. This is in tension with EIa2, EIa3, EIp8s2, and EIp11d2.

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parts' of extension with simplest bodies. If we instead identify simplest bodies as Gueroult does, no problems arise. Spinoza only gives reason to think that simplest bodies survive collisions (EIIa2″), not that parts of extension all the way down the mereological ladder must do so. And, given that Spinoza endorses persistence conditions having to do with motive relations, rather than identity of parts (EIIL4), it poses no problem that the parts of simplest bodies are frequently exchanged for others.

To conclude, there are two basic kinds of simplicity relevant to this discussion of Spinoza's simplest bodies. Motive simplicity: this kind of simplicity applies to Gueroult's simplest bodies, in that simplest bodies are exhaustively characterized by a single internal principle of motion and rest. Gueroult's simplest bodies are portions of extension exhibiting motive simplicity. Mereological simplicity: this kind of simplicity applies to Deleuze's simplest bodies, a limit concept representing the 'ultimate' end of extension's infinite division. Gueroult's simplest bodies, however, do not enjoy mereological simplicity, as they are composed of parts. In fact, *no* actual bodies enjoy mereological simplicity for Spinoza, since extension is actually infinitely divided. I have proposed that we understand the parts of Gueroult's simplest bodies as bodies *approaching* Deleuze's limit concept. So long as we do not identify these parts with simplest bodies, no problems arise from the instability of their identity.

Thus, I take Spinoza's simplest bodies to be portions of extension exhibiting internal motive homogeneity among their parts, which are the result of extension's being divided to infinity. In short, Gueroult's understanding of Spinoza's simplest bodies is the right one but is best understood as resting on the mereological structure of Spinozistic extension presented by Deleuze.[33]

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DAVID HARMON (dh212@st-andrews.ac.uk) *is completing his PhD at the University of St Andrews. His research interests are in early modern rationalism, metaphysics, and philosophy of physics.*

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