

Leibniz and the Veridicality of Body Perceptions*

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According to Leibniz’s late metaphysics, sensory perception represents to us as extended, colored, textured, etc., a world which fundamentally consists only of non-spatial, colorless entities, the monads. It is a short step from here to the conclusion that, as Nicholas Jolley put it, “sense-perception involves a misrepresentation of the world more radical than anything Descartes had envisaged” (Jolley 1986, 48). In this paper, I argue that the oft-repeated claim that Leibniz’s theory of monads makes the world of bodies an illusion is false. Leibniz holds that in typical cases of body perception the bodies perceived really exist and have the qualities, both primary and secondary, they are perceived to have. At the same time, Leibniz holds that our perceptions of these bodies are accurate representations of the monads from which the bodies result. The contrary thesis – that our body perceptions are misrepresentations of the monads – stems from a misunderstanding of Leibniz’s theory of *confused concepts* and his phenomenalist account of the nature of body. Clarifying these issues will have important consequences for our understanding of Leibniz’s idealistic metaphysics and the manner in which that metaphysical theory is meant to support mechanistic science.

I begin by showing that Leibniz holds, against the Cartesians, that secondary quality perception is veridical – that is, that it accurately represents the intrinsic natures of bodies. Leibniz is able to hold this view because he rejects another Cartesian thesis, the transparency of the mental, and holds that we have conscious awareness of only a fraction of the representational content of our perception. Thus our idea of yellow really does represent some microphysical state of affairs, although we cannot learn this by introspective examination of that concept alone. In the same manner, I argue in §2, our body perceptions in general represent monads and relations between them, although we are unable to say what these relations are. In §3, I use these results to draw conclusions about the necessary conditions for the existence and reality of bodies. I argue that Leibniz holds that the existence of bodies is constituted by facts about our body perceptions. However, on Leibniz’s view, among those bodies that *exist* only some are *real* (others are imagined, dreamed, hallucinated, etc.), and

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the distinction between real and unreal bodies is *not* to be found in our perception, but rather in the mind-independent facts about the monads. For this reason, Leibniz’s brand of phenomenalism does not have the same epistemological (anti-skeptical) consequences as more familiar brands of phenomenalism, such as Berkeley’s. I conclude by considering the implications of these views about the metaphysics and epistemology of body for Leibniz’s commitment to mechanism. I argue that, although Leibniz defends the mechanistic methodological thesis that we ought to aspire to explain everything in terms of the concept of body, Leibniz’s mechanism turns out to be anthropocentric in a way mechanists of a more strongly realist orientation, such as Descartes, would find deeply objectionable. Mechanism, it turns out, is simply an artifact of our particular manner of confusedly (but accurately!) representing the world and, in Leibniz’s view, there is every reason to suspect that there are other creatures, with superior capacities, who can do better.

1 The Veridicality of Secondary Quality Perceptions

One of the defining features of the ‘mechanical philosophy’ was the view that the so-called ‘primary qualities’ are attributable to bodies in a more fundamental or objective sense than the ‘secondary qualities,’ and so occupy a privileged place in natural philosophy. Among the mechanical philosophers who influenced Leibniz there were (at least) two different views on the nature of secondary qualities and the reason for their exclusion from fundamental physics (see McCann 1994, 62-63). The first view, the Galileo-Descartes model, took a hard-nosed eliminativist approach to secondary qualities, holding that our sensory perception of bodies represents them as having qualities, such as whiteness and sweetness, which they do not and cannot have, and that commonsense beliefs and assertions falsely attribute these chimerical qualities to bodies.¹ The second view, the Boyle-Locke model, was a reductivist approach according to which our perceptions, as well as our commonsense beliefs and assertions, merely represent the body as having the power or disposition to cause a certain idea in the mind, which idea

1. For Galileo, see Galilei (1623) 2008, 185-189. For discussion see Redondi 1987, 55-57, 63. Descartes is less explicit on this point, but his discussion of secondary qualities in the *Meditations* is embedded in a discussion of perceptual error. In the *Sixth Meditation*, Descartes argues that if we make the mistake of treating our senses as “reliable touchstones for immediate judgements about the essential nature of the bodies located outside us” (CSM, 2:57-58) we will make false judgments, such as the judgment that bodies are hot, white, green, sweet, or bitter (2:56-57). On the other hand, there are other texts where Descartes appears to endorse a view closer to the Boyle-Locke model (1:153, 218). On Descartes’ ambivalence on this point, see Cottingham 1989–1990. Malebranche insists much more explicitly on the claim that secondary quality perception is a case of perceptual error (Malebranche [1674–1675] 1997, 569-570, 573-574). Arnauld is also quite explicit in holding that we are prone to judge that secondary qualities are really in bodies and that this judgment is false. He is, however, more circumspect than Malebranche about the attribution of error either to the senses or to plain language assertions (Arnauld and Nicole [1662] 1996, 49-53; Arnauld [1683] 1990, 130-132, 173-175).

bears no resemblance to the power or disposition which causes it (Boyle [1666] 1991, 30-37; EHU, §2.8.10). A word like ‘white’ is applied to both the idea and the power or disposition which causes it by sheer equivocation.

Leibniz rejects both of these views. In developing his own alternative account of secondary qualities and secondary quality perceptions, Leibniz takes over from the Cartesians the view that primary quality ideas are *distinct* while secondary quality ideas are *confused*. However, Leibniz defines the terms ‘distinct’ and ‘confused’ in his own way. His canonical treatment of this subject is in the 1684 “Meditations on Knowledge, Truth, and Ideas”:

[K]nowledge is *clear* when I have the means for recognizing the thing represented. Clear knowledge, again, is either confused or distinct. It is confused when I cannot enumerate one by one marks [*nota*]² sufficient for differentiating a thing from others, even though the thing does indeed have such marks and requisites into which its notion can be resolved. And so we recognize colors, tastes, and other particular objects of the senses clearly enough, and we distinguish them from one another, but only through the simple testimony of the senses, not by way of explicit marks . . . But a *distinct notion* is like the notion an assayer has of gold, that is, a notion connected with marks and tests sufficient to distinguish a thing from all other similar bodies . . . a *nominal definition* . . . is nothing but an enumeration of sufficient marks (A, 6.4:586-587/AG, 24; cf. A, 6.4:528, 539-540/MP, 6, 11; DM, §24).

For Leibniz, a notion or concept is a recognitional capacity, and the concept or notion is clear to the degree that the recognitional capacity is reliable (cf. McRae 1976, 74-76). The exercise of such a capacity produces clear knowledge (*cognitio*).³ Leibniz claims that our secondary quality concepts are reliable capacities of this sort, and hence that we have clear knowledge of the secondary qualities of bodies. In characterizing these capacities as reliable (that is, in calling our knowledge ‘clear’), Leibniz implies that our attributions of secondary qualities to bodies are typically correct.

In claiming that our secondary quality concepts, although clear, are confused, Leibniz is claiming that these concepts admit of a hidden analysis. In such a case, the thinker is reliably disposed to apply the concept to the correct objects, *but can’t say why*. The concept is primitive *for the thinker*, but is not primitive in reality: a further analysis could, in principle, be done (A,

2. Translators’ insertion.

3. Unlike the English word ‘knowledge’, *cognitio*, in this usage, is not factive – that is, false *cognitio* is possible. *Cognitio* is simply the application of a concept (notion, idea, etc.) to an object, whether that application is correct or incorrect. Leibniz likely inherited the non-factive use of *cognitio*, directly or indirectly, from Aquinas (see Coope 2013), and it was in turn inherited from Leibniz by Kant. As a result, it might be preferable to use ‘cognition’ in translation, as has become customary in translating the German word *erkenntnis* which Kant connects with Latin *cognitio*. The uses of *cognitio* in the “Meditations” are in fact so translated by some interpreters (e.g., Wilson 1977, 129; Shim 2005, 93, 96; Duarte 2009). Nevertheless, I will continue using the word ‘knowledge’ for consistency with standard translations.

6.4:540/MP, 11; A, 6.4:586/AG, 24). As Leibniz puts it in a 1701 letter to De Volder, “[p]rimitive notions lie concealed in derivative ones, but they are distinguished only with difficulty” (LDV, 210-211).⁴ Thus Leibniz’s view is that secondary qualities are really possessed by bodies, but are analyzable into more fundamental qualities. The concepts of these more fundamental qualities ‘lie concealed in’ our secondary quality concepts, but cannot be discovered by introspection alone.

Leibniz brings the same set of definitions to his discussion of Locke’s views on secondary qualities in the *New Essays on Human Understanding* (1704). In the early chapters of book II of the *Essay*, Locke carefully distinguishes the features of ideas from the features of their objects, arguing, for instance, that we may have simple ideas of complex things (EHU, §2.2.1) and positive ideas of negative things (§§2.8.1-3). On Locke’s account, the idea of green is a simple idea that represents the complex power that causes it. Leibniz disagrees:

[T]hese sensible ideas appear simple because they are confused and thus do not provide the mind with any way of making discriminations within what they contain . . . It is obvious that green, for instance, comes from a mixture of blue and yellow; which makes it credible that the idea of green is composed of the ideas of those two colours, although the idea of green appears to us as simple as that of blue, or as that of warmth. So these ideas of blue and of warmth should also be regarded as simple only in appearance . . . we should undertake the analysis of them by means of further experiments, and by means of reason (NE, 120; cf. G, 4:550/WF, 238).

Later in book II, when Leibniz arrives at Locke’s own account of the distinction between clear and obscure and distinct and confused ideas, Leibniz states explicitly that he is still operating with the definitions of these terms he proposed in the “Meditations” (NE, 254-256). In saying that these ideas appear simple only because they are confused, Leibniz is claiming that our ideas have *structure* and *complexity* which is hidden from us and that, although an analysis is in principle possible, it must take place by means of ‘experiments’ and ‘reason,’ and not by direct introspective examination of the ideas (G, 6:499-501/AG, 186-188; L, 287-288).⁵

Locke further claimed that the connections between mechanical constitutions and secondary quality ideas was arbitrarily instituted by God (EHU, §2.8.13-15), and that it followed from this that we could not have ‘universal knowledge’ regarding secondary qualities (§4.5.7). Leibniz objects to these views as contrary

4. Leibniz does not use the word ‘confused’ in this context, but the word ‘distinguished’ (*distinguuntur*) is a verb form of ‘distinct’ (*distincta*), which is Leibniz’s antonym for ‘confused’.

5. The Latin manuscript underlying L, 280-289 is, so far as I can determine, still unpublished.

On the impossibility of discovering the correct analysis of color by introspection, see Simmons 2001, 65-66; Lodge and Puryear 2006, 184-186; Duarte 2009, 712, 731-732; Puryear 2013, 13. For a detailed treatment of the methodology of the hybrid empirical/intellectual process which does allow us to discover the analysis of color, see Leduc 2010.

to divine rationality (NE, 131-132, 403-404). Instead, Leibniz insists that there is a non-arbitrary relationship of *expression* between our secondary quality ideas and the mechanical constitutions they represent. As Leibniz explains in the *Theodicy*:

The representation has a natural relation to that which is to be represented . . . The representation often suppresses something in the objects when it is imperfect; but it can add nothing: that would render it, not more than perfect, but false. Moreover, the suppression is never complete in our perceptions, and there is in the representation, confused as it is, more than we see there. Thus there is reason for supposing that the ideas of heat, cold, colours, etc., also only represent the small movements carried out in the organs, when one is conscious of these qualities, although the multiplicity and the diminutive character of these movements prevent their clear representation (T, §356).

The fact that Leibniz here says that secondary quality ideas “only represent the small movements carried out in the organs” should not be seen as a denial of what he says elsewhere, namely, that secondary quality perceptions represent the motions or mechanical constitutions of external bodies (see, e.g., NE, 56), for it is Leibniz’s consistent position that we express external objects *by* expressing the states of our body, and especially its sense organs, which correspond to states of the soul according to the pre-established harmony (LDV, 76-77, 266-267; NE, 117; G, 563-564/WF, 250; T, §62; PNG, §4; Mon, §62).⁶ Thus the fact that these sensations ‘only’ express the state of the organs does not prevent them from expressing external bodies.

Leibniz’s response to Locke’s charge of divine arbitrariness depends directly on his view that our apparently simple ideas contain hidden complexity. This is made explicit in the preface to the *New Essays*: “the insensible parts of our sensible perceptions . . . bring it about that those perceptions of colours, warmth and other sensible qualities are related to the motions in bodies which correspond to them” (NE, 56). In this way, Leibniz holds, apparently simple ideas like green are able, by their own intrinsic nature and not merely their causal history, to represent complex features of bodies (cf. Duarte 2009, 708-710).

In sum, Leibniz endorses the mechanistic thesis that secondary qualities are to be accounted for in terms of primary qualities, so that a completed physics will refer to primary qualities alone. Furthermore, he agrees with the Cartesians and with Locke that our secondary quality ideas are apparently simple, and hence that the analysis of secondary qualities into primary qualities must be a matter for natural philosophy and not simple introspection. However, Leibniz parts ways with both the Cartesians and Locke by holding that our *apparently* simple ideas are *really* complex. As Leibniz recognizes, his introduction of a contrast between appearance and reality within the realm of our own ideas –

6. For discussion see McRae 1976, 20, 28-29; Adams 1994, 286-288.

that is, the denial of the transparency of the mental – places him radically at odds with the first principles adopted by other modern philosophers (NE, 52-58; Mon, §14).⁷ It is this radical departure that allows Leibniz to endorse the mechanistic approach to secondary qualities while maintaining, against both the Cartesians and Locke, that our secondary quality ideas accurately represent the intrinsic natures of the bodies to which they are applied.⁸

2 The Veridicality of Body Perceptions

Leibniz’s denial of the transparency of the mental, and the theory of confused ideas made possible by this denial, allows him to combine the mechanistic thesis that secondary qualities must be analyzed into primary qualities with the commonsense thesis that our idea of green accurately represents an objective feature of grass and thereby gives us knowledge of the nature of grass. Metaphysically, this puts Leibniz at odds with the Cartesians who held that the grass was not really green (or, as they sometimes preferred to put it, that greenness was not really in the grass) and with Locke who held that the idea of green represents some unknown and unknowable power in the grass which causes that idea. Epistemologically, Leibniz again disagrees with the Cartesians, who held that knowledge of the intrinsic nature of grass was available only to the pure intellect and not to the senses (see, e.g., CSM, 2:20-22), and with Locke, who held that such knowledge was not available at all (EHU, §3.6.9).

It is, according to Leibniz, part of the task of natural philosophy to analyze secondary qualities into primary qualities, and this analysis proceeds in the same fashion as the rest of natural philosophy, namely, by experiment working in concert with reason (NE, 120). The purpose of this process of analysis is to gain more distinct knowledge of what we perceive (G, 6:499-501/AG, 186-187; NE, 130, 382-383, 403-404). This knowledge is distinct because the concepts employed in it – the primary quality concepts – are distinct.

Leibniz rejects standard mechanistic accounts of secondary qualities.⁹ He also rejects the Cartesian identification of body with extension (see, e.g., DM, §12; GM, 2.2:235/WF, 154). What Leibniz endorses is the broader mechanistic program according to which *body* is the clear and distinct idea which lies at the foundation of physics and in terms of which we must explain all of the confused ideas we get from the senses.

7. For discussion see Simmons 2001.

8. Here I disagree with Puryear 2013 who holds that Leibniz’s ability to combine the subjective and objective aspects of color in a coherent theory depends on his general phenomenalism about bodies. Leibniz holds that secondary qualities are phenomena insofar as they are artifacts of our particular manner of confusedly representing bodies. This is the subjective aspect of color. The objective aspect stems from the fact that the *content* of any particular color perception can be analyzed in mechanistic terms. It is the doctrine of *confusion* that is doing all the work.

9. By ‘standard mechanistic accounts,’ I mean those held by canonical mechanists, such as the Cartesians, Boyle, and Locke. I agree that Leibniz endorses ‘mechanism about color’ as Puryear 2013, 13 defines that phrase, i.e., that he reduces colors to mechanical properties.

In light of Leibniz’s commitment to this mechanistic thesis, it is rather surprising to find him saying, as early as the *Discourse on Metaphysics* (1686), that “the notions of size, of shape, and of motion are not as distinct as we imagine . . . they involve something imaginary and relative to our perceptions, as also (but much more so) do colour, heat, and other similar qualities” (DM, §12). According to Leibniz, the distinction between primary and secondary qualities is only a matter of degree (see Adams 1994, 228-234). In fact, Leibniz at least sometimes says that all of our ideas are to some degree confused. According to this view, we have no *adequate* ideas, none that we can fully analyze into ideas which admit in principle of no further analysis (A, 6.4:528-529/MP, 6-7).¹⁰

In Leibniz’s late philosophy, the claim that even our primary quality concepts, and the concept of body itself, are somewhat confused is directly connected to the theory of monads. Just as Leibniz accepts Locke’s claim that the idea of green occurs in our conscious awareness as “*one uniform Appearance*” (EHU, §2.2.1), he also accepts that the world appears to us to be filled with individual extended objects distributed in space and time. Yet ultimately, Leibniz claims, “there is nothing in things but simple substances, and in them, perception and appetite” (LDV, 306-307). The monads, the ultimate constituents of Leibniz’s world, are not extended, nor are they located in space and time. Indeed, monads could not possibly be extended for, in Leibniz’s view, nothing extended can be a ‘true unity’; an extended thing is always really a multitude (72-73, 300-301). Accordingly the ‘modes of extension’ (size, shape, and motion) which form the ‘characters’ of Galileo’s mathematical language of nature (Galilei [1623] 2008, 183) must necessarily “involve something imaginary and relative to our perceptions,” since nothing spatial could possibly belong to the metaphysically fundamental realm of true unities. Space and extension themselves stem from our confused mode of representation.

It is precisely here that the charge of misrepresentation is at its strongest. Thus Glenn Hartz alleges that, in Leibniz’s monadological metaphysics, “The senses get blamed for erroneously attributing not only unity but also *secondary qualities* and *continuity* to aggregates” of monads (Hartz 1992, 515). Similarly, Donald Rutherford writes,

Although [Leibniz] accepts [the mechanists’] assumption that material objects can be adequately explained only in terms of the mechanical properties of size, shape, and motion, he rejects their further conclusion that these notions provide us with accurate knowledge of reality (Rutherford 1995a, 87).

Rutherford reiterates the point in a more recent work:

According to Leibniz, reason teaches us that only a small portion of the content of our perceptions accurately represents features of reality. Most of the properties we perceive things to have – color, sound, flavor, but also spatial extent and continuity – are not properties of

10. For discussion see Adams 1994, 121-122; Plaisted 2003.

things as they are in themselves, that is, monads (Rutherford 2008, 187).¹¹

If I am correct that Leibniz regards perception by means of confused secondary quality ideas as nonetheless veridical then *a fortiori* he ought to regard perception by means of relatively distinct primary quality ideas as veridical, contrary to the claims of Jolley, Hartz, and Rutherford. In other words, my claim is that, just as secondary quality ideas are accurate but not totally perspicuous representations of the mechanical constitutions of bodies, so primary quality ideas (and the idea of body itself) are accurate but not totally perspicuous representations of monadic relations.¹² This, after all, is precisely what it means to say these ideas are *confused*. Leibniz applies the confused/distinct contrast only within the realm of *clear* ideas, which are reliable recognitional capacities. As a result, it must be the case that, in typical cases of the application of such concepts as *body*, *round*, or *five feet long* we are correctly identifying some monadic state of affairs. Leibniz’s monadology is in this sense *reductive* rather than *eliminative*: rather than saying there are no bodies, it provides an account of what it is to be a body. As Leibniz himself says, “I do not really do away with body, but reduce it to what it is” (LDV, 318-319). A body is an aggregate of monads.

If this is correct, then why does Leibniz say that primary quality concepts “involve something imaginary” (DM, §12)? To understand this claim, we must recall that this section of the *Discourse* is a direct criticism of the Cartesian brand of mechanism, according to which “the whole nature of body . . . consist[s] solely in extension” (§12).¹³ A key part of this program was the view that extension is a clear and distinct idea *of the pure intellect* and so radically unlike the secondary quality ideas which are ‘imaginary’, i.e., *derived from the faculty of imagination* (see CSM, 2:50-51). Leibniz rejects the Cartesian view that “confused thoughts are completely different in kind from distinct thoughts” and holds instead that confused thoughts “are only less well distinguished and less developed because of their multiplicity” (G, 4:563/WF, 250). Furthermore, according to Leibniz, sensation is just the having of confused ideas and understanding (the activity of the pure intellect) is just the having of distinct ideas (LDV, 76-77; T, §66). It follows from this that pure intellect and sense/imagination exist on a continuum, rather than being radically distinct as the Cartesians supposed. What Leibniz is arguing in DM, §12 is that primary quality ideas, although more distinct and hence further toward the ‘intellectual’ end of the

11. Rutherford does claim that Leibniz upholds the veridicality of our perceptions of bodies (Rutherford 2008, 151-153, 186). However, he clarifies that Leibniz upholds this only “in the weakest, phenomenalist sense” (187). I am arguing, on the contrary, that these perceptions are veridical in the strong sense that reality is as the perceptions represent it to be.

12. We saw above that secondary quality ideas represent the mechanical constitutions of bodies by representing the state of the sense organs which express those constitutions. In the same way, secondary quality ideas can be said to represent monadic relations by representing mechanical constitutions. Ultimately, for Leibniz, everything must come down to the monads’ perceptions of one another (Mon, §§56-58).

13. Garber 2009, 160-163 also argues that, when this passage is read in its anti-Cartesian context, it does not ultimately involve a rejection of the attribution of unity to bodies.

continuum than secondary quality ideas, are nonetheless somewhat confused, so that sense/imagination is not entirely absent from them.¹⁴ In other words, ‘imaginary’ here contrasts with ‘intellectual’, not with ‘real’.

This doctrine is preserved in the late period. For instance, in a 1712 dialogue commenting on Malebranche, Leibniz says that body “is a *being of reason*, or, rather, of *imagination, a phenomenon*” (G, 6:625/AG, 263). This is connected with Leibniz’s claim that body “does not have true unity.” According to Leibniz, this follows directly from the nature of extension (LDV, 72-73, 300-301). As Leibniz says elsewhere, “confusion is when several things are present, but there is no way of distinguishing one from another” (G, 7:290/MP, 146).¹⁵ The concept of extension, and the concept of body which includes it, are confused in part because they elide the distinction between the infinitely many monads they represent. Nevertheless, the concept of body is *clear* and, on Leibniz’s definitions, this must mean that, by means of this concept, I accurately recognize some underlying monadic state of affairs, just as by means of my clear but confused concept of green I accurately recognize an underlying mechanical state of affairs. It is to the nature of this underlying state of affairs that we now turn.

3 Leibniz’s Phenomenalism

‘Phenomenalism,’ as I use that term here, is the Berkeleian thesis that bodies exist by being the object or content of perception: their *esse* is *percipi*.¹⁶ This basic phenomenalist thesis is a consistent part of Leibniz’s late metaphysics.¹⁷ In this section, I explicate Leibniz’s phenomenalism in order to show that it is consistent with my thesis that body perceptions are (typically) veridical representations of underlying monadic states of affairs. In Leibniz’s view, the existence of a body comes about when infinitely many monads are confusedly co-apprehended under the concept *body*. However, among those bodies that *exist*, only some are *real*. A body is real when the perceptual state in which the monads are confusedly apprehended accurately represents the relations between them. Thus Leibniz’s phenomenalism is not merely consistent with but

14. Leibniz discusses the respective roles of intellect and sense/imagination in our thought about primary qualities in physics at G, 6:500-502/AG, 187-188 where the primary qualities appear to be among “*those that are both sensible and intelligible*.”

15. For discussion see McRae 1976, 36-37; Rutherford 1995a, 80-85.

16. A phenomenalist need not accept Berkeley’s dictum in precisely the sense in which Berkeley intended it. Margaret Wilson has argued that Leibniz’s understanding of perception is so radically different from Berkeley’s that we should not count this as a point of agreement between them (Wilson 1987). To say that there is no agreement here at all is surely too strong, for Leibniz and Berkeley agree in their identification of the paradigmatic instances of perception. They do disagree about what sorts of things these paradigmatic instances are and, consequently, about which other things belong, or could belong, to that sort. However, as long as we stick to the paradigm cases, we can identify a point of agreement between Leibniz and Berkeley. We can do this by indicating my present perception of my desk and saying ‘bodies exist only by being the objects or contents of states of *that general sort*.’ Cf. McCracken 2011, 186-187. I do not mean to make any stronger claim of agreement between Leibniz and Berkeley than this.

17. Contrary to Jolley 1986; Rutherford 1995a, 225-226; 1995b.

directly dependent on his understanding of our body perceptions as confused but nonetheless veridical.

According to Leibniz, “body does not have true unity; it is only an *aggregate*, what the schools call *one per accidens*, an assemblage like a flock; its unity arises from our perception. It is a *being of reason*, or, rather, of *imagination*, a *phenomenon*” (G, 6:625/AG, 263). Leibniz frequently links the claim that bodies are aggregates with the claim that they are phenomena.¹⁸ This thesis is central to Leibniz’s phenomenalism.

Aggregates differ from pluralities in that they possess a kind of unity that mere pluralities lack. On the other hand, they differ from genuine substances in that their unity is extrinsic to them. The unity of the aggregate is bestowed on it by the mind which apprehends the constituents in a unified way and thereby confers unity on them.

Leibniz endorses the traditional maxim of the convertibility of unity and being: “nothing is truly *one* being if it is not truly one *being* . . . *one* and *being* are reciprocal things. It is one thing to be a being, quite another to be a number of beings” (A, 2.2:186/WF, 124; cf. LDV, 262-263; LDB, 20-21). Accordingly, if an aggregate cannot be *one* without being apprehended in a unified way by some mind, then an aggregate cannot exist without being so apprehended.¹⁹ Leibniz himself draws this conclusion explicitly in the *New Essays*: “the only perfect unity that these ‘entities by aggregation’ have is a mental one, and *consequently* their very way of being is also in a way mental” (NE, 146, emphasis added). It is Leibniz’s view that by bestowing unity on an aggregate the mind likewise bestows existence.²⁰ It is because their existence depends on being perceived in this way that Leibniz classifies aggregates as phenomena.

If this is correct, then the perceptions of a single perceiver are sufficient to confer being on a body. However, perceivers sometimes have non-veridical perceptions, as in dreams and hallucinations. Leibniz’s response to this is to distinguish being from reality. Thus he writes, “it is . . . certain that there exists

18. See, e.g., LDV, 260-263; NE, 146; LDB, 276-277; G, 6:586/AG, 263; G, 6:625/AG, 227. For discussion see Adams 1994, 241, 244-253.

19. Cf. Adams 1994, 245-249; Hoffman 1996, 111, 117-118; Lodge 2001, 470-473. If this is correct, then Leibniz could not have intended “to identify bodies with pluralities of monads,” as Rutherford 1995b, 146 claims, since on this view pluralities do not exist. Furthermore, Leibniz could not have intended to endorse a semi-phenomenalism on which bodies exist independently of being perceived but are one only in virtue of being perceived, as Garber 2009, 292-296 claims. Both of these interpretations run afoul of the convertibility of unity and being.

As Tom Feeney pointed out to me, ‘being’ and ‘existence’ are not always synonyms for Leibniz. Thus, for instance, at A, 6.4:1500/L, 363, Latin *ens* denotes a possibly existing thing, whereas only actual things are called *existens*. However, as Leibniz explicitly asserts in this very text, since actuality implies possibility, every existing thing must be a being (in this technical sense). Thus if being requires unity then, *a fortiori*, existence will likewise require unity.

20. Essentially the same point is made at LDB, 30, which Look and Rutherford translate, “just as there is being by aggregation, so also there is one by aggregation.” The verb here is *datur* (‘is given’), not *est* (‘is’). Leibniz is talking about an act of aggregation in which the mind gives unity to a plurality and thereby gives being to a new entity. Accordingly, I would translate this phrase, “just as being is conferred by aggregation, so also is unity.”

in my mind the appearance of a golden mountain or of a centaur when I dream of these” (A, 6.4:1500/L, 363). Earlier in the same paragraph, Leibniz explicitly equates appearances (Latin *apparitiones*) with phenomena. These dream phenomena exist but are not real.²¹

Leibniz gives three different accounts of the reality of phenomena. According to the first account, the reality of phenomena depends on the harmonious connections between them. According to the second account, real phenomena are “the phenomena of God.” According to the third account, aggregates ‘borrow’ their reality from their constituent monads. The view I have so far defended, which holds that bodies are phenomena which exist because finite perceivers co-apprehend (and thereby unify) pluralities of monads under confused concepts, is capable of reconciling these three approaches.

Leibniz’s usual criterion for the reality (or ‘truth’) of phenomena is harmonious linking between them, especially insofar as such links lead to prediction (A, 6.4:1500-1501/L, 363-364; DM, §14; NE, 374, 392, 444; LDB, 378-379; G, 6:590/AG, 265). However, although links within the experience of a single perceiver render phenomena ‘real enough’ for practical purposes, this does not provide metaphysical certainty of the reality of the phenomena (A, 6.4:1502-1503/L, 364-365; NE, 374-375). The reason for this is that genuine reality requires intersubjective harmony. As Leibniz tells Des Bosses, “the truth of a phenomenon consists in the agreement of all perceivers” (LDB, 378-379; cf. LDV, 306-307; NE, 375). This universal harmony is the basis for Leibniz’s understanding of each monad as a ‘living mirror’ of the whole universe (PNG, §12; Mon, §§56-57).

The universal harmony permits the possibility of perceptual error, and hence of unreal phenomena, because this agreement or connectedness is not merely a matter of similarity of sensory perception. “The linking of phenomena which warrants the *truths of fact* about sensible things outside us is itself verified by means of *truths of reason*” (NE, 374-375). Thus “we can even explain dreams and how little they are linked with other phenomena” (444). Truths of reason allow us to get beyond merely recognizing patterns in experience to discover genuine physical necessities, and so develop physical science (49-51). This will allow us to discover the reason the perceiver experiences the unreal phenomena and so fit them into our scientific story.²²

In order to discover the correct, harmonious linking of sensory perception which identifies some as real and others as unreal, we must apply truths of reason to the world of sense to recognize the reasons for the phenomena. In discussing this distinction, Leibniz sometimes appeals to ‘the phenomena of God,’ as in the following passage from the Des Bosses correspondence:

If bodies are phenomena, and are judged by our appearances, they will not be real, since they will appear differently to others. Thus,

21. This particular text, in which Leibniz explicitly distinguishes being and reality, is drawn from the middle period, when Leibniz may not yet have worked out the details of his later monadological metaphysics. (The dating of the text is not certain, but the Akademie editors give the period 1683-1686.) The distinction is, however, implicit in later texts. See, e.g., G, 6:590/AG, 265 (written 1712, revised 1715).

22. On the ‘scientific story’ and Leibniz’s phenomenalism, cf. Adams 1994, 257-261.

the reality of bodies, space, motion, and time seems to consist in this: that they are the phenomena of God, that is, the objects of his knowledge of vision. And the difference between the appearance of bodies with respect to us and their appearance with respect to God is in some way like the difference between a drawing in perspective and a ground plan. For whereas drawings in perspective differ according to the position of the viewer, a ground plan or geometrical representation is unique. God certainly sees things exactly as they are according to geometrical truth, although likewise he also knows how each thing appears to every other, and thus he contains in himself eminently all the other appearances (LDB, 230-233).

Donald Rutherford interprets this passage as supporting his view that it is God's perception and not the perception of finite minds, that unifies monads into bodies (Rutherford 1994; 1995a, 223; 1995b, 148-150). However, this interpretation ignores the distinction between reality and existence and also misunderstands Leibniz's view of God's perception.

What Leibniz wants in this passage is an objective standard which allows us to adjudicate between the conflicting appearances of different perceivers, to judge which of them are, and which of them are not, real. This is what Leibniz claims to find in the "phenomena of God." However, to perceive a body is, necessarily, to perceive confusedly. God perceives nothing confusedly; rather, he "sees things exactly as they are in accordance with geometrical truth, although he also knows how everything appears to everything else."²³ God thus has a sort of indirect perception of bodies, for his distinct perception of me includes perception of all of my confused perceptions, including my perceptions of bodies. It is thus not the case that God perceives bodies and thereby unifies monads into aggregates. God perceives bodies only by means of his awareness of finite perceivers' perceptions of bodies. However, God also perceives the 'ground plan' which shows how all the different perspectives can be brought together. It is in this way that God's phenomena provide a means of adjudicating between the conflicting perceptions of finite minds, and so provide a criterion for the reality of phenomena: God sees how the phenomena are to be harmonized.

Recognizing this point allows us to understand how this invocation of 'God's phenomena' can fit together with Leibniz's view that reality consists in the linking of phenomena (cf. Brown 1987, 205). The "ground plan" God perceives is a specification of the harmonious inter-relation between the phenomena of finite perceivers. This harmonious inter-relation provides the criterion by which one phenomenon can be said to be 'real' and another 'imagined' or 'hallucinated' or 'dreamed.' This is, however, a distinction between different phenomena had by *finite* perceivers. God does not himself *have* phenomena of this sort, he only *knows* that *we* have them, and it is our having them that unites monads into aggregates.

23. That God cannot perceive as we do is explicitly asserted at CLC, §9.87. See Brown 1987, 205-206.

This is further supported by another passage in the Des Bosses correspondence where Leibniz attempts to reconcile phenomenalism with the Catholic doctrine of transubstantiation. Leibniz writes:

[I]f monads are not a substantial part of bodies, and composites are mere phenomena, then it would have to be said that the substance of bodies consists in true phenomena, *which God himself, through knowledge of vision, undoubtedly perceives in [the monads] themselves, along with the angels and the blessed*, to whom it is given to see things truly. And thus, God, with the blessed, perceives the body of Christ, when bread and wine appear to us (LDB, 296-297; cf. 320-321).²⁴

According to the doctrine of transubstantiation, the substance of the bread and the wine are miraculously replaced with the substance of the body and the blood of Christ while the accidents remain unchanged. The difficulty with which Leibniz and Des Bosses are here wrestling is the question of which items in Leibniz's metaphysics should be identified with the substance and which with the accidents. On the hypothesis that "composites are mere phenomena," Leibniz here says, transubstantiation will not require the destruction or creation of monads, since the 'true phenomena' perceived by God along with the angels and the blessed can be identified as the 'substance' that changes while the perceptions of earthly humans can be identified as the 'accidents' that stay the same.

This text supports the interpretation I have given in two ways. First, it asserts that God perceives the phenomena *in the monads*.²⁵ This aligns well with my interpretation, which says that God does not perceive the phenomena directly, but rather perceives *monads having* the phenomena. Second, Leibniz claims that "it would have to be said" that "the angels and the blessed" perceive the true phenomena along with God. This suggests that it would be insufficient or otherwise problematic if God alone perceived them. In order for the monads to be united into the body of Christ, some finite minds must perceive them as the body of Christ. God's perception serves only to adjudicate between the angels and the blessed, who perceive the body of Christ, and you and I, who perceive bread, and single out the former as real and the latter as illusory.

In a 1704 letter to De Volder Leibniz writes, "things that are aggregated from many are not one thing except from a mind, and they have no reality except that which is borrowed, i.e., that is from the things from which they are aggregated" (LDV, 284-285). This 'borrowed reality' thesis (Leibniz's third account of the reality of phenomena) may appear inconsistent with the interpretation so far

24. The italicized portion of the translation has been modified to reflect Leibniz's emphasis more accurately and to make the antecedent of the pronoun clearer. The Latin text reads: *quae nempe ipse Deus in ipsis per Scientiam visionis percipit, itemque angeli et beati*. Look and Rutherford's translation reads: "namely, those that God himself perceives in them through knowledge of vision and likewise the angels and the blessed."

25. An alternative reading would have God perceiving the phenomena *in bodies*, but it is unclear what this would amount to, whereas it is quite clear what perceiving phenomena in monads means, since monads are subjects of phenomena.

developed, but in fact it is not. What the borrowed reality thesis tells us is that the monads from which the body is aggregated must play a special role in the perceptual harmony which constitutes the reality of the body. The preceding analysis of Leibniz's understanding of our body perceptions allows us to see what this special role must be. To perceive a body is to perceive a plurality of monads as unified under the confused concept of body. Now, "this unity that collections [i.e., aggregates] have is merely a respect or relation, whose foundation lies in what is the case within each of the individual substances taken alone" (NE, 146). Co-apprehending the monads, and thereby aggregating them together, must involve representing them as somehow related to each other. But since the entities in question are monads, this relation can only be perceptual. Accordingly, we may say that our body perceptions accurately represent the underlying monads only if they harmonize with the perceptual relations between those monads. A body perception is veridical, and the body in question is therefore real, only if the monads thereby aggregated are in fact related in the way that the concept of body represents them as being related.

I have so far attributed to Leibniz four theses: (1) our body concepts confusedly represent monadic states of affairs; (2) bodies *exist* because we finite perceivers have body perceptions which unify monads into aggregates; (3) among bodies, only some are part of God's 'ground plan' for harmonizing the perceptions of finite perceivers and these alone are *real*; and (4) bodies 'borrow' their reality from their constituent monads. The fact that concepts which are *confused* nevertheless represent *accurately* is the key to fitting these four theses together.

In aggregating monads the mind does not represent those monads as merely existing but as being related in some particular way. Such relations must, for Leibniz, be grounded in the intrinsic properties of the monads (145-146), which is to say, in the monads' perceptions. Precisely because our concept of body is confused, we are not in a position to say exactly what perceptual relations must obtain within a plurality of monads in order for the concept *body* to be applied correctly to that plurality. Nevertheless we (typically) know a body when we see one (or so Leibniz supposes). When I unify some monads into a body and those monads bear to one another the perceptual relations which the concept of body represents them as bearing, my perception of that body is in harmony with the perceptions of the body's constituent monads, and the body is therefore real. If those monads have different perceptions, or if there are no such monads, the body I perceive will still exist, but it will exist only in my mind and not in reality; it will be a dream, illusion, or hallucination. This is why Leibniz, in epistemological contexts, sometimes says that the harmony of perceptions provides only moral certainty, and not absolute certainty, of the reality of the phenomena (A, 6.4:1502-1503/L, 364-365; NE, 374-375): the fact that my perceptions are *internally* harmonious provides evidence, but not certainty, that they also harmonize with the perceptions of other perceivers. Hence, while I am absolutely certain that the chair I am sitting in exists, I am only morally certain that it is a real chair and not a dream chair, because the external har-

mony required for the reality of the chair may not obtain. This combination of mind-dependent existence and mind-independent reality makes excellent sense of Leibniz’s claim that bodies are ‘semi-mental’ (LDB, 30-31, 34-35; cf. Lodge 2001, 482-483; Rutherford 2008, 176).

This conclusion might be thought to take the wind out of Leibniz’s phenomenalist sails. After all, it is the existence of *real* bodies, not imaginary ones, that we care most about in metaphysics and epistemology, and I have admitted that our body perceptions are not sufficient for the existence of real bodies. Reality further requires that the perceived monads bear certain relations to one another. However, on the view I have attributed to Leibniz, it is the unification of monads under the concept of body in finite perception that makes bodies, both real and imaginary, exist. This is certainly a strong, and controversial, enough claim to deserve the name ‘phenomenalism’.

4 Leibniz’s Mechanism

As I indicated above, Leibniz endorses the mechanistic project of explaining the natural world in terms of the concept of body. Indeed, Leibniz explicitly asserts that non-mechanical explanations are unintelligible (NE, 65-66; G, 7:418/AG, 345). If, however, Leibniz holds the phenomenalist theory ascribed to him in the previous section, then he is committed to the claim that body is merely an artifact of a particular manner of confusedly representing the world. It is hard to understand, then, why the concept of body would be explanatorily privileged in the way mechanism supposes. Thus Nicholas Jolley argues that “Leibniz never did more than flirt with phenomenalism” because to endorse phenomenalism would be to undermine his project of “synthesizing the most recent advances in [mechanistic] physics with an essentially traditional metaphysics” (Jolley 1986, 51; cf. Garber 2009, 111).

Contrary to Jolley, Leibniz’s phenomenalism forms a key part of his strategy for defending mechanism. On Leibniz’s view, the concept of body is the most distinct concept presented to us in sense perception. Leibniz’s primary criticism of anti-mechanistic thinkers is that they halt their inquiry too soon, taking as primitive concepts which could be further analyzed by human empirical science. Body is, however, a stopping point for physical inquiry. This last claim might appear inconsistent with Leibniz’s claim to have discovered that body is reducible to monads, but I will argue that it is not.

I have already argued above that it is Leibniz’s view that secondary qualities can be analyzed into primary ones, and that it follows from this that primary quality ideas are more distinct. Leibniz believes that theoretical concepts like gravity and magnetism are likewise relatively confused ideas which can be analyzed into the more distinct idea of body (L, 288; G, 7:341-342/AG, 316-317). Leibniz needs to defend two claims here: first, that all of these qualities can be analyzed in terms of the concept of body and, second, that there is no need, within physics, for a further analysis of body.

Leibniz argues for the first claim from what Rutherford calls the ‘Princi-

ple of Intelligibility’ (Rutherford 1992; see LDV, 268-269; NE, 65-66, 382; C, 11-12/MP, 172-173; G, 7:367, 419/AG, 327, 345-346). According to this principle, with the exception of miracles, which fall outside the scope of physics, every quality possessed by an object must be an “explicable modification” of its nature (NE, 66; cf. T, §355; Rutherford 1992, 35-36). The nature of body, according to Leibniz, consists in the diffusion of active and passive force, that is, in force’s being spread through space (G, 4:393-400/AG, 250-257).²⁶ The intelligible modifications of this nature just are the Cartesian modes of extension and the Leibnizian dynamical properties (G, 4:397/AG, 254). It follows from the Principle of Intelligibility that only these properties can (non-miraculously) be qualities of bodies, in a genuine or fundamental sense. Any other qualities attributed to bodies – whether secondary qualities like yellowness or theoretical qualities like gravity – must be analyzed in terms of these (cf. Rutherford 1992, 37-38). The phenomenalist analysis of body in no way undermines this view since, as we have seen, extension requires aggregation and all aggregates are phenomena. Only a phenomenon could possibly possess a nature to which these qualities could intelligibly be attributed.

One reason for adopting the second claim, that there is no need within physics for a further analysis of the concept of body, is that, since body is the fundamental concept that unifies the perceived aggregates, such an analysis would dissolve the aggregates and so eliminate the objects being studied. Thus Leibniz says of sensory images in general, “it is self-contradictory to want these confused images to persist while wanting their components to be discerned by the imagination itself” (NE, 404): it is not possible to perceive clearly the underlying monads while still perceiving the body. Nothing of this sort happens with the analysis of color: when, instead of using the concept of color, we use a more distinct mechanistic concept, we still think of the world as containing the objects to which we formerly attributed color.

A second reason is that there would be a radical methodological discontinuity between existing physics and the project of reducing body. This is because the primary qualities of body are the most distinct concepts available to the imagination (G, 6:500-502/AG, 187-188). Any concept more distinct than this would be an object of the pure intellect, and the pure intellect derives all of its concepts from the thought of the self (G, 6:502/AG, 188). As a result, if we were to attempt to explain the phenomena in terms of a more distinct concept than the concept of body, we would not be able first to formulate “subordinate principles” and then “step by step advance toward their causes,” as good physicists often do (G, 7:341/AG, 317). Instead, we would have to

26. Properly speaking, a ‘nature’ for Leibniz is “a form or force” possessed intrinsically by a created thing “from which the series of phenomena follows in accordance with the dictates of [God’s] original command” (G, 4:507/WF, 213). Thus it is really the force that “constitutes the inmost nature of bodies” (GM, 2.2:235/WF, 154). The body which has this nature is extended. Extension is not itself a nature (or part of a nature), but the diffusion of a nature (G, 4:394/AG, 251). However, in applying the principle of intelligibility to body, Leibniz neglects this distinction and treats extension as part of the nature of body. Perhaps this indicates that the sense of ‘nature’ at issue in the Principle of Intelligibility is not precisely the same as the sense Leibniz employs elsewhere.

begin from metaphysical first principles and build up from there to the notion of body.

It has been widely noticed that Leibniz never actually does this: he never gives anything like the details of a reduction of bodies to monads (Wilson 1981, 136; Jolley 1986, 50; Adams 1994, 223-224; Garber 2009, 355). What has already been said serves partially to explain this. Because the concept of body is confused, it cannot be analyzed by introspection. Since there are no concepts more distinct than body presented to us in sensory perception, body also cannot be reduced to another empirical concept, the way color can. Accordingly, the only analysis of body which is possible for us is an analysis which proceeds by intellectual reflection on the question of what could possibly span the gap between our metaphysical knowledge and our natural scientific knowledge. This is what Leibniz attempted in his science of dynamics, building upward from his basic substances with his doctrine of primitive force, and building downward from bodies with his doctrine of derivative force (GM, 6:236-238/WF, 155-157). All of this is, however, highly schematic. Leibniz never seems to have achieved a genuine meeting in the middle.

Leibniz, however, has a thoroughgoing ideological commitment to ‘meetings in the middle,’ or what he calls the ‘law of continuity’. The wide gap between human empirical science and its confused concept of body and human metaphysics and its distinct concept of monad seems like exactly the sort of ‘leap’ Leibniz denies that nature makes (see NE, 56). Leibniz explicitly applies the law of continuity to existing species, holding that there are beings more perfect than humans “whose understandings are incomparably more perfect than ours, and who surpass us in all sorts of conceptions” (353) and that these beings are arranged on a continuum of perfection (307, 473).²⁷ Perfection is associated by Leibniz with distinctness of thought and perception (T, §66). Thus these higher beings who “surpass us in all sorts of conceptions” would have more distinct concepts than ours and would experience the world in terms of these more distinct concepts rather than through the concept of body. If this is correct, then mechanism must be regarded as a *human-relative* methodological prescription, and it will not be the case that, as Gregory Brown has claimed, “*mechanical* laws . . . are the only kind of laws created minds can properly be said to understand” (Brown 1995, 27). Mechanical explanation is the ‘gold standard’ in *human empirical explanation*; other higher minds can do better.

Two objections may be raised to this. The first is that Leibniz repeatedly insists that angels (beings more perfect than us) must have bodies of some sort (G, 6:507/AG, 192; NE, 59, 220; LDB, 68-71; T, §§90, 124, 249; Mon, §§71-72), and he even says that their greater spiritual perfection is represented in greater perfection of bodily organs, according to pre-established harmony (NE, 307). This, however, does not imply that the angels’ sensory perception does not contain some more distinct concept to which our concept of body can be reduced. It only implies that a comprehensive and accurate representation of

27. Cf. G, 6:543/L, 588: “It is just as reasonable that there should be substances capable of perception below us as above us, so that our soul, far from being the lowest of all, finds itself in the middle.”

the world by means of the concept of body would include bodies associated with angels.

The second objection is that, for Leibniz, sensory perception is by definition perception with a certain degree of confusion. If a concept were too distinct perception by means of that concept would no longer be sensation, it would be understanding. Still, wherever exactly the line between sensation and understanding, is to be drawn, this will not detract from the likelihood that there are beings who come to know the world by means of concepts more distinct than body. Whether or not their manner of coming to know ultimately counts as sensation, these beings will possess a science superior to mechanism.

We must thus conclude that Leibniz is, at least implicitly, committed to the claim that mechanistic science does not provide the deepest sort of explanation available to any finite mind. What Leibniz *does* claim is that intelligible explanation must be in terms of the natures of creatures. The aggregates of monads we humans sense are united in our perception under the concept of body. It is in terms of the nature of body, as given in our concept, that we must explain the phenomena. There are very probably higher creatures who perceive (whether by sensation or not) aggregates of monads united by more distinct concepts, which form the nature of those creatures' phenomena. Because their science would be a science of these more distinct concepts, it would be a deeper, more distinct science than mechanistic physics.

5 Conclusion

According to Leibniz, bodies really exist and possess the qualities, both primary and secondary, that we perceive them to have. However, our concept of body, and our concepts of the primary and secondary qualities of bodies, are *confused* – that is, they admit of a hidden analysis. Pursuing this analysis, Leibniz thinks, will show that the *existence* of a body consists in the co-apprehension of infinitely many monads in a finite perceptual act, and that such a body is *real* insofar as that perceptual act is an accurate representation of the relations between those monads. Because bodies have this kind of perception-dependent existence, Leibniz calls them 'phenomenal,' but because their reality is independent of our perception, Leibniz says that they are only 'semi-mental' beings, and not mental *simpliciter*.

It follows from this picture that the very existence of bodies is an artifact of our particular manner of confusedly representing the world. This does not undermine Leibniz's advocacy of mechanistic science, but rather supports it. On the other hand, it does make mechanism a merely human-relative methodological prescription, a result with which Descartes, for instance, would surely be dissatisfied.²⁸

28. I thank Edwin McCann for many helpful discussions of this subject matter, and Tom Feeney and two anonymous referees for helpful comments on previous drafts. An earlier version of this paper, under the title "Leibniz on Phenomenalism, Mechanism, and the Great Chain of Being," was presented at the 2011 conference of the International Society for the History of

Abbreviations

- A Leibniz, G. W. 1923–. *Sämtliche Schriften und Briefe*. Berlin: Akademie-Verlag. Cited by series, volume, and page.
- AG Ariew, Roger, and Daniel Garber, eds. and trans. 1989. *Philosophical Essays*. By G. W. Leibniz. Indianapolis: Hackett.
- C Couturat, Louis, ed. 1903. *Opuscules et Fragments Inédits de Leibniz: Extraits des Manuscrits de la Bibliothèque Royale de Hanovre*. Paris: Felix Alcan.
- CLC Leibniz, G. W., and Samuel Clarke. (1717) 1969. “The Controversy between Leibniz and Clarke.” In *Philosophical Papers and Letters*, 2nd ed., by G. W. Leibniz, edited and translated by Leroy E. Loemker, 675–721. Dordrecht: Kluwer Academic Publishers.
- CSM Cottingham, John, Robert Stoothoff, Dugald Murdoch, and Anthony Kenny, trans. 1984–1991. *The Philosophical Writings of Descartes*. 3 vols. Cambridge: Cambridge University Press.
- DM Leibniz, G. W. 1686. *Discours de Metaphysique*. In [A](#), 6.4:1531-1588. Translated in [WF](#), 53-89.
- EHU Locke, John. (1690) 1975. *An Essay Concerning Human Understanding*. Edited by Peter H. Nidditch. Oxford: Oxford University Press.
- G Gerhardt, C. I., ed. (1875–1890) 1978. *Die philosophischen Schriften*. By G. W. Leibniz. 7 vols. Hildesheim: George Olms Verlag.
- GM Gerhardt, C. I., ed. 1849. *Leibnizens mathematische Schriften*. Berlin: A. Asher & Comp. Cited by series, volume, and page.
- L Loemker, Leroy E., ed. and trans. 1969. *Philosophical Papers and Letters*. 2nd ed. By G. W. Leibniz. Vol. 2. Synthese Historical Library. Dordrecht: Kluwer Academic Publishers.
- LDB Look, Brandon C., and Donald Rutherford, trans. 2007. *The Leibniz-Des Bosses Correspondence*. The Yale Leibniz. New Haven: Yale University Press.
- LDV Lodge, Paul, trans. 2013. *The Leibniz-De Volder Correspondence: With Selections from the Correspondence Between Leibniz and Johann Bernoulli*. The Yale Leibniz. New Haven: Yale University Press.
- Mon Leibniz, G. W. 1714a. *Monadologie*. In [G](#), 6:607-623. Translated in [WF](#), 267-281.
- MP Morris, Mary, and G. H. R. Parkinson, trans. 1973. *Philosophical Writings*. By G. W. Leibniz. Edited by G. H. R. Parkinson. London: J. M. Dent & Sons.

Philosophy of Science in Halifax, NS. The paper was also presented, under its present title, at the 2014 Leibniz Society of North America conference in Tampa, FL, where it received many helpful comments, especially from Daniel Garber and Ursula Goldenbaum.

- NE Leibniz, G. W. 1704. *Nouveaux Essais sur L'Entendment par L'Auteur du Systeme de L'Harmonie Preestablie*. In **A**, 6.6:43-527. English edition: *New Essays on Human Understanding*. Edited and translated by Peter Remnant and Jonathan Bennett. Cambridge Texts in the History of Philosophy. Cambridge: Cambridge University Press, 1996.
- PNG Leibniz, G. W. 1714b. *Principes de la Nature et de la Grace, Fondés en Raison*. In **G**, 6:598-606. Translated in **WF**, 258-266.
- T Leibniz, G. W. 1710. *Essais de Theodicée: Sur la Bonté de Dieu, la Liberté de L'Homme et L'Origine du Mal*. In **G**, 6:21-462. English edition: *Theodicy: Essays on the Goodness of God, the Freedom of Man, and the Origin of Evil*. Edited by Austin Farrer. Translated by E. M. Huggard. La Salle, Ill.: Open Court, 1985.
- WF Woolhouse, R. S., and Richard Francks, eds. and trans. 1998. *Philosophical Texts*. By G. W. Leibniz. Oxford Philosophical Texts. Oxford: Oxford University Press.

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