

# **‘Real Grounds’ in Matter and Things in Themselves**

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## **Abstract**

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## **1. Introduction**

A starting point for Kant’s modal metaphysics is his sustained insistence that the logically possible and the ‘really’ possible do not coincide, as Nick Stang observes in his ambitious and revealing study (Stang 2016). A real essence is not a logical essence, a ‘real ground’ is not a ‘logical ground’. Stang takes us on a remarkable journey through diverse times and topics in Kant’s thinking, from his early interest in the ontology of possible beings, to his later interest in the representation of possible beings. Targets for his analysis include a pre-Critical argument about God, whose existence is necessary, and a mature argument about a material world, whose laws are necessary, and in neither case logically necessary. Concepts of ‘grounding’ do duty for a potentially confusing variety of relations, and we owe a great debt to Stang for untangling them, and showing their unexpected significance for Kant’s modal metaphysics.

I shall be wanting to look at ‘real grounds’ in matter, and things in themselves. Matter’s real essence is a ‘ground’ for certain features of phenomena. Things in themselves are likewise a ‘ground’ for certain features of phenomena. How do these two grounding claims relate? The former involves a causal essentialism about physics, which Stang proposes as an attractive interpretation of Kant. I agree. The latter involves a contested ontology of things in themselves, which I propose as an attractive interpretation of Kant. Stang may not agree.

What I shall offer is not so much a critique of Stang, but an appreciative development of his work in some directions he might not expect. I complain of no sins of commission, only some of omission.

My interest here is in the Kant who is an essentialist about matter and its laws, described in the eighth chapter of *Kant's Modal Metaphysics*: a Kant for whom matter's real essence provides a ground for the necessity of physical laws, and for other attributes of matter.

Matter's real essence provides Kant with an important illustration of the distinction between real and logical essence, and between real and logical grounds:

[T]hat bodies attract belongs to the essence of things, although it does not lie in the concept of the body. Accordingly, the logical essence is the first inner ground of all that which is contained in the concept. But a real essence is the first inner ground of all that which belongs to the thing itself. (*Metaphysik L2*, 28: 553)<sup>1</sup>

That bodies attract each other belongs to their real, not their logical, essence. The concept of matter does not 'contain' the concept of attraction, yet matter's real essence includes a force of attraction. More generally, when we are doing metaphysics, we need to look for the 'real', not logical, grounds.

I take Stang's essentialist interpretation of Kant's physics to be significant, and plausible.<sup>2</sup> According to Kant, matter has a real essence, constituted by the two forces of attraction and impenetrability. The laws governing matter have their ground in this real essence, and so too do matter's other attributes.<sup>3</sup> There is a real, asymmetric dependence relation between matter's essence, and its attributes.

My first goal will be to examine this essentialism more closely. I shall offer it additional support, drawing on a passage in the *Metaphysical Foundations of Natural Science* (one which happens to include a rare joke from Kant!). But this will lead us to consider the essence not only of matter, but of the fundamental *properties* that constitute matter. I shall spell out an unnoted implication: that matter's essence is constituted by *relational* properties. The essence of matter's properties, in turn, includes their nomic role, I shall suggest. This marks a contrast with other accounts that require matter's essence to consist of intrinsic primary qualities. This feature deserves attention, as I shall also suggest, from any reader wishing to understand Kant's modal metaphysics.

Stang's work makes available a wealth of resources for unpacking Kant's metaphysics of modality, and my second goal is to consider their application to things in themselves. Here we move into territory Stang touches on, but does not fully explore. According to Kant, noumena are the 'grounds' of phenomena: the thing in itself is 'something which lies at the ground of external appearances' (A358), it 'may be the ground of this appearance that we call matter' (A277/B333).<sup>4</sup> Can Stang's work shed light on this most infamous of grounding relations? Yes, I shall suggest, and in a way he does not himself spell out.

To say that noumena are the 'grounds' of phenomena is to affirm a real, asymmetric dependence relation between them. Here is one possibility. Could it be that phenomenal substance, namely matter, is grounded in the *real essence of noumena*? This would then parallel the essentialism of Kant's matter theory, extending it to things in themselves. Stang's framework makes such an extension available. But it would be a mistake, I shall argue, and I expect Stang would agree.

Noumena are the 'grounds' of phenomena in a different way: as a *noumenal substratum*, which bears matter as its property. This, I shall argue, is a fundamental feature of Kant's distinction

between phenomena and things in themselves. Stang does not consider it, but his framework allows us to put Kant's distinction in exactly these terms.

On the picture I shall sketch, with help of Stang's resources, matter is a property of things in themselves. Physical attributes, including the laws, are properties of matter. Laws are grounded on matter, which is grounded on things in themselves. But the grounding relations are different. Kant places a necessity at the heart of matter's relation to physical laws: the laws, and other attributes, are grounded in the real essence of matter. That is his essentialism about matter. But Kant at the same time places a contingency at the heart of matter's relation to things in themselves: matter, and its laws and attributes, are not grounded in the essence of things in themselves. This contingency is significant. It may even be a reason for our ignorance of things in themselves. But that is another story.<sup>5</sup>

## **2. Essence of Matter as 'Real Ground' of Laws**

On Stang's essentialist interpretation of Kant's physics, the attributes of matter, including the laws governing its behaviour, have their ground in properties that constitute matter's real essence: 'Kant holds what is now called an 'essentialist' view of laws,' says Stang, since he believes laws are grounded in the real essence of matter (p. 229).

What sort of necessity do the relevant laws have? According to Stang, *nomic necessity* is crucial to Kant's matter theory. Nomic necessity applies to certain laws of physics, and to certain other attributes of matter. Nomic necessity is in play when the real essence of matter provides a real ground for laws and other attributes of matter. Kant's views about law, real essence and ground are thus entwined in a distinctive essentialist theory of matter and its laws. With this in mind, Stang defines nomic necessity as follows:

(*Nomic necessity*) It is *nominally necessary* that  $p$  if and only if  $p$  and the fact that  $p$  is grounded in the real essences of empirical natural kinds (e.g., matter, water, etc.). (p. 229)

Note that Stang's definition mentions the essence not only of matter, but of other natural kinds such as water. Here I raise a caveat, and set it aside. I have reservations about attributing the essentialist thesis to Kant with respect to such natural kinds as gold or water. I observe little interest on Kant's part in the real essences of water and gold, as a ground for laws. But I observe great interest on Kant's part in the real essence of matter as a ground for laws. Most of Stang's textual support, it appears, concerns matter, and its fundamental forces of attraction and impenetrability. So in what follows I shall set aside such natural kinds, in agnostic mood.

Let us step back and, agreeing with Stang in spirit if not in letter, suggest that nomic necessity is about the grounding of laws in the *real essence of substance*. The laws and other attributes of matter are 'nominally necessary' just in case they are grounded in the real essence of substance, and here we are talking about *phenomenal substance*, i.e. matter.<sup>6</sup> So, throwing out the water, I propose this as an amended version of Stang's definition, as follows:

(*Phenomenal nomic necessity*) It is *phenomenally nominally necessary* that  $p$  if and only if  $p$  and the fact that  $p$  is grounded in the real essence of phenomenal substance, i.e. of matter.

This, I suggest, will do a fair job of capturing the necessity that laws and other attributes are supposed to have, when they depend on matter's real essence.

Why add 'phenomenal' in this amended definition of nomic necessity? Because once we allow that essentialism is about a grounding on the real essence of *substance*, the way is open for a

different nomic necessity, where the substance in question is not phenomenal but noumenal, as follows:

(*Noumenal nomic necessity*) It is *noumenally nomically necessary* that  $p$  if and only  $p$  and the fact that  $p$  is grounded in the real essence of noumenal substance, i.e. of things in themselves.

This assumes that things in themselves are *substances*. I defend this controversial assumption elsewhere, and note that Stang himself may allow it.<sup>7</sup> We shall put this definition of noumenal nomic necessity to work in Section 3, when we consider how noumena may be the ‘grounds’ of phenomena.

In this Section though, our topic is *phenomenal* nomic necessity, which depends on the essence of matter. According to Kant, matter is constituted by a ‘conflict’ of two fundamental forces of attraction and impenetrability: ‘only an original attraction in conflict with the original repulsion can make possible a determinate degree of the filling of space, and thus matter’ (*Metaphysical Foundations of Natural Science*, 4: 518).<sup>8</sup>

A force of impenetrability is essential to matter, in order for matter to fill space.

*Matter* is the *movable* insofar as it *fills a space*. To *fill* a space is to resist every movable that strives through its motion to penetrate into a certain space.

Matter fills a space, not through its mere *existence*, but through a *particular moving force*. (4: 496, 497)

Impenetrability is matter's 'power of extension'. Impenetrability is 'the fundamental property' and the 'primary sign of matter', but it takes an additional force to constitute a determinate material thing. If matter were impenetrable but not attractive, it would disperse to infinity. If it were attractive but not impenetrable, it would collapse to a point: 'the possibility of matter requires an attractive force as the second essential fundamental force of matter' (4: 508). Both forces are necessary, and both belong to the real essence of matter.

Do the forces belong to the *logical* essence of matter? Kant says:

A property on which the inner possibility of a thing rests, as a condition, is an essential element thereof. Hence repulsive force belongs to the essence of matter just as much as attractive force, and *neither can be separated from the other in the concept of matter*. (4: 511, emphasis added)

This talk of essence *and* concept might suggest that attraction and impenetrability ('repulsive force') belong to both the real *and* the logical essence of matter. That seems unlikely. First, it would be at odds with the passage quoted at the outset, where Kant says that attractive force belongs to the real, *not* the logical, essence of matter. Second, Kant describes attraction, just beforehand, as 'belonging equally to the concept of matter, *even though not contained in it*' (4: 509, emphasis added). The upshot seems to be this. Matter's real essence includes impenetrability and attraction. Matter's logical essence includes impenetrability, but *not* attraction.

Kant favourably compares his own proposal with that of competitors. For Kant, 'matter fills a space, not by its mere existence, but by a special moving force' (4: 497). This is an improvement

on theorists such as Lambert, for whom the space-filling property is ‘solidity’, instead of a ‘special moving force’ of impenetrability:

Lambert and others called the property of matter by which it fills a space *solidity* (a rather ambiguous expression), and claim that one must assume this in every thing *that exists* (substance), at least in the outer sensible world. (4: 497)

Lambert’s mistake appears to be his ascription of ‘solidity’ to matter, instead of impenetrability.

Do Lambert and others commit the further error, in Kant’s eyes, of supposing a mere logical essence to be adequate, when doing our modal metaphysics of matter? Such a reading might support Stang’s thesis about the importance to Kant of real, rather than logical, essence. And, indeed, so it seems. According to Lambert and others,

the presence of something *real* in space must already, through its concept, and thus in accordance with the principle of noncontradiction, imply this resistance, and bring it about that nothing else can be simultaneously in the space where such a thing is present. But the principle of noncontradiction does not drive matter back...! (4: 497-8)

In this abrupt reification of the principle of noncontradiction, we find an ‘example of Kantian wit’, apparently.<sup>9</sup>

Kant’s joke can be interpreted in Stang’s support. Lambert confuses a logical essence with a real essence. On Lambert’s way of thinking, the concept of matter is the concept of something solid. The concept of a solid thing contains the concept of excluding the co-existence of other things in the space which it occupies. Therefore, one material body cannot penetrate another, on pain of

contradiction. On Stang's account of Kant on real versus logical essence, this would indeed be a mistake: in the metaphysics of nature, what matters is real modality, not logical modality.

However, a puzzle remains, given that the passage concludes as follows:

Only when I ascribe to that which occupies a space a force to repel every external movable that approaches, do I understand how it contains a contradiction for yet another thing of the same kind to penetrate into the space occupied by a thing. (4: 497)

Kant evidently thinks that the attribution of impenetrability, rather than solidity, to matter is a major advance over Lambert. But why then does he cite a merely logical point in his favour? – i.e. the point that such an attribution allows us to see how a ‘contradiction’ would be involved in supposing matter to be penetrable.

Whatever the answer, the joke about Lambert leads us to a new observation. Kant appears to be talking about the essence of a *property*, namely impenetrability itself. I want to consider how the distinction emphasized by Stang between real and logical essence could apply, not only to substances, but to *properties*. Instead of asking about the essence of matter, we can ask about the essence of, say, impenetrability itself.

To see the logical essence of such a property, we consider what is contained in its concept. Such a concept is relational and dispositional. The concept of impenetrability ‘contains’ the concept of resistance to penetration. Kant is right to say that when I attribute impenetrability to a space-occupant, I understand how a ‘contradiction’ would be involved in supposing matter to be penetrable. (What remains unclear is why this should be relevant.)

To see the real essence, we consider what is the ‘first inner ground of all that which belongs’ to the property itself, its ‘inner character’ that ‘explains its manifest character’, as Stang puts it (p. 235). We understand the properties of attraction and impenetrability to be forces or causal powers that enable something to relate to other things in certain ways. Impenetrability is a causal power to resist penetration: its real essence is given by its causal and nomic profile, as we might say in contemporary parlance.<sup>10</sup> Impenetrability has a real essence, as ‘*a force to repel every external movable thing that approaches*’.

This reveals something about Kant’s causal essentialism, I suggest: it rests not only on a claim about the real essence of matter, as Stang argues, but equally on a claim about the real essences of the fundamental *properties*. If the real essence of impenetrability is its nomic profile, and if matter’s real essence includes impenetrability (and the same *mutatis mutandis* for attraction) – this may turn out to be crucial to Kant’s metaphysics of nature. Yes, the laws and other attributes of matter are nomically necessary: the laws and other attributes are grounded in the real essence of matter. But *that* is because they are grounded in the real essences of matter’s most fundamental properties.

This bears on the difference between impenetrability and solidity. Recall that Lambert’s initial mistake, according to Kant, seemed to be that of attributing *solidity* to matter, rather than impenetrability. The difference between solidity and impenetrability may lie exactly here. The real essence of impenetrability is given by its nomic profile. But that is not true of the real essence of solidity. The identity of impenetrability, as a relational property, is modally wedded to a certain pattern of effects, the resistance to penetration according to certain laws. That is not true of solidity, if solidity is an intrinsic property, which could in principle be associated with a quite

different pattern of effects.<sup>11</sup> Impenetrability is a relational ‘tertiary’ quality, in Lockean terms, whereas solidity is an intrinsic ‘primary’ quality.

Impenetrability and solidity also differ in their logical essences, given a corresponding difference in the *concepts* of impenetrability and solidity: ‘impenetrability’ contains the concept of resisting penetration, etc., but ‘solidity’ does not. But if we follow Stang’s reading of Kant, our primary focus should be on real rather than the logical essences, when we are doing modal metaphysics. On this picture, the real essence of matter consists of properties that are more like Locke’s tertiary qualities than his primary qualities. The essential properties of matter are relational in their being, as well as relational in their concepts. This, incidentally, might explain Kant’s repeated insistence that we find everything in matter to be ‘mere relations’.<sup>12</sup>

What then should we make of Kant’s remark about Lambert? I said it may offer support for Stang’s account of Kant’s modal metaphysics, if Lambert is mistakenly preoccupied with a mere logical essence of matter, rather than its real essence. However, the comparison with Lambert also reveals a gulf between Kant’s account of matter’s real essence, and those of his competitors. This gulf is neglected by Stang, notwithstanding its significance for the topic of nomic necessity. It would apparently make no difference to Stang whether matter’s essential properties are intrinsic primary qualities or relational tertiary qualities. But if matter’s real essence necessitates the laws and other attributes of matter, this may well be because the essences of the properties, i.e. of impenetrability and attraction, *themselves* necessitate the laws and other attributes. It is important to Kant’s modal metaphysics of nature that the fundamental properties are *not* intrinsic primary qualities, whose association with a nomic profile is merely contingent. The essences of impenetrability and attraction, as fundamental properties, are modally wedded to their nomic profile: and perhaps *this* is the real ground of the necessity of the laws.

### 3. Thing in Itself as ‘Real Ground’ of Matter

Kant repeatedly refers to noumena as the ‘ground’ of phenomena, the ‘ground’ of appearances, and the ‘ground’ of matter. The thing in itself is ‘something which lies at the ground of external appearances’ (A358), it ‘may be the ground of this appearance that we call matter’ (A277/B333), it is ‘the non-sensible and to us fully unknown ground of the appearance which we name matter’, as he says in his response to Eberhard.<sup>13</sup>

Kant has in mind here a real ground, not a logical ground. Stang agrees that things in themselves are a ‘real ground’ of phenomena. There is a real asymmetric dependence relation: ‘noumena ground phenomena and not vice versa’, he says. A ‘real ground’ in what sense? Stang offers an interesting reading, which I shall not address here (pp. 271-2).<sup>14</sup> Instead, I shall suggest two ways noumena could ‘ground’ phenomena that draw on a simple extension of his proposals elsewhere.

First, the thing in itself could, conceivably, be a ‘ground’ in the way matter’s real essence is a ground. According to the essentialist interpretation, the physical laws and other attributes have their ground in the real essence of matter. But might they have their ultimate ground in the real essence of things in themselves? An extension of Stang’s definition makes available this interpretation, as I said. We simply use an amended definition of nomic necessity, in terms of noumenal substance, rather than phenomenal substance. Here it is again:

*(Noumenal nomic necessity)* It is *noumenally nomically necessary* that  $p$  if and only  $p$  and the fact that  $p$  is grounded in the real essence of noumenal substance, i.e. of things in themselves.

According to the causal essentialism considered in the previous section, physical laws and other attributes are phenomenally nomically necessary, given that they are grounded in the real essence of matter. But they would be *noumenally* nomically necessary, if they were grounded in the real

essence of things in themselves. Extending Stang's taxonomy makes space for such an interpretation, but it would be mistaken, as we shall see.

Kant has in mind a different grounding relation. Things in themselves are the 'substratum of matter' (A359). 'Matter is merely external appearance, the substratum of which cannot be known through any predicate that we can assign to it' (A359). Things in themselves are the 'substrate' of the physical world, 'which is unknown to us'. Things in themselves are 'the supersensible which grounds each appearance as substrate', he says in his response to Eberhard (8: 209).

On this second understanding of 'ground', things in themselves are 'real grounds' because they are 'substrata', i.e. substances, bearers of properties. They are grounds of phenomena, because they are bearers of properties that constitute certain features of phenomena. A property inheres in a substance, is possessed by a substance. The relation of a substance to its property is a 'real grounding relation', according to Stang. 'A substance', he writes, 'is a *ratio essendi* of the possibility of its accidents, for an accident would not be possible without the very substance it inheres in'. It is a 'real ground' because 'the ground of a substance's accidents is not its concept' (p. 212). Stang is writing here of phenomenal substance, but I wish to extend this to noumenal substance.

For completeness one could define 'substantial' grounding relations, and distinguish phenomenal and noumenal versions of this distinctive modal relation, as we did earlier for 'nomic necessity'. But I shall set these aside, and in the remaining space, defend the claim that things in themselves are 'real grounds' in this second 'substantial' way, not in the first 'essentialist' way.

First of all, noumenal causal essentialism would be a mistake, as an interpretation: Kant explicitly rejects it, I believe, when he rejects the Leibnizian version of the thesis that

phenomena have their ground in noumena. For Leibniz, physical force and its laws, indeed all the phenomena of matter and space, have their ground in the natures of monadic substances. Leibniz is a noumenal essentialist *par excellence*, in the sense that nomic facts about physical phenomena have their ground in the essences of things in themselves. The Leibnizian monads ‘are supposed to serve as the raw material for the whole universe’, says Kant (A274/B330).

Thus:

Leibniz first assumed things (monads), with an inner power of representation, in order afterwards to found on these their external relations and the community of their states ... The mere relation of substances was then the ground through which space was possible as a consequence. (A267/B323)

Alas, this noumenal essentialism lacks genuine causal power: ‘when everything is merely intrinsic ... the state of ... one substance cannot stand in any active connection whatsoever with the state of another’ (A274/B330).

Kant’s rejection of this Leibnizian grounding is a constant in his intellectual career, first appearing in the *Nova Dilucidatio*, where he says that a monadic substance ‘never has the power through its own intrinsic properties to determine others different from itself’.<sup>15</sup> When Kant says this, he rules out noumenal causal essentialism. The real essence of a monadic substance consists of certain intrinsic properties: but this essence *cannot* be a real ground for causal powers or forces, or for the laws governing their interactions. Noumena do not ground phenomena in the way Leibniz thought.

A consequence is that the causal powers or forces are *contingently* possessed by monadic substances, and that is just what Kant concludes in the *Nova Dilucidatio*. The causal powers or forces enabling substances to interact are added to substance in a special creative act:

If, therefore, nothing more is added to this existence, there would be no relation among beings and clearly no mutual interaction. . . . The mutual relation of substances requires a conceptual plan in a corresponding creative thought of the divine intellect. This thought is plainly arbitrary on God's part and can therefore be omitted or not omitted at His own pleasure. (1: 413)

Things in themselves do *not* ground phenomena in virtue of their real essence. When Kant rejects Leibniz, he denies noumenal nomic necessity. Things in themselves *are*, though, the ground of phenomena a different way: in virtue of being substances, ‘substrata’ of matter and its laws and other attributes, as we see in Kant’s remarks about what Leibniz *ought* to have said about grounding.

In Kant’s response to Eberhard, he offers a reconstruction of Leibniz, according to which Leibniz ought to have said that things in themselves are the substrata of phenomena. Eberhard had complained that Kant offered nothing new: after all, Leibniz had already said that things in themselves are ‘non-sensible grounds of appearances’. Kant responds by saying that things in themselves are not ‘grounds’ in one sense: they are not substances whose properties explain the physical, phenomenal world. But they are ‘grounds’ in a sense we could attribute to a reconstructed Leibniz, in charity. Things in themselves are the ‘fully unknown ground of the appearance which we name matter’, the ‘substrate’ of the ‘physical world’ (8: 203, 248).

I suggested before that Kant's essentialism about matter may be expressed in his oft-repeated claim that phenomenal substance consists of 'relations' – the forces of attraction and impenetrability, whose nomic profile belongs to their essence. Perhaps his denial of essentialism about things in themselves is expressed in a different remark: that phenomenal substance is an 'accident', which implies contingency. Kant says, in one of the Reflections:

In the end, however, we find everything in the object to be accidents. The first subject is something that makes the accidents possible ... It is something with which I am acquainted through the enduring accident of impenetrability and also ... attraction. We judge the reality of the accidents through the sensation of an object. The reality of the accidents is distinct from the reality of the [first] subject. (R 4412 [1772?], 17: 537)

The attributes and laws of the physical realm are grounded in the essence of matter. But matter is a mere accident of the first subject, the substance, the thing in itself.

In the terms I have stolen and customized from Stang, there is phenomenal nomic necessity – but no noumenal nomic necessity. But there is a noumenal grounding of a different kind. Noumena are still the ground of phenomena. In place of the grounding supplied by an essence, there is the grounding supplied by a substratum, which, as bearer of these accidents, is what 'makes the accidents possible' – as a 'first subject', or substance.

### Notes

<sup>1</sup>This passage is given at greater length by Stang, p. 234, translation from Kant 1997. I broadly agree with Stang about the relation of 'body' and 'matter'.

<sup>2</sup> A partly comparable interpretation is offered by Eric Watkins, as Stang points out (Watkins 2005: 286-91). I myself attribute a causal essentialism to Kant without developing it: 'resistance in a filled space' has a necessary connection with the fundamental force of impenetrability,

which constitutes part of the essence of matter (Langton 1998: 175, 177, 178). For causal essentialism see Shoemaker (1980, 1998), Ellis and Lierse (1994), Hawthorne (2001) and Bird (2005), all cited by Stang; and Langton and Robichaud (2010).

<sup>3</sup> Some fundamental laws, at least, have their ground in this essence. Stang carefully distinguishes the nomic and epistemic standing of different laws and attributes of matter, some of which are not grounded in matter's essence, but I do not do justice to this here.

<sup>4</sup> Translations from the first *Critique* are those of Kant 1929, with standard A/B pagination.

<sup>5</sup> The argument developed in Langton 1998 could be fruitfully reframed and developed with resources borrowed and extended from Stang, on the lines proposed. See also Langton 2015a.

<sup>6</sup> I am not doing justice to the exact relation between phenomenal substance and matter, and whether that relation is identity.

<sup>7</sup> See Langton 1998. Stang himself allows a certain application of the categories to things in themselves, e.g. the category of causation is used to develop a concept of noumenal causal modality, pp. 225-32. I am doing something comparable for substance.

<sup>8</sup> Translations from MFNS are those of Michael Friedman in Kant 2002 [Is this correct?]. Kant's theory of matter and force is developed in several works, most notably the pre-Critical *Physical Monadology* (1756; tr. Lewis White Beck in Kant 1986) and MFNS. Their differences will not occupy us here.

<sup>9</sup> So Ellington informs us, in the note to his translation (Kant 1970).

<sup>10</sup> See e.g. Shoemaker, 'Causality and Properties'. Causal essentialism in its contemporary guise is often taken to be a thesis about the essence of properties, rather than about the essence of a substance.

<sup>11</sup> Cf. Langton 1998: ch. 8, where I bring out the implication that there are possible worlds where one could walk through solid walls. Note that solidity may be unlike impenetrability in terms of its real essence *and* its logical essence. At the level of concepts, impenetrability ‘contains’ the ‘concept’ of resisting penetration, etc.

<sup>12</sup> See e.g. B67, A277/B333, A285/B341. The significance of the relational nature of phenomena, and its implications for Kant’s ‘primary’ qualities, is a theme of Langton 1998.

<sup>13</sup> ‘On a Discovery, whereby Any New Critique of Pure Reason is to be Made Superfluous by an Older One’ (8: xxx [Provide Ak. page number]; tr. Henry Allison in Kant 1973 and 2002, italics [?] added). A277/B333 concerns the ‘transcendental object’. The passage from Kant’s response to Eberhard identifies Leibniz’s monads with things in themselves, in order to charitably interpret Leibniz as offering a true monadology. For further argument that these and many other such passages express Kant’s ontological commitment to things in themselves, see Langton 1998, especially chapters 2, 3, 9 and 10.

<sup>14</sup> I set aside the different sorts of ‘real ground’ he takes seriously, but they are not the two I shall consider here.

<sup>15</sup> ‘A New Exposition of the First Principles of Metaphysical Knowledge’ (1: 415; tr. J. A. Reuscher in Kant 1986, David Walford and Ralf Meerbote in Kant 1992).[OK like this?]

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