

## **Objects, Discreteness, and Pure Power Theories: George Molnar's Critique of Sydney Shoemaker's Causal Theory of Properties**

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**Abstract** Sydney Shoemaker's causal theory of properties is an important starting place for some contemporary metaphysical perspectives concerning the nature of properties. In this paper, I discuss the causal and intrinsic criteria that Shoemaker stipulates for the identity of genuine properties and relations, and address George Molnar's criticism that holding both criteria presents an unbridgeable hypothesis in the causal theory of properties. The causal criterion requires that properties and relations contribute to the causal powers of objects if they are to be deemed genuine rather than 'mere-Cambridge'. The intrinsic criterion requires that all genuine properties and relations be intrinsic. Molnar's S-property argument says that these criteria conflict if one considers extrinsic spatiotemporal properties and relations to contribute causally. In this paper, I argue that a solution to the contradiction that Molnar identifies involves a denial of discreteness between objects, leading to a power holist perspective and a resulting deflationary account of intrinsicality.

**Keywords** Shoemaker · Molnar · Holism · Genuine properties · Powers · Causal theory of properties · Discreteness

In this paper, I analyse George Molnar's argument against Sydney Shoemaker's 1980s causal theory of properties (CTP), and show that it raises important questions

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for contemporary metaphysical accounts of powers, properties and objects. The focus of the paper is upon the entailment of quiddity that accompanies the inclusion of discrete entities within strong Pandispositionalist views. The structure of the paper is as follows: Section 1 provides a brief introduction and background to Molnar's argument against CTP. Section 2 provides a comparative overview of CTP and contemporary strong Pandispositionalism, and describes the causal and the intrinsic criteria set out by Shoemaker. Section 3 details Molnar's 'S-property' argument, the conclusion of which is that, contrary to CTP, the causal and intrinsic criteria are not mutually interdependent conditions for identifying genuine properties. In Section 4, I further examine this claim by providing two *reductio* arguments, each beginning with the case where one or other of the two criteria is denied. Section 5 concludes that the two criteria cannot be legitimately teased apart without violating fundamental assumptions of strong Pandispositionalism. However, I show that Molnar's critique does hold against those strong Pandispositionalist positions that include discreta in the theory, forcing their hand in one of two directions: either to admit quiddity into the theory and thereby step back from a strong Pandispositionalist stance, or else deny the existence of discreta.

The overall finding of this paper is that strong Pandispositionalist views that include discreta also require extrinsic causal properties and relations, as per Molnar's assertion. In turn, the presence of extrinsic relations entails the presence of quiddity, a position that is incompatible with strong Pandispositionalism. I suggest that the best solution for contemporary strong Pandispositionalism is to deny the existence of extrinsic properties and relations by adopting a holistic view, as per the account of power holism discussed by Neil Williams (2010). I conclude with a suggestion for further research aimed at examining the treatment of objects in such a system, including developing models that separate out the concept of 'distinctness' from 'discreteness', and providing a deflationary account of intrinsicity.

## 1 Introduction and Background

CTP represents a starting place for contemporary Pandispositionalist views, for example, those put forward by Stephen Mumford (2004, 2009) and Alexander Bird (2007). Although the term 'Pandispositionalism' carries with it a range of expectations regarding how the identity of properties should be treated, CTP can in fact be considered as a *strong* form of Pandispositionalism, the view that all genuine properties are pure powers. (Rather than the term 'strong Pandispositionalism' I prefer the term 'pure power theory', and so interchange these terms throughout the paper). As detailed in this paper shortly, a pure power is one that is not grounded in anything categorical or qualitative, and which does not ontologically depend upon any non-power basis.

The arguments of this paper pertain to this strong version of Pandispositionalism rather than to moderate or weaker forms that merely admit properties as powers but which either deny their being 'pure powers' or else deny that there exist *only* pure powers. Theories that hold properties to be both irreducibly dispositional and also irreducibly qualitative, e.g. Heil (2003, 2005), Martin (1997) and Crane et al. (1996), might be said to fall under a description of 'moderate' Pandispositionalism according

to which all properties are powers, although not ‘pure’ powers. In contrast, a strong Pandispositionalism rules out the existence of anything at all non-causal, whether it be a property or a feature of a property.<sup>1</sup> In this paper, the focus is on strong Pandispositionalism, and thus refers to those views<sup>2</sup> which hold all properties to be *pure* powers, and properties and relations to be *exhausted* by their powers or potentials. CTP is Pandispositionalist in this strong sense, incompatible with the existence of even a minimalist notion of quiddity, described by David Armstrong as the case where properties are ‘barely, numerically different’, and such difference would serve to provide properties their identity (Armstrong 1997, p. 168; 2000, pp. 19–20).

Armstrong’s categoricism posits that all properties must be grounded in a categorical basis in order to be considered ‘real’ (see, Armstrong 1997, 80; 2000, 13–14; 2004, 138–139; Crane et al. 1996). In contrast, according to pure power theories, pure powers do not rely upon anything ‘additional’ to ensure their possessors behave ‘in certain ways in certain circumstances’ (Bostock 2008, p. 139). This something additional can be described as ‘quiddity’, defined in this paper in line with the discussion provided by Robert Black and others: whatever there is to a property over and above the power that it bestows upon its bearer (Bird 2006; Black 2000, p. 92; Mumford 2004, 2009). In scholastic thought, properties or ‘attributes’ were thought to provide the ‘whatness’ to objects, and thus were considered to be ‘quidditas’, literally ‘what it is’ that objects are. Traditionally, for a property to be a quiddity, it must be qualitative (non-causal). In contrast, properties that contribute to the causal powers of objects are described as ‘dispositions’ or ‘powers’ rather than quiddities.

There is a complication in this terminology for contemporary debates about properties, however. This is particularly the case for properties that are considered to be ‘clusters’ of powers (such as in CTP and in Mumford’s contemporary account) or for those that have both a qualitative and a causal contribution to make to its bearer rather than being wholly qualitative or wholly dispositional (such as that put forward by John Heil and Charles Martin). In this paper, I therefore move away from the strict grammatical use of a whole property counting as a quiddity or not. In line with the usage put forward by Black et al., I describe the qualitative or non-causal *aspect* of the property as the ‘quiddity’ of the property.

I deem CTP to be a strong version of Pandispositionalism by virtue of its claim that all and only genuine properties are given their identity in terms of their causal role and that there can be nothing more to properties other than their causal power. David Armstrong referred to this view as ‘Power Maximalism’ (2000), and amounts to a denial of quiddity. This is ascertained from the fact that, as detailed shortly, CTP does not allow for genuine properties to change across time or to have been anything other than what they are. They are necessary, nomic, essential and immutable (Shoemaker 1980b, pp. 294–296; 1984, pp. 217–221). If there were anything to a property which

<sup>1</sup> Shoemaker’s change in 1998 was precisely to introduce properties having non-causal features, and hence his move to a moderate Pan-dispositionalism.

<sup>2</sup> These include such views as put forward by CTP (1980a, b), Hugh Mellor (1974), Stephen Mumford (2004, 2009) and Richard Holton (1999).

was not exhausted by its causal role, then that property could theoretically survive a change in its non-power ‘aspect’ while maintaining its identity as that property (since the identity is given by its causal power). This would violate the CTP constraint that properties and powers are immutable. For this reason, I construe CTP as a strong Pandispositionalist theory. While a change to CTP, introduced by Shoemaker in 1998, moves his position from a strong Pandispositionalism to a more moderate view, contemporary strong Pandispositionalists, such as Mumford (2004, 2009), reject this change. Since this paper concerns itself with how arguments against CTP also constitute arguments against contemporary strong Pandispositionalism, I concentrate only on Shoemaker’s earlier position and parantheseise his 1998 changes.

CTP draws a distinction between ‘genuine’ and ‘mere-Cambridge’ properties and relations, made in terms of the criteria of causality and intrinsicality (Shoemaker 1980b, pp. 208–209, 292–297; 1984, p. 209). In the case of properties, for example:

1. all genuine properties causally contribute to the powers of their bearers
2. all genuine properties are intrinsic

The causal role and the intrinsicality of properties cannot be readily teased apart in CTP. All genuine properties are intrinsic and their being distinguishable from mere-Cambridge properties relies upon their making a causal contribution to the powers of the objects of which they are intrinsic. Relations are considered to be on a par with properties and these two criteria and their interconnectedness apply equally to them. (Intrinsic relations will be addressed in more detail in Section 2.2).

George Molnar (2003) has argued that it is incorrect to require both the causal and intrinsic criteria as an identity condition for genuine properties and relations. He claims that in the case of spatiotemporal properties and relations the causal criteria holds without their being intrinsic. According to Molnar’s argument, spatiotemporal properties and relations causally contribute to the powers of their relata, and since the causal contribution that properties and relations make to the powers of things sets them apart from being mere-Cambridge properties, then spatiotemporal properties should be considered, by virtue of the causal contribution, to be genuine. Yet they are not intrinsic. Thus, says Molnar, one or other of CTP’s criterion must be in error. If the causal criterion is in error, then non-causal or categorical properties might be considered to be genuine. Otherwise, if the intrinsic criterion is in error, it is plausible to believe that there exist genuine properties that are not intrinsic. (Molnar’s stance is captured by the second of these descriptions.)

If one accepts Molnar’s criticism as cogent, then the dilemma he points to is relevant not only to CTP, but also to those contemporary pure power theories that take CTP as their starting place. In this paper, the question is raised concerning whether, indeed, it is possible to tease the criteria apart as Molnar attempts to do. That is, is it legitimate for him to treat the two criteria as independent in his critique against a view that assumes their interdependence? And even if Molnar’s approach turns out to be question begging against CTP, is the interdependence of the criteria nonetheless something that contemporary pure power theorists need to address? These are two important issues addressed in this paper. I begin with a fairly comprehensive

description of CTP and its comparison to contemporary pure power theories, since an understanding of why it is important to these views that the two criteria be considered interdependent, is vital to answering these issues.

## 2 The Causal Theory of Properties and Contemporary Strong Pandispositionalism Compared

### 2.1 The Causal Criterion

CTP holds all genuine properties to be pure powers. A ‘pure power’ has been described as one that does not ontologically depend upon a non-power basis (Marmodoro 2009, p. 337; Psillos 2006), as being ungrounded (Molnar 2003, pp. 58, 125–142; Psillos 2006, p. 138), and irreducibly dispositional. Mumford’s contemporary Pandispositionalism holds that although there is nothing to properties over and above their powers, viewing them to be irreducibly dispositional (or ungrounded) does not amount to their being mere *possibilia* (2009, p. 100). Rather, they are taken to be *real* in their own right, according to the test of reality provided by the eleatic principle (Mumford 2009, pp. 100, 107), which is, as Mark Colyvan describes, a causal criterion or test that justifies believing in only those entities to which causal power can be ascribed (1998, p. 313). Already, then, we see that the identity of properties as ontologically robust entities is tied to the causal criterion. Mumford argues that the eleatic reality test is on the side of the Pandispositionalist since their properties and powers are potencies, and something cannot be potent without being real (2009, p. 100).

CTP’s causal criterion requires that genuine properties be identified by their abilities or potentialities for contributing to that object’s causal powers (Shoemaker 1980b, p. 294), and summarised in four main postulates:

1. Each genuine property is strictly identified with a set of causal potentialities, and is nomic, essential, primitive and immutable; unchanging across time or possible worlds (1980b, pp. 294–296; 1984, pp. 217–221).
2. Genuine properties contribute to the conditional powers of their instantiating objects. Contingent upon their co-instantiation with other properties, the instantiating object will possess a ‘cluster’ of conditional powers (1984, p. 213).
3. A cluster of conditional powers is also identified as a property (1984, p. 213). (As noted, this identity is removed in the view of Shoemaker (1998)).
4. The identity of genuine properties is given by their causal contribution to the conditional powers of their bearers, such that it is not possible for two different properties to possess exactly the same set of causal potentialities (1980b, pp. 296–297; 1984, p. 210). If properties X and Y make exactly the same causal contribution to an object, then X and Y are the same property (1998, pp. 64, 212). This identity applies across possible worlds (1984, p. 221). In response to an objection raised by Richard Boyd (Shoemaker 1984, postscript), Shoemaker adds an additional requirement that, for X and Y to be the same property, the circumstances required for the instantiation of X are sufficient for the instantiation of Y, and vice versa (p. 233).

CTP posits that a property or relation that does not causally contribute to the powers of its instantiating object is a ‘mere-Cambridge’ property. Examples include: the property of being ‘grue’ (i.e. the property of being either blue or green depending on when the object is first observed (Goodman 1973, p. 123)); and historical properties (e.g., ‘being 20 years old’ or ‘having been slept in by George Washington’ (Shoemaker 1984, p. 208)). This causal criterion applies to properties and relations alike (Shoemaker 1980b, p. 296) since relations can be viewed as poly-adic properties.<sup>3</sup> Like properties, genuine relations are known by their effects (1980b, p. 297). The difference between mere-Cambridge and genuine relations lies in whether the effects of such relations can vary while the genuine properties of the relata remain otherwise unchanged (1980b, p. 297). Mere-Cambridge relations might include, for example, ‘Barack Obama *is* President of the United States’ or spatiotemporal relations such as ‘being 50 miles south of a burning barn’ (1984, p. 208). On this view, it would be possible for Barack Obama to retain all of his essential properties, and the role of the President to remain unchanged, even if it were not the case that Barack Obama were the President. Thus, the relation ‘*is*’ may have changed without an accompanying change in the essential properties of the relata. Likewise, my being 50 miles from a burning barn (or instead some other distance) may make no causal difference to the essential properties and powers of the barn, nor the barn to my powers.<sup>4</sup>

CTP’s stricture, requiring the effects of genuine relations to be unvarying with respect to their relata, shores up the idea that genuine relations can be neither extrinsic in Molnar’s sense of the word (discussed in more detail in Section 2.2) nor external. Both concepts involve relations to discrete objects, relations that are contingent and independent of their relata, and which thereby allow their relata to vary independently of them. Therefore, for CTP (as with the account of Mumford (2004)) all genuine relations must be ‘internal’ or ‘wholly intrinsic’ (definitions and further discussion is provided in more detail shortly). In the case where relata can vary independently of their relations, the intrinsic properties of such relata must be ‘fully portable’, an idea that is captured in Molnar’s symmetry property (S-property) argument (see Section 3).

## 2.2 The Intrinsic Criterion

Genuine properties and relations are, according to CTP, not only causally contributing, but ‘intrinsic’. Molnar’s understanding of ‘intrinsic’ can be formally stated as: ‘P is intrinsic to *x* iff *x*’s having P, and *x*’s lacking P, are independent of the existence,

<sup>3</sup> In his discussion on ‘circumstances’, for example, Shoemaker says that *being in a certain type of relation* can be spoken of as *possessing a certain type of relational property* (Shoemaker 1984, p. 211 fn.). Relations between discrete objects, such as spatiotemporal relations, are mere-Cambridge, although there are also genuine relations which derive from the genuine, intrinsic properties of their relata. These genuine relations, like genuine properties, have their causal potentialities specified by (necessary) laws of nature. For Shoemaker the causal potentialities of both properties and relations are essential to them (1980b, p. 297), and correspond to a thing’s cluster of conditional powers (1984, p. 213). Genuine relations, like genuine properties, are universals; and what is true in one instance of a universal is true in every instance (1980b, pp. 301–302).

<sup>4</sup> It is not within the scope of this paper to discuss this point in further detail. Robert Francescotti (1999b), however, provides an excellent discussion.

and the non-existence, of any contingent object wholly distinct from  $x$ ' (2003, p. 102).<sup>5</sup> Molnar's formulation of what it means to be intrinsic is similar to that developed by David Lewis (1983), refined by Rae Langton and David Lewis (1998) and further explored and refined by Robert Francescotti<sup>6</sup> and others.<sup>7</sup> The term, as informally discussed by Molnar, describes properties that an object has which in no way depend upon what other objects exist (2003, p. 39). This is similar to the working definition of 'intrinsic' adopted by Neil E. Williams, who like Molnar derives it from Langton and Lewis (Williams 2010, pp. 85–86). Accordingly, the notion of 'intrinsic' relies upon an assumption of discreteness between entities. For example, Molnar's 'wholly distinct objects' are, for Williams, explicitly 'contingent objects' (Williams 2010, pp. 85–86). Viewing relations as polyadic properties, this definition can be extended to relations. Thus relations between discrete, or wholly independent, or contingent objects and their properties, cannot be intrinsic, as Molnar and Williams defines the term.<sup>8</sup>

Shoemaker, himself, defines an intrinsic property as one such that, 'if anything has it then anything exactly similar to that thing must have it' (1980b, p. 292). What he means by 'exactly similar thing' can be addressed in terms of 'duplicates'. For Molnar, 'Two things (actual or possible) are duplicates iff they have the same basic intrinsic properties' (2003, p. 102). As touched upon already, being intrinsic involves the idea of properties possessed by objects that are 'independent of accompaniment'.<sup>9</sup> For Molnar, an object is 'accompanied' if and only if 'it exists in the same world as some contingent object wholly distinct from it' (2003, p. 40). An object is independent of accompaniment if and only if it may have or lack a property,  $F$ , regardless of whether it is accompanied. For a property to be 'basic', it requires further that  $F$  and not- $F$  are non-conjunctive (mutually exclusive) and contingent. This latter requirement is satisfied by Shoemaker's properties since, unlike properties whose causal potentialities are had necessarily, particulars may change their properties either through time or across possible worlds (1984, pp. 218–219).

If the concept of 'duplicates' can be used to indicate Shoemaker's 'exactly similar things' as I suggest, then a property for Shoemaker is intrinsic just in the case that all

<sup>5</sup> Molnar's more detailed definition is as follows:

$Df$   $F$  is an intrinsic property of  $a$  iff  $a$ 's having the property  $F$  is ontologically independent of the existence, and of the non-existence, of any contingent  $b$  such that  $a$  is wholly distinct from  $b$ ; and  $a$ 's not having the property  $F$  is ontologically independent of the existence, and of the non-existence, of any contingent  $b$  such that  $a$  is wholly distinct from  $b$ .

$Df$   $F$  is an extrinsic property of  $a$  iff  $F$  is a property of  $a$  and  $F$  is not an intrinsic property of  $a$  (2003, p. 102).

<sup>6</sup> Robert Francescotti's formal definition, given as follows:  $F$  is an intrinsic property =<sub>df</sub> necessarily, for any item  $x$ , if  $x$  has  $F$ , then there are internal properties  $I_1, \dots, I_n$  had by  $x$ , such that  $x$ 's having  $F$  consists in  $x$ 's having  $I_1, \dots, I_n$ . (Call a property that is not a  $d$ -relational feature of item  $x$  an internal property of  $x$ .) (Francescotti 1999a, p. 608).

<sup>7</sup> Further discussions on intrinsic properties and relations include that provided by David Lewis (1986a; 1999). Brian Weatherson (2001) also provides a useful resource to the debate by reviewing sources of criticism of Langton and Lewis's account and by amending it to defend against these various criticisms.

<sup>8</sup> It is not within the scope of this paper to discuss the nature of relations between mereological parts of a whole. Whether, for example, fingers on a hand should be considered discrete or not, will determine whether the relations between the fingers are extrinsic or intrinsic.

<sup>9</sup> The terms ' $d$ -relational' (i.e. relational to any distinct object) and 'independent from', are similar conceptually to Langton and Lewis's use of the term 'unaccompanied' or 'lonely' to discuss objects not contingently co-existing with other (distinct) objects (1998, p. 343).

duplicates have that property. Thus, exactly similar things (or duplicates) are objects that have the same basic intrinsic properties, *such properties being possessed independently of the existence of any other object*. If the intrinsic properties and powers of objects exist independently of all other objects, this highlights the strict distinctness (or discreteness) of objects. Shoemaker's intrinsic properties, in line with the description provided by Molnar and Williams, seems therefore to rely upon the assumption that objects are discrete entities, a topic that is discussed in more detail in Section 4. As I will argue later, it is this discreteness which enables and fortifies Molnar's critique.

In principle, being 'intrinsic' can be considered to differ from being 'internal'. While intrinsic properties are possessed by objects that are independent from any other object and thus derive their identity independently of the existence of any other discrete object, the notion of 'internality' relies upon the idea of 'groundedness'. Internal relations are grounded in their relata. As Mumford describes them, they are nothing over and above their terms, and hence are necessary—given the properties, the relations exist (2004, pp. 167, 197). He further holds that such necessary relations can exist between distinct properties. An object, for example, may change its colour without changing its shape, yet having a shape is necessary for having a colour.<sup>10</sup> However, given his support for holism concerning properties, consistency demands that these properties are not *strictly* distinct in the sense required for discreteness. In the holistic view—for which Mumford declares a preference—all properties are interrelated in a vast interconnected web, the identity of each being supplied by virtue of its place in the network (Mumford 2004, p. 189). Williams coins this type of holism as 'power holism', whereby 'The specific, determinate nature of each power (that is, the set of manifestations a power is *for* and the precise partners required for those manifestations) depends on the specific, determinate nature of other powers with which it is arranged in a system of powers' (2010, p. 96). Mumford argues that holding to the causal criterion demands that every property be part of the relational web, since it loses its identity if it is causally cut off from the whole (2004, p. 182).

All powers within a system contribute to the nature of all other powers within that system, and therefore no two powers or properties can ever be *wholly* distinct. Lewis, unlike Mumford, views fundamental entities and their properties as strictly distinct (that is, discrete), and therefore does not allow for internal relations to span distinct entities, as Mumford does. Lewis draws the distinction between 'intrinsic' and 'internal' on the basis that properties (monadic and polyadic) may be only partially intrinsic, but cannot be partially internal. Partially intrinsic properties might include, for example, being a brother, being in debt, or being located with respect to some place—properties that rely upon more than one discrete entity for their existence. According to Lewis, only properties that are *entirely* intrinsic (e.g. shape, charge or internal structure) are internal (Lewis 1983, p. 197). This restriction is consistent with his view of fundamental entities being discreta. Objects may be deemed discreta if

<sup>10</sup> It is not within the scope of this paper to debate whether this claim equivocates on type-token issues. I suspect that it does, but will not argue for that point here. The case that I do put forward, that such properties cannot be strictly distinct and also have a place in an interrelated web, negates the relevance of the former issue.

they are completely self-contained, having all of their properties intrinsically and having no necessary causal or metaphysical connection with any other entity (Lewis 1986b, p. ix; Mumford 2004, pp. 182–184).

A Lewisian view of discreta would allow discrete entities to be related only contingently, and can be recombined in arbitrary ways. In cases where relations may span discreta, therefore, the utter unconnectedness of discreta ensures that these relations cannot be grounded in the properties of such discreta. This is because, were such an internal relation to exist between discreta, it would entail the necessary co-existence of such discreta together with their (relevant) properties. For example, I might claim my pen and my paperclip to be discrete objects, and that a relation of ‘is bigger than’ holds between them, such that <my pen *is bigger than* my paperclip>. The instantiation of such a relation *entails* that both my pen and paperclip each has the properties of spatiotemporal extension that are consistent with such a relation being true.<sup>11</sup> But because the relation is external, it could have been the case—in some possible world, say, in which the laws of nature were different—that the existence of the pen and paper could hold without the ‘bigger than’ relation holding between them. I do, therefore, agree with Lewis that it is consistent for a theory that includes discreta among its fundamental entities to posit that only wholly intrinsic properties and relations can be internal. If this argument holds, then no relation between discreta can be internal; rather, they must be ‘external’. As I see it, this principle is one that applies generally, for the non-Pandispositionalist and Pandispositionalist alike.

Mumford describes external relations as those that are ‘outside of’ or ‘independent from’, and additional to, their relata. The very same external relations could be, or could have been, applied to different entities (2004, pp. 147–148). Returning to the example of my pen and paperclip: the relation <is bigger than> involves more than just the existence of my pen, the paperclip and their respective sets of properties, for if these entities are truly discrete, then even positing the relation must also involve the further concepts of comparison, a measuring device (whether mental or physical), an external frame of reference, and so on, which in turn involves the properties of further entities. The same applies to other comparatives, including certain paradigmatic relations often thought to be internal (e.g. *is hotter than*, *is near to*, *is father of*, etc.). The upshot is that, if discreta are built into a system, then *external* relations are *required* in order for connections or even comparisons between discreta to exist. Therefore, since discreteness involves connection-wise inertia, necessity and possibility can only be supplied by relations that are external to the properties taken as the relata.

While Lewis’s *wholly intrinsic* properties and relations coincide with Molnar’s *intrinsic* properties and relations, Lewis’s *partially intrinsic* and his *extrinsic properties* together are those that Molnar considers to be ‘*extrinsic*’ (2003, p. 40). These extrinsic relations are those that span discrete entities, are contingent, and external. Thus, Molnar uses the term ‘*extrinsic*’ relation in referring to external relations, and

<sup>11</sup> Questions about whether the paperclip and pen both need to presently exist for the comparison to be made, whether past entities can be said to exist in some fashion or other at all, and other such issues, all unnecessarily complicate what is meant as a naïve yet comprehensible example. For the purposes of this paper, these and other questions have been parenthesised.

this provides the starting point for his critique of CTP's intrinsic criteria for genuine properties. Molnar notes that intrinsic properties are sometimes also understood to mean 'fully portable'; that is, intrinsic properties are those that an object retains through any changes in location (2003, p. 39). Portability also requires that the bearers of objects have their intrinsic properties independently of other distinct objects. The idea of portability also underlies Molnar's S-property argument.

### 3 Molnar's S-Property Argument

In CTP, a genuine property is equated with it being an intrinsic property, as evidenced by stated equivalences. For example, Shoemaker writes, 'As a preliminary step towards clarifying the notion of a genuine or 'intrinsic' property...' (1980b, p. 292). This equivalence is apparent again when he writes that, 'my account of properties says that the identity of a genuine, or intrinsic, property is constituted by its potentialities for contributing to the causal powers of the things that have it' (1980b, p. 294). As this statement also shows, for Shoemaker, all genuine properties and relations are identified by their respective causal contributions to the powers of their bearers. The intrinsicality of genuine properties cannot be teased apart from their causal contribution. Rather, they are part of an internally related system of concepts, none of which can be explicated without reference to the others (1980b, p. 294; 1984, pp. 221–222; 1980a). Consequently, if a thing loses or gains a genuine, intrinsic property, this is accompanied by a change in its causal powers and vice versa (Shoemaker 1984, 207–208).

The interdependence of intrinsicality and causal contribution is used in CTP to mark off genuine from mere-Cambridge properties, and this is the target of Molnar's argument. Molnar argues that the *interdependence* of the causal and intrinsic criteria for genuine properties does not hold once we begin to consider spatiotemporal properties and relations. Spatiotemporal relations causally contribute to the powers of the relata standing in those relations, yet such relations are not intrinsic, if such relata are considered to be discrete entities (2003, p. 159). The S-property argument, which Molnar produces in defense of this claim, shows that objects have intrinsic powers which are sensitive to extrinsic spatiotemporal properties such as location and distance. By virtue of this sensitivity, they are affected by such properties. Taking his cue from Richard Feynman, RB Leighton and M Sands (1963, pp. 521–523; Molnar 2003, p. 160), Molnar puts forward 'S-properties' as those involved in symmetry operations. A system has a symmetry in the case in which a transformation that can be brought to bear on that system leaves the system the same as it was before the operation (see, Lederman and Hill 2008, p. 15). An example of a geometrical symmetry is given by an unmarked, symmetrical vase being rotated through its vertical axis by 360°. The rotation or transformation is called a 'symmetry transformation' or 'symmetry operation'. Molnar describes a symmetry operation as involving only a single salient physical property of a particular undergoing such a transformation (2003, p. 160). In the case of the vase, rotation.

The S-properties that Molnar has in mind are all spatiotemporal, except when concerning the interchange of identical particles, and are involved in operations such as translation in space, translation in time, rotation through a fixed angle, change of

uniform velocity in a straight line and reversal of time direction. The argument relies upon the assumption that S-properties are extrinsic to the objects concerned, but that the intrinsic powers of objects are fundamentally position sensitive. Different positional circumstances of objects will produce different outcomes of the manifestation of the very same forces by virtue of this sensitivity of objects to S-properties. Thus, S-properties are involved in moderating the forces among objects, and in this role, they are causally relevant to every physical event (2003, p. 163) because they co-determine the strength of forces that are exerted by every object upon others (2003, pp. 163–165). Sensitivity to position and other S-properties, however, is inherent, since it derives from the nature of the powers that are manifested by their force-bearers (2003, pp. 163–164). Thus, while such sensitivity resides intrinsically within objects and is part of the essential nature of power, it is moderated by, because its essence is to be sensitive to, extrinsic, spatiotemporal properties. By this reasoning, although these S-properties are not themselves powers, they nonetheless affect the *outcomes* of the operation of powers (2003, pp. 164–165).

Whether Molnar is talking about basic spatiotemporal relations playing a part in causal interactions (e.g. gravitational force being inversely proportional to the square of distance), or whether he is invoking a deeper principle, captured by Emmy Noether's Theorem concerning symmetries in physics,<sup>12</sup> clearly contextual sensitivity plays an important part to the operation of systems in general. The claim that I make in this paper is conservative: *If* one accepts Molnar's S-property argument as cogent, then they should also take seriously the conflict that it highlights between the causal and intrinsic criteria for positions that hold a doctrine of pure powers: If spatiotemporal relations play a causal role in the moderation of the powers of objects, and if that causal role marks off genuine from mere-Cambridge properties as Shoemaker claims, then spatiotemporal relations ought to be considered genuine. However, if they are not intrinsic but instead span discrete entities, they cannot be considered to be genuine. And thus, in the case of spatiotemporal properties and relations, the two criteria used to distinguish genuine from mere-Cambridge properties appears to be at odds with one another. (I will argue, in Section 3 however, that Molnar's argument is convincing only with respect to those Pandispositionalist views that also accept objects and their properties as discreta.)

At this point, I pre-empt and then answer a possible objection to Molnar's claims, namely, that if one treats the causal and intrinsic criteria *independently*, as Molnar attempts to do, then he has no argument against CTP. For example, it might be noted that, on one hand, if both the intrinsic and causal criteria are *necessary* for a property to be considered genuine, then an intrinsic property that does not causally contribute is not a genuine property—simpliciter; and likewise for a property that causally contributes but is not intrinsic. Hence, according to this objection, Molnar's argument falls down because he mistakenly presupposes both criteria to each individually be capable of marking off genuine from mere-Cambridge properties, when in reality both are required to make that distinction. On the other hand, if the two criteria are merely each *sufficient*, then it takes only one of the criterion to hold

<sup>12</sup> As noted by Leon Lederman and Christopher Hill, Noether's Theorem (1915) observes that, for every continuous symmetry in the laws of physics, there is a corresponding conservation law and a corresponding conserved quantity (Lederman and Hill 2008, pp. 54, 73).

for the property in question to be considered genuine. In this case also, Molnar has no argument.<sup>13</sup>

In reply, I note that Shoemaker emphasises the *interdependence* of the causal and intrinsic criteria, as I have detailed earlier. Each is part of an internally related system of concepts. Genuine properties are marked off from mere-Cambridge ones by their causal contribution to the powers of their instantiators, and this contribution *requires* that they *be* intrinsic. Or it could be considered the other way around: genuine properties are all intrinsic to their bearers, and any contribution they make to the powers of their bearers would not be possible without their being intrinsic. Thus, in the CTP schema, there is no proviso to treat the two criteria as independent, and this is precisely Molnar's objection against CTP. The criteria is described by CTP as *conjoint* rather than independent, and the two criteria cannot be properly teased apart. Yet, says Molnar, they *do* come apart in the case of spatiotemporal properties, in a way that allows either criterion to rightly be considered sufficient for a property to be considered genuine. Thus, the point of Molnar's criticism is that *this conjoint status is what is at fault in CTP*. Molnar's own theory holds that the sufficiency of each criterion independently provides room for the existence of genuine non-causal and/or extrinsic properties, but that CTP cannot account for extrinsic but causal spatiotemporal properties. In the next section I argue that both CTP and contemporary strong Pandispositionalism are strictly dependent upon both the intrinsic and the causal criteria being *interdependent*, and that therefore both positions are vulnerable to Molnar's critique, at least in the case in which discreta are admitted into the theory.

## 4 Exploring Independent Scenarios

In this section, I show why strong Pandispositionalism in general relies upon the causal and the intrinsic criteria being interdependent. My method of argument will be a *reductio absurdum* approach—and will proceed by examining two scenarios in which I assume the two criteria to be independent, and by showing why each of these situations cannot work for a Pandispositionalist without violating certain fundamental axioms of the theory. The first scenario posits the intrinsic criterion to hold, but denies the causal criterion, achieving this by allowing a causal role to be undertaken by entities other than genuine properties of objects. The second scenario denies the intrinsic criterion by allowing the existence of genuine, non-intrinsic properties and relations. The closing argument will be that this interdependence is required for a pure power theory, but that it cannot be sustained—as per Molnar's critique—if discreta are permitted in the theory.

### 4.1 Scenario 1: Denying the Causal Criterion

Abandoning the causal criterion would involve allowing non-causal properties to be considered genuine. This is a route that Molnar himself defends, by arguing for 'A Posteriori Dualism', according to which both genuine causal and non-causal (quid-distic) properties exist (Molnar 2003, pp. 58–58; 158–185). I argue that if any view

<sup>13</sup> I owe this objection to an anonymous referee's feedback on an earlier draft of this paper.

allows non-causal properties to be counted as genuine, then it must admit quiddity into the metaphysic if we consider quiddity in the terms outlined earlier: as whatever there is to a property over and above its contribution to the powers of its bearer (Bird 2006; Black 2000, p. 92; Mumford 2004, 2009).

A demonstration of the claim that granting genuine non-causal properties requires the further granting of quiddity, can be given by pointing to the constraints occurring in David Armstrong's (2004) 'Soft Theory of Powers'. I read Armstrong's inclusion of 'minimal quiddity' as a reluctant assent to this claim. In this view all genuine properties are non-dispositional, and the causal role is ultimately shifted from the domain of properties of objects to that of independent, external relations. The modal burden is placed upon contingent laws of nature.<sup>14</sup> A possible world containing exactly the same 'stuff' may feasibly have different laws of nature, and thereby objects may have the same properties, but different powers, than that which they have in the actual world (1997, p. 169). If an object's causal powers are already explained by contingent, external laws, then it seems redundant to identify its properties in terms of their causal roles. For this reason, among others, Armstrong grounds dispositional properties in categorical, causally inert properties. As he notes, such properties are consistent with endorsing contingent, external laws of nature (1997, p. 83).

A metaphysic such as Armstrong's, which removes the causal role from properties and places it upon contingent or external laws, must account for the identity of properties in some manner other than their causal role—either explicitly or by default—through quiddity. Such a task has been recognised by Armstrong, himself, as problematic (2000, pp. 19–20). Since, for Armstrong, properties and relations are self-contained, 'distinct from the power they bestow' (1989, p. 118; 1997, pp. 41, 69, 245), the identity or 'inner nature' of a property seems mysterious—able to be identified neither directly nor indirectly via the manifestation of its instantiating particular's power (1997, p. 168; 2000, pp. 19–20). This has led Armstrong to identify properties in quiddistic terms, albeit via a deflationary account whereby properties are 'barely, numerically different' from other universals in the same adicity class (e.g. monadic, dyadic relation, triadic relation, etc.); feasibly 'interchangeable' with each other and with respect to the powers they bestow (1997, p. 168; 2000, pp. 19–20). Armstrong's treatment of properties counts whatever minimal identity such properties do possess as being non-causal and thus quiddistic, in the sense of being identified by factors other than their causal role. This shows that, minimal or otherwise, if external relations, as contingent laws, are admitted into an ontology in a causal or nomic role, then the properties they take as their relata must be identified in terms of something that is non-causal and hence quiddistic.

In short, Armstrong's Categoricalism, is a demonstration that quiddity—even minimal—is a by-product of allowing properties to rely upon contingent, external laws of nature to provide a causal role. But this raises the question whether allowing genuine properties to be non-causal *must* go hand-in-and with the existence of such external, contingent laws, or whether the prospect of non-causal properties and

<sup>14</sup> Although it is not within the scope of this paper to discuss further, other interesting analyses of Armstrong's account of Laws include those put forward by Herbert Hochberg (1999, 2002), Charles Martin and Ullin Place (Crane et al. 1996), Alexander Bird (2005, 2007) and Stephen Mumford (2004, 2007).

necessary laws could co-exist. CTP, for example, defends the view that the laws of nature are necessary—they spell out the causal potentialities of properties and relations that exist in the world: Given what exists, we have the laws, which specify or describe *relations between properties*. Can this view of necessary laws be compatible with holding the identity of properties apart from their causal contribution? I do not believe so. Such laws of nature can be reasonably counted as internal, since they are neither over and above, nor independent of, the properties that they relate. Given the objects and properties that exist, these connections between properties exist. But if properties had no causal contribution to make, then such laws, being grounded in these properties, would be incapable of fulfilling a governing role, which would instead be supplied by external relations.

The upshot is that if the causal criteria were denied, and consequently non-causal but genuine properties included in a philosopher's arsenal of allowed entities, then governing relations which are external to such properties would also be required. The existence of external relations thus goes hand-in-hand with the existence of quiddity: If external relations provide an explanation for how properties can connect, arguably it is this, and not the properties themselves, that determine the powers that things have. The identity of such properties connected by external relations, must in this case, be given in terms other than some causal role.

The notion of quiddity that I have adopted in this paper is a definitional one: quiddity is, by default, built-in to views that deny the causal criterion: either the identity of a property is given by its causal role, or as a quiddity. Hence, Stephen Mumford's description of the existence of quiddity in a Pandispositionalist metaphysics that defends *de re* necessity as an 'embarrassment' to any theory (2004, pp. 146–152). (*De re* necessity is defined by him as that exists in nature rather than merely in words or in logical form; 2004, p. 166).

However, the incorporation of quiddity is more than a mere embarrassment. It has been argued that quiddity is responsible for creating the regresses which it is later supposed to resolve. Richard Swinburne and others<sup>15</sup> point out that if properties have their identity by virtue of their causal role alone, and if there is nothing more to these properties than this contribution—properties are reducible to causal powers and potentialities, and hence to effects alone—the resulting pure power world is one in which only effects exist, and to which there is nothing except other effects. The alleged problem is that the 'properties' are never actually encountered, since each one is represented by proxy as nothing more than effects. Swinburne suggests that the only way that this regress can be broken is if there is something more to properties than powers (Shoemaker et al. 1980; Swinburne 1980). The overall argument, and later regress arguments that follow, address both ontological and epistemological considerations. Broadly speaking, they propose that the identity of a property is not effectively given by its causal contribution alone, but instead, by its quiddity—by 'something else' over and above its causal role. Thus defined, it is quiddity which also allows us to make sense of the existence of unmanifested dispositions (Armstrong 1997, p. 79; Psillos 2006).

<sup>15</sup> Others include those such as John Foster, Charles Martin, John Heil, David Armstrong, Brian Ellis and, more recently, Stathos Psillos (Armstrong 1997, 80; 2000, 13–14; 2004, 138–139; Crane et al. 1996; Ellis 2001, 2002, 2005; Foster 1982, 66–72; Heil 2003, 76, 99–107; 2006, 42; Martin 1993).

Although it is not within the scope of this paper to provide a detailed analysis of these regress arguments (others have done so<sup>16</sup>), one particular response is directly relevant to this paper. Anna Marmodoro (2009) provides an interesting critique of Stathos Psillos's regress argument against ungrounded dispositions. She argues that the distinction made between a property and its essence underpins the regress argument, and without such a distinction the regress does not get started. Marmodoro draws out an assumption that Psillos builds into his argument—that powers need further powers in order to do what they do. Discussing Psillos's claim that physical directedness toward a manifestation is a property of a power (2006), Marmodoro argues that this is to assume that directedness toward a manifestation is different from what a power is, but that this assumption introduces a difference between what a power is and what it does. This distinction amounts to a claim for quiddity, because it assumes there to be more to a power than what it does; an assumption that is not sustainable. A power just *is* 'directedness toward a manifestation'—which is also what it does.

If Marmodoro's argument holds, it would follow that the Pandispositionalist stance is secure from the objections of the regress arguments precisely because this stance, on the whole, rejects the existence of quiddity, and it is quiddity which both creates and bridges the distinction between identities of properties and their causal essences. But the bridge is not required if the gulf does not exist: a cure is needed only according to views that build-in quiddity in the first place. In a similar vein, Mumford argues that the regress simply does not hold, since powers should be considered to be real—their reality ensured by the eleatic test—and that unmanifested powers exist in their own right as powers *for*. To assume that they are mere *possibilia* is to mistake the perspective of Pandispositionalists (2009).

In accordance with the stated objective of this section, assuming the causal and intrinsic criteria to be independent and then denying the causal criterion, would not be viable from a pure power perspective. A denial of the causal criterion entails the existence of quiddity, and it is this which is called for not only to cure the regresses, but is also responsible for creating them. This makes quiddity not only embarrassing, but also antithetical to strong Pandispositionalism.

#### 4.2 Scenario 2: Denying the Intrinsic Criterion

I now turn to the examination of whether it would be possible, from a Pandispositionalist perspective, to treat the causal and intrinsic criteria as independent, and to then deny the intrinsic criterion. There are two ways in which the intrinsic criterion could be relinquished: In the first case, by incorporating genuine, non-intrinsic properties; or in the second case, by denying the existence of discrete objects. This section explores the first of these options, and Section 5 addresses the second.

For the purpose of this discussion, let us say that manifest, macro-world objects are complex, mereological entities comprised of simpler and simpler parts which, at the most fundamental level, are ultimately discrete. In the case where strictly independent,

<sup>16</sup> Alexander Bird provides a full description and analysis of these arguments in his book, *Nature's Metaphysics: Laws and Properties* (Bird 2007). Mumford also discusses them in his book, *Laws in Nature* (2004) and in a recent paper (2009).

discrete objects are permitted, is it feasible for a Pandispositionalist to deny the intrinsic criterion by considering spatiotemporal properties and relations to be genuine?

I begin exploring this question by considering necessary laws, advocated by Shoemaker, which would appear to be internal, that is, to hold between properties by virtue of being grounded in those properties. As noted earlier, internal relations are such that they do not exist over and above their relata. If one were to describe the properties so related, and then describe necessary laws, then they would have done the same thing twice over. In contrast, relations holding between discrete objects and their properties must be external and contingent. This is because, as described in Section 2.2, discrete objects *and their properties* are independent—wholly distinct—from other discrete objects *and their properties*. Necessary laws, holding between the properties of discrete entities, would connect two such entities non-contingently. But this surely cannot be the case for *discrete* objects, since by definition they exist independently of every other object; their properties are strictly intrinsic.

The upshot is that, if discrete objects were to be related to one another, or if the properties of discrete objects were to be related to those of other discrete objects, then this could only occur via external relations.<sup>17</sup> As Mumford argues, the requirement for external relations is built into a system that incorporates inactive or inanimate, discrete units (2009, p. 196), and if governance is built into a system at all, if not built into properties, then it is achieved via external, relations. But such relations must be contingent, since two objects that are discrete must be able to vary independently of one another. Moreover, since the relations connecting such objects are external to them, these objects must also be able to vary independently of these relations. (I parantheseise the difficult question that is raised in this context, of whether such external relations are in fact capable of necessity. Such a questions is outside the scope of this paper.)

In the case where discrete objects are connected via external relations, the identities of the properties of such objects thus connected could not be given completely in terms of their contribution to the powers of their bearers—that is, by their causal role. As noted in Section 2, for CTP clusters of conditional powers are considered to be comprised of sets of causal potentialities, these sets being considered to be, themselves, properties. But ‘properties’ also referred to these clusters of conditional powers. Ultimately properties reduce to powers and vice versa. Shoemaker removed the reduction in 1998 by changing properties from ‘being comprised of’ clusters of conditional powers to ‘possessing sets of causal features’ (Shoemaker 1998). However, in contemporary Pandispositionalist views, such as that put forward by Stephen Mumford, properties are even yet thought to be comprised of causal powers in addition to their relations or metaphysical connections with other properties. As Mumford describes the position, ‘Following Shoemaker’s (1980a, b) lead, I claim that properties are clusters of relations with other properties, these relations including

<sup>17</sup> As mentioned earlier, ‘objects’ can be thought of as systems of component parts, each of which is a further system of still more fundamental parts, and so on. Thus, the level at which we point to an object and call it discrete from another is subject to pragmatic theoretical and contextual considerations. My arm and my leg, for example, might be considered part of a single system, yet that system comprised of discrete parts. It is not, however, within the scope of this paper to provide a thorough-going analysis of objecthood. Let it therefore suffice to understand this talk of discrete objects generally, and allow that the principles of discreteness can be specified in greater detail depending upon the context under consideration.

causal powers to, and metaphysical connections with, other properties' (Mumford 2004, p. 17).

In the spirit of enquiring whether it would be feasible for a Pandispositionalist to deny the intrinsic criterion, one consideration would be that, were it the case that discrete objects were connected by external, contingent relations between their properties, then the identity of such properties would be modified (e.g. constrained) by their connecting relations. As Mumford presently sees it, where properties are comprised of their metaphysical connections and relations such that these connections between properties are grounded in the properties themselves, relations are explicitly recognised as part of the identity of such properties. (Although, this situation lends itself to a holistic view in which the identity of all properties is ultimately tied to the identity of all other properties in a vast relational network, a topic discussed further in Section 5). But if, according to our hypothetical scenario, relations between properties of discrete objects—such as the spatiotemporal relations considered by Molnar—were considered to be external, contingent, and genuine, then it is these rather than the nature of the properties themselves, that dictate how properties imbue their possessors with certain powers. In this case, if overdetermination of identity is to be avoided, it would not be possible for such properties to gain their identity uniquely in terms of their causal role—that is, in terms of the power that they bestow upon their possessors. Thus, by denying the intrinsic criterion, the causal criterion itself is compromised. This reinforces the interdependence of the two criteria, as per CTP. In short, in the case where strictly independent, discrete objects are permitted, it is *not feasible* for a Pandispositionalist to deny the intrinsic criterion, since this would necessitate admittance of quiddity into the theory, and would thus violate one of the core tenets of the strong Pandispositionalist position.

The overall conclusion to be drawn from this discussion is that the intrinsic and causal criteria are inextricably interconnected in strong Pandispositionalism. So we must ask whether Molnar's argument holds against such pure power theories. I consider Molnar's argument *is* a valid critique, but against only those theories that allow for the existence of discreta. That is, if some theory admits discreta, then Molnar is correct to point out that genuine external relations between such discreta hold, and that such a view is unable to defend the claim for the causal and intrinsic criteria to be strictly interdependent. What an analysis of Molnar's argument shows is that, not only does the existence of discreta result in the criteria coming apart, but that it also entails the existence of quiddity in it doing so. Thus, his argument points to a very serious problem for pure power views that admit discreta. In Section 5, I suggest that an answer to Molnar is provided if and only if discreteness between objects is avoided.

## 5 Summary, Conclusions and Suggestions for Further Research

In summary, this paper has presented an examination of George Molnar's critique of Sydney Shoemaker's early CTS. The aim of Molnar's critique is to argue for the existence of extrinsic, genuine properties. He does so by claiming, *contra* CTS, that spatiotemporal relations are examples of where the causal and intrinsic criteria come apart. I argue that the existence of discreta is an underlying requirement for Molnar's

argument to proceed, since these enforce the presence of governing external relations. The requirement for external relations to govern how properties and objects behave interrupts the close interdependence of the intrinsic and causal criteria, and I have shown that this separation of the two leads to the presence of quiddity. Since the existence of quiddity is mutually exclusive with the claims of strong Pandispositionalism, Molnar's argument shows that the existence of discreta enables this fatal blow to a pure power theory. Molnar's target was specifically Sydney Shoemaker's CTS, however the argument can be applied equally to any contemporary strong Pandispositionalist position that incorporates discrete objects.

In responding to Molnar's critique, perhaps the sensitivity of spatiotemporal properties and relations central to the S-property argument can be explained by varieties of Pandispositionalism that deny discreta and adopt a holistic perspective. That is, the force of Molnar's critique may be allayed by sacrificing the assumption of discreteness. If particulars and objects were not considered to be discrete entities, but were instead considered to be dynamic parts of a unified whole—a vast interconnected 'Power Network' (see, Williams 2010)—then this relational web would feasibly also include spatiotemporal relations, affording a consistent view of spatiotemporal relations and properties as a causally efficacious part of the whole. The upshot is that such relations would no longer be extrinsic, and their presence and action plausibly explained in terms of the properties and their place within the network. In this case, Molnar's argument loses its force, since the necessity of laws such as those that involve spatiotemporal properties (e.g. gravity), can be accounted for without giving rise to the presence of quiddity.

The question remains, how to consider the status of objects within such a vast, causal network. The answer, I believe, is captured in the notions of holism concerning properties, and priority monism concerning substance. In what follows, I draw an outline of how a pure power theory may be capable of answering Molnar's critique. This is not meant to be taken as a fully developed model, but only a brief outline of research that is presently underway. The central aim of this paper has been to analyse Molnar's argument, and to show why it stands as a stumbling block to any pure power theory wishing to include discreta.

I hope to have shown that Molnar's critique demands of pure power ontologies that they abandon the notion of discreteness, and that it is vital to continue refining holistic models of, not only properties, but also of objects. Mumford provides, for example, a holistic pure power ontology by arguing that for the strong Pandispositionalist it makes no sense for any property to stand alone, since it would thereby be devoid of its causal role (see, Mumford 2004, pp. 182–184). Suppose that every property is interconnected either directly or indirectly (via properties) with every other property in a vast, interconnected web, described by Neil Williams as a 'Power Network' (2010). It would seem that objects which instantiate such properties (in the case of substance-attribute theory), or object-bundles (in the case of bundle theory), are also interconnected via their properties. This picture could be made to resemble that of priority monism, in which the cosmos is a single whole, but also has proper parts. To be a 'part' is to be in a relation that is reflexive (e.g. everything is a part of itself) and transitive (e.g. any part of any part of a thing is itself part of that thing—allows hierarchical structuring). Such a relation represents a partial ordering. A 'proper part' can be viewed as a *strict* partial ordering, and is achieved by adding

an asymmetry requirement that two things standing in a whole/part relation cannot be part of each other (for a more detailed discussion of priority monism, see, Schaffer 2010). We might think of the everyday objects of the world in terms of these proper parts. A priority monist perspective would suggest that objects cannot be fundamentally or wholly distinct, since every proper part is embedded within a common ground, the fundamental underlying unity. This formulation avoids the concern raised by Molnar that external relations necessarily accompanies the existence of discreta, since viewing objects holistically allows a description of them as distinct in a deflationary sense: Relatively distinct, but not discrete.

This idea of ‘relative distinctness’ is captured by objects being more or less distinct with respect to every other object; that is, a reflection of their relations to all other objects (and their properties) within the web. This relative distinctness thereby allows properties to be ‘intrinsic’ to their objects, but changes the definition of ‘intrinsic’ from pre-supposing discrete (independent or *d*-relational (see, footnote 6)) entities, to one that merely views intrinsic properties as those possessed by objects which are merely ‘distinguishable’ from other objects. Such a view accommodates intrinsicity in a meaningful way, albeit a somewhat deflationary account of it must suffice. The advantage of this deflationary account of intrinsicity is that, although the concept is softened, it is not abandoned; and this is all that is minimally required to accommodate the identity of spatiotemporal properties and relations in terms of their causal efficacy while denying that they are extrinsic.

The idea of ‘object-hood’ will also be re-cast in such a system, to one that is dynamic; and where every object is in a complex array of changing relations to other objects via their properties, and both its identity and distinctness is thereby continuously altered. If being intrinsic involves being part of such an object, then external relations are not required for the connections between such dynamic objects, since its metaphysical connections are intrinsically grounded in its properties and relations. Thus, Molnar’s requirement for external properties and/or relations is avoided, likewise any resultant encounter with quiddity.

This paper has pointed to an important issue for pure power theories, in asking how to account for the effects that occur within and between systems of entities. The take-home message of this paper is that critiques such as that provided by Molnar, can be answered within the domain of pure-power ontologies. However, a holistic account will be required if pure-power theories are to give a consistent, adequate account of everyday objects and their properties. This will involve the development of models that distinguish between ‘mere distinctness’ and discreteness, and that provide a sufficient albeit deflationary account of intrinsicity. Such a model may require a dynamic notion of objecthood.

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