

[Chapter 7 of D. M. Armstrong, C. B. Martin, U. T. Place and T. Crane (Ed.) *Dispositions: A Debate*. London: Routledge. pp. 105-125)]

STRUCTURAL PROPERTIES: CATEGORICAL, DISPOSITIONAL OR BOTH?

by U. T. PLACE

Differences with Martin and Armstrong over Linguisticism

It would seem that the differences between Place's position and Martin's are less substantial than those between Martin's position and Armstrong's or between Place's position and Armstrong's. But there are two issues on which Martin and Armstrong agree and Place's position differs. The first of these is one which, curiously enough, Martin raises at the very beginning of his chapter, the issue of linguisticism.

Martin is not alone in rejecting

the Linguisticism that renders properties being had by objects as merely a matter of predicates being true or false of the object, if any, to which the subject term refers. (above p. 71)

That should not surprise us when we reflect that all three participants in this debate subscribe

- to realism, understood as the claim that the universe exists independently of our conceptions, beliefs and knowledge about it,
- to the truthmaker principle, understood as the claim that, at least in the case of those propositions which are contingently true, a proposition is true, if and only if there exists a situation (event or state of affairs) corresponding to that which the proposition depicts.

Linguisticism, as Martin characterises it, offends against both principles by collapsing reality and the segments of reality depicted by sentences (situations) into the truth of the indicative sentences used to depict them. To this extent there can be no difference between us. Differences only emerge in relation to the cases that are cited as instances of this peculiarly philosophical disease. The example cited by Martin is the slogan [p. 106]

To be is to be the value of a variable,

introduced semi-seriously by Quine,¹ but taken progressively more seriously by his followers, if not by Quine himself, as an account of what it *is* for something to exist. Another instance of linguisticism is the doctrine that wanting is a propositional attitude, the doctrine that what the wanter wants is that a certain proposition be true. If I want something, say an apple, what I want and what, given the opportunity, I am disposed to bring about is the state of affairs whereby I obtain and, presumably, eat an apple. The fact that that state of affairs, if and when it exists, makes true the proposition expressed by the sentence *I now have and am eating an apple* is a massive irrelevancy as far as the wanter is concerned. What is wanted is the state of affairs, not the truth of the proposition that describes it.²

The linguisticism involved in the doctrine that wanting is a propositional attitude is important for our present purposes because it shows that linguisticism consists, not just in equating the existence of a property with the truth of a proposition in which a predicate is ascribed to a subject, but more generally in equating the existence of a situation with the proposition it makes true. It thus draws our attention both to the link between linguisticism and Martin's truthmaker principle and to another piece of linguisticism to which, despite the fact that both adhere to the truthmaker principle, both Martin and Armstrong, along with a majority of contemporary philosophers, subscribe, the doctrine that causal necessity is a species of logical necessity.

That this is an unacceptable case of linguisticism should be apparent when we reflect that logical relations, as the etymology of the word 'logic' implies, are relations between linguistic entities - sentences and propositions - relations whereby the truth of one or more sentences or propositions guarantees or rules out the truth of another. Causal relations, on the other hand, are relations between situations - states of affairs and events. Situations are neither true nor false. They either exist or do not exist. If a situation exists,

it makes a proposition asserting its existence true. Such a proposition can stand in logical relations such as necessity and contingency with propositions asserting the existence of other things. But the situations themselves stand to one another only in relations of a spatio-temporal and sometimes causal kind. To suppose that causal relations are a species of logical relation is once again to confound the existence of a situation with the truth of the proposition its existence makes true. It is, perhaps, their commitment to this piece of linguisticism which explains why, as Armstrong observes (above p. 89), "Martin and [p. 107] Armstrong find obscure" the "'counterfactual theory' of causal necessity" held by Place. For if you think of causal necessity as a species of logical necessity, the need for a separate account of causal necessity will not arise.

Another manifestation of this linguisticism of the causal relation is the widespread belief that, despite obvious logical difficulties, causal conditionals, such as the causal counterfactual ('if situation *C* had not existed, situation *E* would not have existed') and the subjunctive conditional ('if at any time a situation of the *C* type were to exist, a situation of the *E* type would *ceteris paribus* probably exist') to which Ryle appeals in his analysis of dispositional statements, can be represented as conditional relations of the form 'If *p* then *q*' between the truth of propositions describing them. It is sometimes suggested that this form of linguisticism is committed only if we represent a sentence such as

1. 'If someone were to strike the match against the sandpaper, it would ignite.'

as

2. 'If "Someone strikes the match against the sandpaper" is a true sentence, "The match ignites" is a true sentence.'

and that no such objection can be raised to a form such as

3. 'If it is true that someone strikes the match against the sandpaper, it is true that the match ignites.'

But on Place's view the only difference between renderings 2 and 3 is that 2 uses *oratio recta* or direct reported speech to quote the conditionally connected sentences; whereas 3 uses *oratio obliqua* or indirect reported speech. The effect of this is that 2 ties the claim to particular ways of formulating the two sentences; whereas 3 applies regardless of which particular sentence forms are used to 'express' the two propositions. The same linguisticism is present in both.

In Place's view, what makes philosophers reluctant to abandon the linguisticism involved in construing 'wanting something' as a propositional attitude, in treating causal necessity as a species of logical necessity and in treating causal (i.e., subjunctive and counterfactual) conditionals as connecting statements or propositions is that the alternative raises what appear to be insuperable logical difficulties. The alternative is to accept that the objects of desire and the entities connected by the 'if ... then ...' in a causal conditional are situations which either, as in the case the objects of desire and those conditionally connected in a subjunctive [p. 108] conditional, do not yet exist and may never do so, or, as in the case of the counterfactual, will never now exist. The problem is that standard quantification theory does not allow quantification over non-existent objects. Consequently, in order to accommodate the phenomena of dispositions and causation we seem driven into the ultimate absurdity of asserting the existence of non-existent objects, such as the intentional objects in Meinong's *Außersein* and the possible worlds of possible world semantics.

As he argued in the article which initiated this debate,³ in Place's view the solution of this problem awaits the development of an intensional quantification theory which will allow us to quantify over the merely possible, as do the quantifiers of ordinary language. But until such a theory is developed, we shall have to make do with ordinary language.

The Role of Structure in the Explanation of Disposition

The other issue where Armstrong follows Martin, whereas Place is reluctant to follow suit is in moving the discussion away from structural properties as the basis for dispositional properties and towards a discussion of the categorical and dispositional properties of elementary particles, particles so small that they have no known microstructure. Place is not impressed by the argument that discussion of the

dispositional/structural property relation

is vitiated by debate concerning whether properties at a higher level are anything over and above properties at a lower level. (p. 73)

This seems to him a straightforward matter. Of course, properties at the higher level are something "over and above properties at a lower level." Properties at the higher level are properties of the whole. Properties at the lower level are properties of the parts⁴ which make up the whole. Since they are properties of different things, there is quite simply no way that we can hope to 'reduce' the properties of the whole to the properties of the parts. To that extent, all the properties of wholes are 'emergent properties' relative to the properties of the parts. But that should not be taken to mean that the properties of the whole cannot, at least in some cases, be predicted from a knowledge of the properties of the parts and the way those parts are put together so as to form the whole. Thanks to science, there are now many cases where just such predictions can be made. Such predictions, however, are only possible on the assumption that there exists a causal relation whereby the parts, their arrangement [p. 109] and their properties stand as cause to the properties of the whole as effect. But, as Hume has taught us, causal relations hold only between "distinct existences." For that reason also, we have to conclude that the properties of the whole are not properties of the parts under some other guise.⁵

Place fully accepts and appreciates Martin's insistence that the issue of the distinction between the categorical (or "qualitative" as he prefers to call it) and the dispositional needs to be disentangled from that of the relation between the properties of the whole and those of its microstructure; but he rejects the suggestion that considering the case of an elementary particle which has no microstructure allows him to deal with former issue without being drawn into the latter. This stratagem fails because, on what he calls his "Limit View", every property has a categorical (qualitative) as well as a dispositional aspect. Consequently, just as Armstrong's view commits him to finding a categorical property or set of such properties in which every property which appears dispositional actually consists, so Martin's view commits him to finding a qualitative aspect to balance what he takes to be the dispositional aspect of a property such as the brittleness of a pane of glass which others, such as Place, take to be purely dispositional.

Now, as we shall see later, not all the candidates for the role of qualitative aspect with respect to what others would think of as a purely dispositional property are to be found in the *microstructure* of the property-bearer; but what an examination of the relevant examples *does* seem to suggest is that there are no non-dispositional features of the property-bearer which are *not* structural properties. There would also seem to be no exceptions to the rule that all dispositional properties are underpinned by structural properties, both dispositional and non-dispositional, which in the case of a particle with no microstructure would have to properties of the macrostructure.

If this is correct, it would seem that Martin's choice of the case of the microstructureless elementary particle, while allowing him to finesse the issue of the relation between the properties of the whole and those of the parts, deprives him of the possibility of providing any illustrative support for the claims that he makes about the relation between the non-dispositional (qualitative) and dispositional aspects of a property. Moreover, the claim (above p. 73) that by choosing this example he has described an entity whose (unspecified) properties are "*non-structural*" would appear to be without foundation. For if all properties have a qualitative as well as a dispositional aspect and all qualitative properties/property-aspects are structural, there can *be* no such thing as property which is not structural. [p. 110]

Martin's Disagreements with Armstrong

Martin notes that he and Place agree as against Armstrong that properties of the same kind are particular properties ('tropes') which resemble one another in some respect (other than being the properties of the same particular substance). Martin uses the adjective "exact" to describe the kind of resemblance that must hold between particulars for them to be of the same kind. Place is inclined to wonder whether this is not too much of a concession to Armstrong's view according to which a universal is conceived as a kind of particular such that the very same individual is somehow present in every instance of that universal. As Martin points out, on such a view resemblance has to be exact. Otherwise, it is a different universal that is instantiated in the two cases. On the conceptualist view to which Place and, it would seem, Martin subscribes, there has to be *some respect* in which two things resemble one another for them be 'of the same kind'. It is true that two things of the same kind cannot be only approximately similar in the respect in

which their resemblance makes them instances of that kind. But to express this by saying that they must 'exactly' resemble one another in that respect is wholly pleonastic. 'Exactly' adds nothing to the resemblance that has not already been specified in saying that the two things resemble one another 'in some respect'.

This is Place's only reservation with respect to the contents of this second section of Martin's first chapter in which criticism is directed at Armstrong's theory of universals and laws of nature. There is, however, a comment which he would wish to contribute from his perspective to the discussion of Armstrong's theory of universals.

What puzzles Place about this theory is the apparent contradiction between the claim that universals are something over and above resemblances between their instances and the claim that is also made that such universals exist only in so far as instances of them exist. He thinks that what makes such a view seem plausible is the apparent *implausibility* of the conceptualist alternative. For if, as the conceptualist maintains, kinds/universals are mind-made, wherever the words 'kind' or 'universal' occur, we ought to be able to substitute words like 'concept' or 'intension' without loss or change of meaning. Yet clearly we cannot do this.

The solution to this problem favoured by Place is that terms such as 'kind' and 'universal' look at a classification from the point of view of the object classified. They focus on the features particulars need to have in common to be recognised as members of a class. Terms such as [p.111] 'concept' and 'intension', by contrast, focus on the mind's disposition to classify things in a particular way. The consequence of this difference of focus is that we predicate existence of kinds and universals under different circumstances from those under which we predicate existence of concepts and intensions. A concept or intension is said to exist in so far as some being has a disposition to classify things in that way. A kind or universal is said to exist in so far as there exist instances of that kind. Since instances of a kind can pre-exist any disposition on the part of an organism to classify things in that way, this usage forces us to say that kinds/universals existed long before the corresponding concept existed. Hence, the logicist/platonist/realist conclusion that universals exist independently of our conceptual scheme. The conceptualist reply has to be that what criterion of existence we employ is just a matter of which aspect of the classificatory process we want to focus in on: the existence of the objects classified or the existence of an ability to classify them in that way.

Martin's Disagreements with Place

It seems to Place that Martin's criticism of his view of the relation between dispositional and categorical properties is based on a misunderstanding. He supposes that whereas on his own view every dispositional property has a categorical or, as he would say, "qualitative" aspect, for Place there are two distinct properties such that the categorical property stands as *sole cause* to the dispositional property as effect. That this cannot be Place's view follows from the fact that he agrees with Martin in holding that without a dispositional property linking the two interacting objects, there can be no causal relation between them. That this must be so follows from Place's contention⁶

- that causal necessity is a matter of the truth of a causal counterfactual (the Hume-Mackie principle),
- that the truth of a causal counterfactual depends on the truth of a causal law statement governing the relation between states or events of the cause type and states or events of the effect type,
- that dispositional statements (statements ascribing a dispositional property to a particular substance) are causal law statements restricted in their application to the individual concerned and to the period of time over which the disposition persists (the Ryle principle),
- that the truth of such an individual dispositional statement is all that is required in order to 'support' the truth of a causal counterfactual (the Goodman principle), and [p. 112]
- that the possession by the individual of a dispositional property consists in the existence of a state of affairs which cannot be characterised other than by saying that it is the state of affairs whereby the individual dispositional statement is true (an application of the Martin 'truthmaker' principle - above p. 15).⁷

It is a consequence of these principles that in order to explain how the structure of a substance contributes to its dispositional properties, in order, as it were, to get a causal relationship going between the structure

of the property-bearer and its dispositional properties, the structure must have dispositional as well as categorical properties. Armstrong's contention that all properties are ultimately categorical (in the sense of non-dispositional) cannot be right.⁸ As Martin puts it,

The dispositional is as real and irreducible as the categorical. (above p. 74)

On that point Place and Martin are in complete agreement.

Weak Verificationism

Holding, as he does, that all properties have both a categorical and a dispositional aspect, Martin is concerned to deny the existence of "pure dispositional properties" by which he means the kind of disposition described by Ryle⁹ which is simply a matter of what *would* happen if certain contingencies were to be fulfilled. He attributes the belief in such properties (above p. 81) to what he calls "weak verificationism." Place is not entirely sure how these remarks are intended to apply to his own position. 'Verificationism' in the sense intended here is presumably the doctrine that the meaning of a predicate does not extend beyond the observations which confirm or which, if made, *would* confirm the truth of a statement in which it is predicated of something. 'Strong verificationism' would then be a version of this doctrine in which the meaning of the predicate extends no further than the *actual* observations which have confirmed statements containing it in the past. 'Weak verificationism' would then be the more plausible version of the doctrine which allows the meaning of the predicate to extend to events and states of affairs which, if observed, *would* verify the statement. Martin appears to believe that adherence to some form of weak verificationism is the only motive one could have for believing in pure dispositional properties which consist in nothing over and above what would or would be liable to happen, if certain conditions were to be fulfilled. [p.113]

It is true that Place does use, in support of a purely dispositional account of dispositional properties, the argument that the only way to verify a statement asserting the existence of such a property is to carry out an experimental test which permits observation of what *does* happen when the relevant conditions are fulfilled (see above p. 29). But that does not commit him to the verificationist view that there is nothing over and above the observations which, if they were made, would verify a statement asserting its existence whose existence is asserted by a statement containing a predicate ascribing such a property to an individual. The claim is that the existence of a dispositional property is a matter of what is liable to *happen*, not of what is liable to be observed.

Place accepts the actual here and now existence of dispositional properties; but all that exists *now* is a state of the property-bearer, a substantive law of its nature, which can be specified *only* by reference to its potential future manifestations. He is persuaded that *that* is all there is to it, not by consideration of what can and cannot be observed at the level of common sense, but by the linguistic fact that is as far as the entailments of dispositional predicates (predicates ascribing dispositional properties to a substance) extend. To say that the glass is brittle is not a mere ungrounded prediction of what is liable to happen in the future. It is to say something about the glass. But what is said about the glass contains no mention of its structure, whether micro or macro. According to Place, all that is *entailed* by such a predicate is the probable existence of manifestations of the disposition whenever the relevant conditions are fulfilled. Of course, the observations which verify the existence of such a disposition are observations either of the occurrence or existence of a manifestation of the disposition on a particular occasion when the relevant conditions *have* been fulfilled, or of the absence of such a manifestation in otherwise similar circumstances when the conditions have *not* been fulfilled. But these observations tell us only what happened on those particular occasions. They are not, and could not conceivably be, observations of what would happen if they were to be fulfilled at some time in the future or had been fulfilled on some occasion in the past.

The Sharpness Example and Martin's "Limit View"

We have seen that Place agrees with Martin in holding that the dispositional cannot be reduced to what Armstrong calls "the categorical" and he calls "the qualitative", meaning by that what does not project, as [p.114] does the dispositional, beyond the here and now. He also agrees that the categorical/qualitative cannot be reduced to the dispositional. Both are essential for causation. But Martin's "Limit View" makes two further claims which Place cannot accept:

1. that every property has two aspects, a categorical/qualitative aspect and a dispositional aspect, that there are no properties that are purely categorical/qualitative or purely dispositional, and
2. that properties vary along a dimension which extends in one direction towards the extreme and uninstantiated limit of pure categoricity/qualitativity and in the other towards the extreme and uninstantiated limit of pure dispositionality.

With regard to (1) Place accepts that there are *some* cases where a property has two aspects, a dispositional aspect and a structural aspect which is at least partly categorical in the sense of having no dispositional import. A case in point is the example of the sharpness of a knife which we encountered in a discussion in note form (note 5, p. 123 [below]) of Armstrong's suggestion that the properties of the whole might be said to "supervene on" the properties of the parts.¹⁰ It was argued in this connection that this suggestion needs to be evaluated in the light of a paradigm case of supervenience, that in which the goodness of knife or needle is said to "supervene on" its sharpness. It now appears that the sharpness of a knife or needle provides, at first sight at least, an excellent illustration of Martin's contention that properties have both a categorical and a dispositional or modal aspect is the case of the sharpness of a knife or needle. Here, on the face of it, we have a property with two aspects: a categorical/qualitative/structural aspect - the fineness of the edge or point - and a dispositional/modal aspect - the object's propensity to cut or pierce. Moreover, the categorical/qualitative/structural aspect of sharpness, unlike that of most other dispositional properties, is a feature of the *macrostructure* rather than the microstructure of the object. It may, therefore, give us a handle on how an elementary particle, such as the quark, which has no known microstructure can nevertheless have a dispositional property, its 'charm', without which we would have no evidence of its existence.¹¹

On closer inspection, however, this example appears less apt for Martin's purpose. A serious discrepancy between the example and the requirements of Martin's "Limit View" comes to light when we observe that to say of an edge or point that it is fine and to say of it that it is apt for the purpose of cutting or piercing is not to say the same thing. For, although the fineness of an edge or point is a necessary condition for a [p. 115] thing's being apt to cut or pierce other things, in order to have that dispositional property, the object must also be harder and more rigid than the object to be cut or pierced. This shows us three things:

1. that the concept of 'sharpness' is an amalgam of two distinct concepts,
 - the structural concept 'having a hard, rigid and fine edge or point', and
 - the purely dispositional concept 'being apt to cut or pierce',
2. that the relation between the features of an object which are subsumed under these two concepts is a causal relation which, if Hume is right, entails that they are "distinct existences" and not, as Martin claims, aspects of one and the same thing, and
3. that the structural property, having a hard, rigid and fine edge or point, on which the existence of the dispositional property, apt for cutting and piercing, depends is itself a combination of three distinct properties only one of which, the fineness of the edge or point, is categorical/qualitative; the hardness and rigidity are both dispositional.

It is Place's contention that there is an intimate and universally applicable connection between the fact that the macro/microstructure of an object stands as cause to its dispositional properties as effect and the fact that the relevant structure consists of two parts or aspects, one categorical (in the sense of having no projection beyond the here and now) and one dispositional. For, contrary to Martin's allegation (above p. 81), Place not only

... allow[s] dispositional properties to play a basic role in causality,

he insists that the existence of a causal relation, any causal relation, depends on the coincidence of two causal factors, one categorical/structural, the other dispositional/modal. As argued in an earlier chapter (above p. 20), the categorical/structural element here is a matter of the spatial *relations*, either of contact or, in the case of relations such as gravitation and magnetic attraction, proximity between two substances, the causal agent and the causal patient, rather than anything properly describable as a 'categorical' or, for

that matter, a 'qualitative' property. But such proximity or contact is not by itself sufficient for a causal relation to exist. To bring the causal relation to life, as it were, there must be a dispositional property governing the interaction between the two substances which provides what Hume¹² has called the "cement" binding the cause and the effect together. [p. 116]

Microreductive Explanations of Dispositional Properties

This causal analysis of the relation between the structure of the property-bearer and the dispositional property it bears puts us in a position to address the issue which Martin has sought to avoid by his choice of the example of the microstructureless elementary particle, the problem of the relation between the properties of the whole and the properties of and arrangement of the parts of which the whole consists (its microstructure). In analysing this relation, a useful starting point is Aristotle's distinction between the *form* (μορφή) and *matter* (ύλη) of a *substance* (ούσία). In the light of this distinction we can say that the microstructure of a substance is a complex composed of

1. the purely categorical existence of the parts of which the substance is composed (Aristotle's ύλη),
2. the purely categorical existence of the spatial relationships between the parts (the purely categorical aspect of Aristotle's μορφή), and
3. the modal existence¹³ of the dispositional properties of the parts of the substance whose interactions with one another, when juxtaposed in the way they are, maintain the integrity of the whole, and give it the dispositional properties which govern its interactions with other things which come into contact with it or penetrate it from without (the functional/dispositional aspect of Aristotle's μορφή).

As an illustration of this complexity we can cite Molière's¹⁴ familiar example of the hypnotic properties or "*virtus dormitiva*" of opium. Thus the property whereby opium puts an organism which consumes a sufficient quantity of it to sleep depends on

1. the chemical composition of opium,
2. the biochemistry and physiology of the brain, and
3. the way the two interact when they come into contact.

A striking feature of this example is that none of the three factors which give opium its dormitive power is purely categorical/qualitative. Like the dormitive power itself, the way opium interacts with the living brain is a pure dispositional property, a matter, not of what is, but of what would happen if... Both the chemical composition of opium and the biochemistry and physiology of the brain have categorical/structural components; but neither are purely categorical/structural. Both are partly a matter of [p. 117] the purely categorical existence of certain molecules standing in certain spatial relationships to one another and partly a matter of the dispositional properties both of the individual molecules and of the sub-structures of which they form part. Notice also that it is not just the microstructure of opium which gives it its dormitive power. The microstructure of the brain is equally important.

For, although language forces us to ascribe it to one substance or the other, the dispositional property can be seen as a property of the interaction between the two substances, a matter of what tends to happen when they interact. Thus the property of opium whereby taking it puts organisms to sleep is the same property as the property of organisms whereby they are put to sleep by taking opium. It is the property which, in Hume's phrase, "cements" their interaction together. Viewed in this way, dispositional properties are properties neither of the causal agent nor of the causal patient, but of the causal interaction between the two.

The problem with this way of formulating the matter is that such interactions are not situations that currently exist. They are possible situations which may or may not arise in the future and which, on the other side of the interaction, may involve indefinitely many possible "partners", to use Martin's term,¹⁵ some of whom may already exist, while others do not yet do so. In order to participate in a causal interaction, if and when it occurs, the partner must not only exist, it must also possess the dispositional property which is the counterpart of that born by the substance to which the dispositional property is ascribed in the first place. But so long as the disposition remains unmanifested, all that need exist for the

dispositional statement to be true is the property and its bearer.

Degrees of Pure Categoricality/Dispositionality - The Example of Colour

Another feature of Martin's Limit View which is supported by some examples, but not by all, is a variation between properties in the extent to which the categorical/qualitative or dispositional aspect is more prominent. This variation can be seen in the different varieties of the property of being coloured. On a physical realist theory of colour such as that to which all three participants in this debate would subscribe, the colour of an object is primarily a matter of the wave length of light it is categorically emitting, transmitting or reflecting. However, there is a difference in this respect between the colour of a reflective surface or a transparent medium and that of a light source. The former is dispositional in that the colour of such objects is manifested only when light is reflected from the surface or transmitted by the medium. The colour of a light [p. 118] source is more categorical, since it consists in the wave frequency pattern of light radiation *currently* being emitted by the source. But even here there is an element of dispositionality. For the relation between a light source and the radiation it emits is a causal relation; and, as all the participants in this debate would presumably concede, the difference between a causal relation and mere spatio-temporal conjunction is, at least in part, a matter of what would or would not happen, if things were different from the way they are. Moreover, no sensible account can be given of why we classify light, whether emitted, transmitted or reflected, in the way we do without some reference to its disposition to differentially affect light sensitive surfaces such as retinas and photographic plates.

However, there is no reason to think that this complex interweaving of pure categorical and dispositional elements in different proportions is typical of properties in general. It would appear to have much more to do with the complexity of the causal relations involved in visual perception and the physics of light than with any simple gradation along a dimension with pure categoricality/qualitativity at one end and pure dispositionality at the other, as postulated on Martin's Limit View. Moreover, the very fact that analysis of that complexity is possible presupposes that a clear differentiation between the categorical/qualitative and the dispositional at the conceptual level is not only possible, but is readily achieved. This in turn suggests that, corresponding to the clear concepts of a pure categorical and a pure dispositional property, there are actual instances of such things.

Pure Dispositional Properties: Not Enough Categoricality To Go Round

From Place's perspective there is an argument which leads to the conclusion that, whatever may be true of pure categorical/qualitative properties, pure dispositional properties must exist. For if he is right in thinking

- that the relation between a dispositional property and the structural properties, whether macro or micro, which underpin it is a causal relation, and
- that, consequently, these structural properties must include a dispositional as well as a purely categorical element,

the structural properties cannot constitute either the categorical essence of the disposition as required by Armstrong or its categorical/qualitative aspect as required by Martin. If the relation is a causal one, it must, [p. 119] according to Hume's principle, be a relation between "distinct existences". It cannot be a relationship like that between a character in a drama and the actor who plays the part, as proposed by Armstrong, or between the two sides of the same coin, as proposed by Martin. Moreover, if the structural properties are as much dispositional as they are purely categorical, it might be argued that *they* constitute two aspects of a single property; but that would leave the dispositional property they underpin without a pure categorical partner. If the fineness of an edge or point is to be the categorical/qualitative aspect of its hardness and rigidity, it cannot also function as the categorical/qualitative aspect of its aptness to cut or pierce. If the arrangement of atoms in a molecule of opium is to constitute the categorical/qualitative aspect of the binding and repelling properties of those atoms, it cannot also constitute the categorical/qualitative aspect of the opium's propensity to put those who take it to sleep. It seems that there is just not enough categoricality/qualitativity around to supply every dispositional property with its own categorical/qualitative partner, its categorical basis as required by Armstrong's theory, its categorical/qualitative aspect as required by Martin's. But a dispositional property which has no categorical/qualitative partner is a pure dispositional property, something whose existence both theories deny.

Such dispositional properties are 'pure' in the sense that they do not *consist* in anything over and above a projection or orientation (there's no avoiding metaphors here) of the property-bearer towards what would happen, if in the future certain conditions were to be fulfilled. They are not pure in the sense of H. H. Price's supposition¹⁶ that there are dispositional properties which have *no* "categorical basis" whatsoever. All such properties have a basis in the structure, either macro or micro, of the property-bearer. It is just that, on this view, the dispositional property and its structural basis are two distinct and causally related things, not one and the same thing.

While the numerical imbalance between categorical and dispositional properties in favour of the latter suggests that some, if not all, dispositional properties are pure in the relevant sense, it turns out that there is no comparable evidence for the existence of the pure categorical properties, which Armstrong's theory demands and which, while rejected by Martin, would be predicted by his theory were he to concede the existence of pure dispositional properties. All the likely candidates are what Locke, following Galileo, calls "primary qualities", things such as shape, size, internal structure, motion and stasis, all of which are a matter of the volume of space occupied by a substance at a moment or over a [p. 120] period of time, and which consist in part of dispositional elements, such as the propensity to repel intrusion into the substance or the propensity to prevent its collapse. Moreover, as we have seen (above p. 27), the purely categorical aspect of these properties appears to reduce to a spatial arrangement, either, as in the sharpness case, to the shape of the property-bearer or to the spatial position of and the spatial relations between the parts of which its microstructure is composed, rather than to anything that would qualify as a specifically categorical/qualitative *property*.

The Place Perspective on the Ontology of Causation

As has been repeatedly emphasised in the course of this chapter, what leads Place to agree with Martin that

The dispositional is as real and irreducible as the categorical. (p. 74)

is that the theory of causation to which he subscribes requires both pure categoricity, in the form of spatial contact or proximity between the causal agent and the causal patient, and dispositionality, governing the interaction between the two, as a *sine qua non* for the occurrence or persistence of the effect. This account of the mechanics of causation is laid out in the paper which initiated the present debate.¹⁷ But that analysis is conducted entirely in terms of causal *language*, not in terms of the underlying causal *reality*; whereas it is the underlying reality that is the issue of this debate. It is, therefore, incumbent on Place to make clear the ontological implications of construing the linguistic epistemology of the causal relation in this way. Given the principle which all three parties to the debate accept, Martin's "truthmaker" principle, the ontological commitments of Place's position are clear. At the linguistic level Place is claiming

- that to say that one event or state of affairs *A* stands as cause with respect to another ("distinct") event or state of affairs *B*, is to say that if *A* had not occurred or existed, *ceteris paribus*, *B* would not have occurred or existed, and
- that the truth of that causal counterfactual is a deduction from an individual dispositional statement of the form:

If at any time, so long as the disposition persists, an event or state of affairs of the *A* type were to occur or exist within the life history of the individual in question, an event or state of affairs [p. 121] of the *B* type would or would probably exist or occur which, *ceteris paribus*, it would not otherwise have done.

On the truthmaker principle, the deduction of a causal counterfactual from an individual dispositional statement means that the same truthmaker, the state of affairs whose existence makes the dispositional statement true, will account for the truth of both statements. But, because the application of the causal law/dispositional statement is restricted to that portion of the life history of the individual over which the disposition obtains, there has to be a separate truthmaker for the causal law statement in the case of each individual who possesses the disposition in question and, where the disposition is present only intermittently, in the case of each period over which it applies. In this respect, Place's view contrasts with

that of Armstrong who postulates a single Law of Nature whose existence makes true a universal law statement covering all instances where the same disposition or disposition type forms part of the life history of the individual.

It thus appears that, on this view, the possession by a particular substance of a dispositional property is the truthmaker of an individual dispositional/causal law statement which supports any causal counterfactual statement involving a manifestation of that disposition by the substance in question, and that there is no other way whereby a causal counterfactual statement *can* be supported.

The evidence (above pp. 116-117) that dispositional properties belong to the interaction between substances rather than to the substances to which they happen to be assigned by language is a remarkable vindication of the notion that dispositions constitute the "cement" which binds cause to effect. However, it must be admitted that the kind of causal interaction envisaged both by the description given of the phenomenon and by the examples cited is not the kind of causal relation envisaged by Place when he argues, against Martin's dual aspect theory, that the structure of a substance stands as cause to its dispositional properties as effect. For this is not an interaction between two distinct and separate substances, as when one billiard ball strikes another and propels it forward. It is an interaction within a single substance between its structure and its dispositional properties.

The notion that there can be and are causal relations between different features of the same substance is undoubtedly problematic in that it appears to conflict with Hume's principle whereby the causal relation holds between "distinct existences." This is not a great problem in the majority of cases in which the structure which stands as cause to a [p. 122] dispositional property of the whole as effect¹⁸ is the microstructure of the property-bearer. For, in this case, the causes of the possession of a dispositional property by the whole are properties, not of the whole, but of its parts, their arrangement and *their* dispositional properties.

A more difficult case is that of the sharpness of a knife or needle discussed above. Here the properties of hardness, rigidity and fineness of edge or point which stand as cause to the propensity to cut or pierce as effect are all properties of the same substance. It is arguable, moreover, that the effect, the propensity to cut or pierce, is simply a special case of the propensity to resist penetration or bending by other things in which hardness and rigidity consist. The only consideration which supports the view that these dispositional properties constitute "distinct existences" in the sense of Hume's principle is the fact that it is only when combined with the categorical property, fineness of edge or point, that hardness and rigidity generate the propensity to cut or pierce. But perhaps that is enough. That, certainly, has to be Place's view.

Conventional wisdom which in this case has its source in Hume's discussion of the matter holds that two situations *A* and *B* are "distinct existences" if under *some* description it is not self-contradictory to suppose that situation *A* exists or occurs and situation *B* does not.¹⁹ The qualification "under some description" is required in order to rule out cases where, for example, *A* is described as a cause of *B* in which case the description makes the denial that *B* existed or occurred self-contradictory. In the present case, the supposition that a point or edge is fine, hard and rigid, but is not apt to pierce or cut, might seem self-contradictory. Consequently, the case for regarding the structural properties as existences distinct from the disposition to cut or pierce which they engender has to rest on the fact that there are three different properties at work here such that it is not only conceivable, but a matter of experimental demonstration, that in the absence of any one of them, the dispositional property either ceases to exist or fails to materialise.

NOTES

1. W. v. O. Quine 'On what there is', *Review of Metaphysics*, 1948. Reprinted in *From a Logical Point of View*, Cambridge, MA: Harvard University Press, 1953, Chapter I.

2. There is an interesting difference in this connection between Place and Martin concerning the nature of propositions and propositional attitudes. According to Place (U. T. Place, 'On the social relativity of truth and the analytic/synthetic distinction.' *Human Studies*, 1991, 14: 265-285), [p. 123]

there is nothing to a proposition or thought over and above the actual and possible sentences which are or could be used to say the same thing in different ways on different occasions." (Place, 1991, *op. cit.*, p. 273)

It is an implication of this view that animals and human infants who lack the ability to construct sentences formulate no propositions and can only be said to have a propositional attitude, such as knowing, remembering or believing that so and so is the case, by invoking the fiction that a being that cannot construct sentences can do so. Martin by contrast (C. B. Martin 'Proto-language' *Australasian Journal of Philosophy*, 1987, 65, 277-

289) argues that the representations which control the behaviour of pre-linguistic organisms have a structure which is sufficiently similar to that of the sentences of human natural language for terms such as 'proposition' and 'propositional attitude' to have a literal non-fictitious application the mental life of such creatures. However, this difference between Place and Martin does not affect the agreement between them over the issue of linguisticism, since on both views propositions are construed as *representations* of reality. They form part of the reality represented only *qua* features of the linguistic or, in Martin's case, language-like mental representations constructed by living organisms.

3. U. T. Place, '[Causal laws, dispositional properties and causal explanation](#).' *Synthesis Philosophica*, 1987, 3, 149-160.

4. Parts here in the sense of discrete functional components rather than arbitrary slices or portions. Place is indebted to David Sanford for drawing his attention to this important distinction.

5. Armstrong (personal communication) comments:

The properties of the whole might still *supervene on* the parts, their properties and relations to each other.

Place replies:

This is an interesting suggestion. However, consideration of the example of the good picture, given by Hare (*Language of Morals*, Oxford, Clarendon Press, 1952, pp. 80-81) when he introduced the term 'supervenience,' suggests that it is not the kind of relation which applies in this case. In Hare's example the goodness of the picture 'supervenes on' some unspecified aspect of its visual appearance. In this case, both the goodness and the unspecified aspect of the visual appearance of the picture are properties of the picture. Neither is a property of the picture's microstructure. Moreover, although we say, in such a case, that it is its visual appearance which makes it a good picture, this is not a causal relation. This can be demonstrated by considering a comparable example to that given by Hare in which the subvenient property *is* specified: the case where the goodness of a knife supervenes on its sharpness. It should be clear that the goodness of the knife and its sharpness are not distinct causally related existences in the way that the horsepower of an engine and the cubic capacity of its cylinders are distinct causally related existences. To say that the knife is sharp is part of what it *means* to say that it is a good knife. To say that its cylinders have a certain cubic capacity is *not* part of what it means to say that an engine has a certain horsepower. An engine with cylinders of a different cubic capacity or with no cylinders at all [p. 124] could have the same horsepower. No knife that was not sharp could be a good knife.

6. Place, 1987, *op. cit.*

7. If this conception of dispositional properties appears excessively paradoxical, as it apparently does to Armstrong (personal communication), it may help to say that, on Place's view, dispositional properties (construed, following Ryle, as laws governing the behaviour of the property bearer in its interactions with other things) stand to dispositional statements in the same relationship that Armstrong's strong universal Laws of Nature stand to the laws formulated by scientists.

8. Armstrong (above p. 91) admits that "structures such as bondings, the sort of structures that are relevant to dispositions such as brittleness, are, as Martin says, 'evidently intrinsically dispositional' themselves." This leads him to "plead for a grain of salt to be applied to talk of categorical structures directly underlying *ordinary* dispositions." Presumably the pure categoricity in which, he thinks, dispositionality really consists emerges only at the level of what he calls elsewhere (above p. 97) "total science."

9. *op. cit.*

10. Place is indebted to a discussion on the topic of supervenience with his colleague in the Leeds University Philosophy Department, Dr. Harry Lewis, for this example.

11. Unfortunately, although the properties of an object which give it the ability to pierce or cut are properties of the *macrostructure* rather than the microstructure, one of them, the dispositional property of hardness, requires and receives an explanation of its existence in terms of the *microstructure* of its owner. This suggests that even if a macrostructural explanation were available for the dispositional property of a fundamental particle which *has* no microstructure, that macrostructural explanation would have to include another dispositional property for which, in the absence of a microstructure, no explanation could be given. In that case we would simply have to accept that elementary particles have dispositional properties which constitute an inexplicable brute fact about the way the universe is constituted.

12. D. Hume *An Abstract of a Treatise of Human Nature*, J. M. Keynes and P. Sraffa (eds.) Cambridge: Cambridge University Press, 1938. Hume, however, takes the "cement of the universe" to include the essentially psychological principles of Resemblance and Contiguity, as well as that of Causation. The restriction of this powerful metaphor to Causation alone is due to John Mackie (J. L. Mackie *The Cement of the Universe*. Oxford: Clarendon Press, 1974).

13. Strictly speaking, as Martin points out, sentences which assert the existence (possession by a substance) of a dispositional property are no less categorical than those which assert the existence of a categorical/qualitative property, such as the possession by a substance of a certain shape. What is asserted by such sentences is the (categorical) existence of a state of affairs which *makes true* a modal sentence describing what would happen if certain conditions were to be fulfilled. To speak of this as "modal existence" is to collapse three things into one, (1) the (categorical) existence of a dispositional property, (2) the truth of a categorical sentence asserting the existence of that state of [p.125] affairs, and (c) the truth of a modal sentence which characterises that state of affairs, but does *not* assert its existence.

14. *op. cit.*

15. I take it that Martin is making the same point when he speaks (see pp. 135-6 below) of "reciprocal disposition partners for mutual manifestation." However, it appears from personal discussion with him that the "partners" he has in mind are the properties rather than, as assumed here, the property-bearers. This discussion also led to new light being thrown on the distinction deployed in this passage between the causal agent and causal patient. Since in every causal interaction both parties are changed as a consequence, the distinction between the causal agent and the causal patient is a matter of which of the two is changed most (the patient) and which comes off relatively unscathed (the agent). In a case where the changes are more or less equal, as when a cube of salt is dissolved in a bowl of water (Martin's example), it is a matter of which effect, the disappearance of the cube or the water's becoming salty, is of interest to the speaker.

16. H. H. Price *Thinking and Experience*, London: Hutchinson, 1953, p. 322, cited by Armstrong, 1968, *op. cit.*, p. 86.

17. Place, 1987, *op. cit.*

18. As evidence that dispositional properties whose source lies in the microstructure of the property-bearer are a very substantial majority of all cases, one may cite the fact that all the dispositional properties mentioned by Geach (1957, *op. cit.*, Chapter 5), the brittleness of glass, the flexibility of rubber, the magnetic properties of an iron bar, the dormitive power of opium, are of this type, the fact that all the behavioural and developmental dispositions of living organisms are, and the fact that much of the prestige of the empirical sciences depends on their track record in laying bare the microstructural basis of dispositional properties which would otherwise have remained totally mysterious.

19. Place is indebted to David Sanford (personal communication) for pointing out that in an earlier version of this sentence he had inadvertently committed himself to a view which he had conspicuously rejected more than forty years earlier (U.T. Place, '[Is consciousness a brain process?](#)' *British Journal of Psychology*, 1956, 47, 44-50), namely the view that two logically distinct descriptions cannot refer to one and the same thing.