[Unpublished summary of the positions adopted in the book *Dispositions: A Debate*. UTP hoped in vain that his co-authors would fill in their positions.]

DISPOSITIONS: A DEBATE

D. M. Armstrong, C. B. Martin and U. T. Place, T. Crane (Ed.) (1996). Routledge

Summaries of the positions adopted by the three authors
by U. T. Place

Principles on which all three contributors to the debate appear to agree

1. Realism
2. The Truthmaker Principle
3. The Regularity Theory of Causation is false
4. Dispositions are causal
5. (Armstrong and Place only) The Principle of Ontological Economy (Ockham's Razor)

1. Realism

Though they disagree about the kinds of thing that do so, all three contributors to this debate are realists in that they insist that most of what exists exists independently of both human experience and human conception.

2. The Truthmaker Principle

Though they disagree on the issue of its application to the truths of mathematics and to analytic truths in so far as the existence of such a category of statement is accepted, all three contributors to the debate accept that all statements that are contingently true are made true by virtue of the existence independent of human observation and conception (except of course in those cases where what is referred to is some act or product of such observation or conception) of some event or state of affairs whose existence the statement asserts. For Armstrong all truths both necessary and contingent require the existence of a truthmaker. Place draws a distinction between necessary/analytic propositions which are made true by linguistic convention alone and require no truthmaker and contingent/synthetic propositions which are made true partly by linguistic convention and partly by the existence of a truthmaker. This difference is linked to the different views they take of the existence of abstract objects such as numbers. If, as Armstrong does, you accept the existence of abstract objects, then the existence of such objects can act as truthmakers for the truths of mathematics. If like Place you deny that such objects exist in anything other than a "being the value of a variable" sense, such truthmakers are unavailable for the truths of mathematics which therefore have to be interpreted as analytic truths requiring no truthmaker.

There is also a difference of view between Armstrong and Place over the truthmakers for negations. According to Armstrong, negations are made true by the existence of everything else. According to Place, it is the *non-existence* of the situation which, if it existed, would make its contradictory true which makes the negation true. He accepts, of course, that to say, e.g., that no tame tigers exist *implies* that some wild ones do, and that *Some wild tigers exist* is made true by the existence of some wild tigers. But the existence of some wild tigers is perfectly consistent with the existence also of some tame ones and, hence, with the falsity of *No tame tigers exist*. Moreover, although it *implies* the existence of some wild tigers, *No tame tigers exist* would still be true if there were no tigers at all, whether wild or tame. *No tame tigers exist* implies *but does not entail* that some wild ones do.

3. The Regularity Theory of Causation is false

Though they disagree as to what should replace it, all three contributors to the debate agree in rejecting the notion which, though he struggled hard to find a way to avoid it, is indelible associated with Hume, the notion that cause and effect is nothing more than a constantly repeated spatio-temporal conjunction of two event or state of affairs types.

4. Dispositions are causal

Though Armstrong and Martin would, for different reasons, be unhappy with Place's view that dispositions cause their manifestations, all three contributors to the debate agreed in viewing dispositionality as an essentially causal notion.

5. The Principle of Ontological Economy (Ockham's Razor)

A principle which is accepted by Armstrong and Place, but apparently not by Martin, is the principle which is enshrined in Ockham's razor, the principle that entities should not be multiplied beyond necessity and, hence, that economy is the principal virtue to be aimed at in constructing an ontology. Martin, by contrast, stresses richness rather than economy as the principal virtue of the account he proposes.

Principles differentiating Place's position from those of Armstrong and Martin

1. Conceptualism
2. The counterfactual theory of causal necessitation
3. Dispositional statements 'support' causal counterfactuals
4. Dispositions are irreducibly subjunctive and intentional
5. Every effect requires categorical juxtaposition and reciprocal dispositional properties as its immediate causes

1. Conceptualism

Although somewhat peripheral to his theory of dispositions, perhaps the most fundamental difference between Place's position and those Armstrong and Martin and one which is discussed extensively in the course of this debate is his *conceptualism*, the belief that universals are the products of the classificatory behaviour of living organisms. Although conceptualism agrees with nominalism in denying the existence of universals considered as abstract objects over and above their instances, Place rejects, as indeed does Armstrong, the view advocated by Aristotle and Locke which holds that the ability to abstract universals from encounters with the particulars which, once the universals are formed, are accepted or rejected as instances of them is an exclusively human ability intimately connected with the linguistic abilities of that species. This leads him to deny what the true nominalist asserts, namely that there are no universals in the absence of language.

Place's insistence on the conceptual abilities of pre-linguistic organisms is supported by appeal to empirical studies of concept formation in animals. But it is also motivated by the need to invoke the Darwinian principle of variation and natural selection, particularly as extended by Thorndike (1898; 1911) to learning by the process of trial and error-correction and by Skinner (1938) to the process whereby stimulus classes (concepts) are formed by the process of selection by consequences (operant discrimination learning), in order to defeat the Kantian version of anti-realist scepticism. Kant argues that if, as he thinks we must, we conclude that the concepts we deploy in order to make sense of our experience are themselves a product of the mind, and if, as he also thinks, we have no alternative but to conceptualise things in that way, we can never know whether or not that conceptual scheme presents the world to us as it is "in itself." That sceptical argument can only be defeated, Place thinks, by a Darwinian argument which shows that complex living organisms would not have survived long enough to pass on their genes to the next generation, if they had not had the ability to develop a conceptual scheme which, in Skinner's words "tak[es] account of the natural lines of fracture along which behavior and environment actually break" (Skinner 1938 p.33).

It will be apparent from this that for Place a universal is a concept and that having a concept is a disposition, the propensity of a living organism to classify the particulars it encounters in its external and to a lesser extent its internal environment into groups according to the kinds of causal relation into which they enter. Since the behaviourally important causal relations which distinguish one kind of thing from another are likely to be the same for all members of a given species and to a considerable extent for members of all animal species whose brain is sufficiently well developed to allow them to sort particulars in this way, there is considerable uniformity in the conceptual schemes developed by different organisms, even before such conceptual uniformity becomes a *sine qua non* of effective linguistic communication.

However, it is not just the shared motivations of living organisms and the conditions required for effective linguistic communication which ensure that by and large our conceptual scheme "carves nature at

its joints" or follows "the natural lines of fracture" whichever metaphor is preferred. As Martin has repeatedly emphasised, whenever a disposition is manifested, its manifestation is also a manifestation of another disposition, its "reciprocal disposition partner." Thus every time a particular is classified as instance of a given universal, that event is a manifestation both of the organism's disposition to classify such things in that way *and* of the disposition of such things to lend themselves to being classified by organisms in that way. The organism's disposition to classify such things in that way is its *concept*. The disposition of such things to lend themselves to being classified by organisms in that way is what J. J. Gibson (1979) has called their "*affordances*."

2. The counterfactual theory of causal necessitation

Place's view of the role of dispositions in relation to causation has its source in the counterfactual theory of causal necessitation first formulated by David Hume in his final discussion of the cause and effect relation in the *Enquiry Concerning the Human Understanding*. On this view, to say that event or state of affairs *A* is a cause of another event or state of affairs *B* is to say that, other things being equal, if *A* had not occurred or existed as and when it did, *B* would not have occurred or existed as and when it did.

Although the causal counterfactual mentions two events neither of which existed at the time, its semantic function is to characterise the nature of the relationship between two events or states of affairs *did* exist at that time by subsuming it under the subjunctive conditional/causal law statement from which it is deduced and which is said to "support" or "sustain" it.

3. Causal law statements 'support' causal counterfactuals

Place's third and fourth principles derive from Nelson Goodman's (1955) book *Fact, Fiction and Forecast*. The third principle holds that since we can never observe what would have happened if things had different from what they actually were, the only way to determine the truth of a causal counterfactual is to deduce it from a causal law statement or subjunctive conditional. In order to do this a *causal law statement* must consist of two subjunctive conditionals:

(a) a *positive* subjunctive conditional of the form

> *If at any time an event or state of affairs of the cause type were to occur or exist, with all other factors required for its occurrence or existence being present, and nothing intervening to prevent it, an event or state of affairs of the effect type would very probably occur or exist.*

(b) a *negative* subjunctive conditional of the form

> *If at any time, with all other factors required for its occurrence or existence being present, and nothing intervening to prevent it, an event or state of affairs of the cause type were* not *to occur or exist, an event or state of affairs of the effect type would not occur or exist.*

From (a) we can deduce the probable existence of an event or state of affairs of the effect type when, on a particular occasion, an event or state of affairs of the cause type occurs or exists, thereby making the observed conjunction between the two more than a coincidence and justifying the inference to its existence in a case where this cannot be directly determined by observation. From (b) we can deduce the negative causal counterfactual to the effect that if, on that occasion, all other things being as they were, an event or state of affairs of the cause type had not occurred or existed, as it did, the event or state of affairs of the effect type would not have existed, as it did.

Although it conforms to the principle whereby the particular is deduced from the universal, the second of these two deductions is non-canonical in the sense that it fails to conform to standard quantification theory. This is because the standard theory has only two quantifiers, a universal quantifier usually rendered in English as 'For all *x*' and a particular/existential quantifier usually rendered as 'There exists an *x*'. It has no way of rendering a universal quantifier of the form 'If at any time there were to exist an *x*' or a deduction therefrom which predicts what *would have* occurred or existed if things had been other than in fact they were. In Place's view this difficulty is not satisfactorily overcome by postulating the existence of the non-existent, whether in the form of Meinong's *Außersein* or the possible worlds of possible world semantics. What is needed is an intensional quantification theory which allows for quantification over occasions within a period of time and inferences to what would have happened but didn't on a particular occasion, if certain conditions had been fulfilled which weren't in fact fulfilled on that occasion.

According to Place, nothing is to be gained from analysing conditionals of this kind as a relation between the truth the proposition expressed by the antecedent of the conditional and that expressed by the consequent. Like conditional imperatives, permissions, promises and threats they express a conditional relation between the occurrence or existence of the event or state of affairs depicted in the antecedent and the occurrence or existence of that depicted in the consequent.

4. Dispositional statements are causal counterfactual sustaining causal law statements

Having pointed out (1965, pp. 17-25) that the difference between a causal law statement and an accidental generalisation is that the former sustain counterfactuals whereas the latter do not, Goodman (1965, p. 39) points out that the causal law statements required to sustain a causal counterfactual have to be and, in Place's view, never are in the first instance, a statement like the universal law statements of scientific theory which are universally quantified over the behaviour of more than one individual. All that is required to support a causal counterfactual according to Goodman is a dispositional statement, a statement ascribing a dispositional property or properties to a particular individuals involved in the causal interaction in question. Such dispositional statements are universal only in the sense that they apply at any moment of time so long as the disposition persists which, as in the case of the more evanescent of human thoughts, may be for a very short time indeed. Dispositional statements are laws not of nature in general but of the nature of the dispositional property-bearer. On Place's view, the laws of nature as proposed by scientists are generalisations based on the results of precise quantitative determinations of the individual dispositional properties of particulars which are taken to be representative of a type.

5. Dispositions are irreducibly subjunctive and intentional

Place's fourth principle derives, though with some reservations from Ryle's (1949) hypothetical analysis of dispositional statements. It holds that the possession by a concrete particular of a dispositional property acts as truthmaker for three kinds of statement:

(a) the causal counterfactual,
(b) the subjunctive conditional/dispositional statement/individual law statement, and
(c) in conjunction with possession of the same type of disposition by other similar particulars, the universal law statements of science.

It will be apparent from this that the possession by individual particulars of their dispositional properties plays the same role in Place's theory as do the substantive Laws of Nature in Armstrong's. This, together with the emphasis he places on the concrete particular which bears the property, is the one point where Place's conceptualism and consequent denial of the existence of such abstract objects impinges on his account of dispositions.

A disposition on this view consists in an orientation of the behaviour of a concrete particular towards the occurrence or continued existence of the kind of event or state of affairs specified in the consequent of the subjunctive conditional that describes it, whenever the conditions specified in the antecedent of the conditional are fulfilled, provided all other factors are as they are or were in the case at issue, and provided nothing, such as Martin's (1994) "electrofink", intervenes to prevent it.

This view differs from Ryle's in holding

(a) that a disposition is a categorically existing state of the property-bearer,
(b) that such states are causes of their manifestations, and
(c) that, with the doubtful exception of the distinguishing dispositional property of the quark or whatever particle turns out to be the ultimate indivisible unit of matter, every dispositional property depends for its existence on some state of the structure, usually the microstructure, of the property-bearer which stands as cause to the existence of the dispositional property as effect.

In holding that the relation between a dispositional property and its structural basis is a causal relation between "distinct existences", to use Hume's term, Place's position differs both from that of Armstrong who maintains that the structure is all that there is and from that of Martin who holds that structure and disposition are two aspects of the same property.

The contention that a disposition consists in an orientation of the behaviour of the property-bearer towards the actualization of its manifestations explains and justifies the conclusion that Place draws from the evidence presented by Martin and Pfeifer (1986) who claim to show that physical dispositions satisfy all the

marks of intentionality that have been suggested in the tangled literature on that difficult topic, namely that intentionality is the mark, not of the mental, but of the dispositional. A disposition on this view is directed towards an object, its various possible future manifestations, which is "inexistent" in Brentano's (1874) sense in that the manifestations do not yet exist and may never do so. It is indeterminate in Anscombe's (1965) sense in that the orientation is towards the actualization of *any* of a range of possible events or states of affairs any one of which, if it were to exist would manifest the disposition.

6. Every effect requires categorical juxtaposition and reciprocal dispositional properties as its immediate causes

Place's fifth principle appears to be unique to him. It holds that every causal relation requires two categories of cause

(1) a purely categorical spatio-temporal conjunction or juxtaposition of two or more concrete particulars, and

(2) a reciprocally related pair or other combination of dispositional properties of the concrete particulars involved.

Both types of cause are essential to the coming about of the effect. Without the juxtaposition of the concrete particulars the conditions required the dispositions of those particulars to manifest themselves would not be satisfied. Without the dispositional properties of the particulars there would be nothing to connect those causal conditions to their effect. The other two participants in the debate, Place thinks, fail to appreciate that both are essential. Armstrong stresses the categorical juxtaposition to the exclusion of the dispositional 'glue', Martin the dispositional glue to the exclusion of the categorical juxtaposition. They agree, however, in thinking that there are such things as categorical or, as Martin prefers to say, "qualitative" properties. Place finds no reason to postulate any such properties. The categorical element in causation, he thinks, invariably resolves itself into spatio-temporal *relations* between the concrete particulars involved. He agrees with Popper in thinking that all properties are dispositional.

Principles differentiating Armstrong's position from those of Place and Martin

[to be filled in by Armstrong]

1. *Universalia in rebus*
2. Causal necessity is that which is prescribed by the laws of nature
3. Laws of nature are truthmakers for causal counterfactuals
4. Dispositions are categorically existing structural features of the property bearer
5. Causes are categorical juxtapositions backed up by laws of nature

Principles differentiating Martin's position from those of Armstrong and Place

[to be filled in by Martin]

1. Logicism
2. Causal necessity is a species of logical necessity
3. Causal powers are the truthmakers for causal counterfactuals
4. Every causally effective property (causal power) has a dispositional and a qualitative (categorical) aspect
5. Causally connected events and states of affairs are mutual manifestations of causal powers

References

Anscombe, G. E. M. (1965). The intentionality of sensation: a grammatical feature. In R. J. Butler (Ed.), *Analytical Philosophy* (pp. 158-180). Blackwell.

Brentano, F. (1874). *Psychologie vom empirischen Standpunkt*. Duncker & Humblot.

Gibson, J. J. (1979). *The ecological approach to visual perception*. Houghton Mifflin Company.

Goodman N. (1965). *Fact, Fiction and Forecast.* Harvard University Press.

Martin, C. B. (1994). Dispositions and conditionals. *Philosophical Quarterly*, 44 , 1-8.

Martin, C. B., & Pfeifer, K. (1986). Intentionality and the non-psychological. *Philosophy and Phenomenological Research*, 46, 531-554.

Ryle, G. (1949). *The Concept of Mind*. Hutchinson.

Skinner, B. F. (1938). *The behavior of organisms: An experimental analysis of behavior*. Appleton-Century-Crofts.

Thorndike, E. L. (1898). Animal intelligence: an experimental study of the associative processes in animals. *Psychological Monographs*, 2(8).

Thorndike, E. L. (1911). *Animal intelligence*. Macmillan.