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ziation‘ zwischen einem *idion aisthêton* und einem anderen, nicht „an sich“ wahrnehmbaren Inhalt besteht (182). (3) Im Unterschied zu früheren Untersuchungen kann G. auf eine Entwicklungshypothese verzichten, etwa im Hinblick auf die Frage nach der Selbständigkeit der Einzelsinne in *De Anima* und den *Parva Naturalia*.³ Dennoch fragt man sich, wie etwa die Aussage in *De an.* III 2, 426b8–12, wo der *Einzelsinn* anscheinend zwei homogene Qualitäten unterscheiden kann, interpretiert werden sollen (auch II 10, 422a21). G. behilft sich mit der Unterscheidung zwischen der „fundamental ability of a sense to pick out, say, red from non-red“ und der „more specific ability to differentiate between red and green“ (145). Für diese Unterscheidung hätte noch genauer argumentiert werden müssen.

G.’ Untersuchung füllt zweifellos eine Lücke. Sie wird für jeden, der sich mit Aristoteles’ Wahrnehmungstheorie beschäftigt, von großem Nutzen sein.

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Charlie B. Martin: *The Mind in Nature*. Oxford: Oxford University Press. ISBN: 978-0-19-923410-3; £ 27.50, EUR 34.09 (hardback); 224 pages

The late C. B. Martin (1924–2008) was well known for his support of the causal theory of mind and for his 1994 Philosophical Quarterly paper ‘Dispositions and Conditionals’ in which he defended dispositional realism. He was Professor of Philosophy Emeritus at the University of Calgary. In his recent book *The Mind in Nature* Martin outlines a strongly realist theory of the world in which properties are both dispositional and qualitative in nature, where space-time acts as a substratum, and the properties, warps and woofs of spatiotemporal regions are ontologically basic (to the exclusion of objects). Martin focuses on both non-conscious (‘vegetative’) systems and conscious systems, with the aim of developing a unified compositionalist picture of both the mental and the non-mental which involves neither dualism nor the reduction of the mental to the non-mental, but is instead based in the “surprising identity” (67) of the qualitative and dispositional elements of properties (a view Martin earlier named ‘The Limit View’).

The Mind in Nature has three main foci. Chapters One to Seven develop a realist account of the world based on powerfully qualitative properties, including the following elements:

- (1) Dispositions are real, irreducible features of the world. Disposition ascriptions cannot be reduced to counterfactual conditionals.
- (2) All properties are both dispositional and ‘qualitative’ (categorical).
- (3) There are no spatiotemporal properties. Space-time acts as a bearer of properties, as a substratum.
- (4) Dispositions have reciprocal disposition partners. They cannot manifest without these partners – manifestation involves the coming together of reciprocal disposition partners.
- (5) Dispositions are powerful – a disposition is always directed towards a manifestation.

³ Block, I.: Three German Commentators on the Individual Senses and the Common Sense in Aristotle’s Psychology, in: *Phronesis* 9 (1964) 58–63; Block, I.: Aristotle on the Common Sense: A Reply to Kahn and Others, in: *Ancient Philosophy* 8 (1988) 235–249. Für eine Entwicklungs-Annahme in die genau entgegengesetzte Richtung vgl. Welsch 1987: Er datiert *De somno* und *De iuventute*, die eine Lehre vom Zentralorgan haben, vor *De anima* und *De sensu*, die diese Lehre nicht haben; vielmehr findet sich hier die von seinen systematischen Prämissen aus gesehen höherwertige Annahme einer „Sinneseinheit“ (350).

In earlier chapters Martin also claims that dispositions exist independently of their manifestations. However, Chapter Seven includes the claims: (i) there is no temporal gap between a triggered disposition and its manifestation, and (ii) a triggered disposition is *identical* to its manifestation. These claims are clearly at odds with the idea that a disposition can exist independently of its manifestation.

The second focus of Martin's book is on what Martin calls 'the vegetative mind': non-conscious, nonmental systems. As he explains, part of his aim in this section is to show that many who characterize the conscious mind attempt to do so by using functions which are functions of non-conscious states. He focuses on the example of the hypothalamus as a prime example of a vegetative system which has functions often ascribed to conscious states.

The third focus of the book is on conscious systems, and the "fight to get experience counted" in explanations of the mental, against those theorists who focus on behaviour to the exclusion of sensory experience (xvi). Martin maintains that the conscious system "is marked by the inner life of percept and percept-like dreamings and imaginings" (xvi).

After an introductory first chapter detailing aims and assumptions (including a rejection of Lewisian modal realism and Armstrongian immanent realism about universals, and the assumption that spacetime acts as a substratum), Chapter Two focuses on the inadequacy of attempts to reduce disposition ascriptions to counterfactual conditionals. Although this is one of the stronger chapters of the book Martin is on old ground here, with much of the chapter echoing Martin (1994). Martin does, however, provide an interesting response to Lewis's Reformed Conditional Analysis in §2.7 (see Lewis (1997)). RCA fails, according to Martin, because it does not take into account dispositions which are capable of persisting before, during and after their manifestations. Lewis thus "fails to express an intrinsic and continuing inhibitor of a continuing intrinsic disposition" (20).

Chapter Two ends with some rather startling claims: universal laws are ontologically otiose and space-time specific, actions are "the *reciprocal* partnerings of a web or net of readiesses" (22) and there is no localized causality. Although intriguing, these deserve more attention and justification than the short few pages that Martin has devoted to them here. Disappointingly, this problem of inadequately justified claims occurs at other points in the book also.

Martin argues against the use of possible worlds both as truthmakers and truth bearers (with David Lewis as a specific target) and against the possible world account of propositions (Chapter Three). As an alternative to possible worlds, a gradualist model is proposed, based on the many readiesses of a quark (or whatever else turns out to be the ultimate basis of reality). These readiesses include any possible object which the quark could be a part of – from a horse to a golden mountain. Not all of these readiesses can be manifested, for many readiesses exclude other readiesses. To explain this, Martin brings in the notion of a *disposition line* – a somewhat ambiguous concept:

A disposition line is what the disposition is for, what it is not for, and what it is prohibitive against with alternative actual or nonactual reciprocal disposition partners. (29–30)

The issue is further complicated by Martin's discussion of 'kinky' disposition lines, which are so called because of their unpredictability. It is unclear whether or not disposition lines are genuine metaphysical features of the world in light of this, but proposing them as a way of explaining the exclusion of some readiesses by other readiesses does little to clarify Martin's point.

In §3.6 Martin claims dispositional realism "provides a basis for naturalistic realism in logic and mathematics" (36). More specifically, the infinite 'readiesses' that a single quark has exist in the quark, and are therefore a basis for the mathematical reality of infinities.

For this to be effective, Martin needs to argue more clearly for why any given quark has an *infinite* (and not merely very large) number of actual readiesses.

In Chapter Four, Martin argues against the idea of levels in nature (and subsequently both ‘top-down’ and ‘bottom-up’ causation), replacing this view with a compositional model for parts and wholes (for instance, he takes a sculpture to be nothing more than its clay constituents). In this compositional model he claims:

(a) there are no levels of being (or, rather there is only one level of ultimate constituents), although there are levels of description and explanation; and (b) the constituents in all of their interrelatednesses, interactivities, and dispositions for these with one another and with whatever might be external, in all of their varying degrees of stability, do fully constitute and together *are* the whole (admitting some additions, subtractions and alterations of properties and configuration suitable for being that kind of whole). (38–39)

On this view, the whole can be reduced to the sum of its parts: an object is nothing more than the set of its properties. Martin claims it is the job of physics to find out what the ultimate constituents of reality are (that is, the simplest constituents which are the basis of reality): in his view, science and ontology can both help each other along. However, many metaphysicians may be disinclined to place such an emphasis on science and its importance in metaphysics.

Martin’s treatment of causation (Chapter Five) is surprisingly brief, given that it is an interesting and important topic in its own right and that causal operativeness plays an important role in Martin’s account of mental directedness (see Chapter Fifteen). On his account, *cause and effect* are replaced with the “contemporaneous mutual manifestation of reciprocal disposition partners” (46). Their manifestation is contemporaneous because there is no temporal gap between the partnering of disposition partners and their manifestation. In fact, these turn out to be *identical*.

The example that Martin uses to illustrate this is as follows:

You have two triangle-shaped slips of paper that, when placed together appropriately, form a square. It is not that the partnering of the triangles *causes* the manifestation of the square, but rather that the partnering *is* the manifestation. (51)

Martin’s choice of example here is not a helpful one, for it does not adequately reflect the fact that many effects are processes which occur over a period of time after being triggered. Dropping a lump of sugar into a glass of water is clearly not identical to the sugar dissolving in the glass of water; the former takes place over a shorter period of time than the latter. If Martin really means to say that there is no temporal gap between the partnering of disposition partners and their manifestation then he needs to make this apparent, and not phrase the claim in terms of identity. The issue of how dispositions explain causation is a fascinating topic, and deserves more than the eight pages to which Martin has devoted its discussion.

Repeating material from Martin (1997), he argues against ‘Pythagoreanism’ (the view that the world is purely quantitative), and argues that the only way of saving dispositionalism from this is to accept that properties are both qualitative and dispositional (Chapter Six). This is Martin’s ‘Limit View’, and based on the idea that dispositionalism is based on verificationism (a claim that many dispositionalists will dispute). Martin’s arguments against pure dispositionalism are similar to Armstrong’s ‘always packing, never travelling’ objection (1997; see also Campbell 1976, Swinburne 1980, and Blackburn 1990), in that he takes pure dispositionalism to consist in a passing from one potency to another. This is an attack which has been frequently made against pure dispositionalism, often resulting from the idea that

dispositions only gain existence through their manifestations. However, it is not clear why Martin should consider them “entirely too promissory” (63), given his earlier claims that dispositions can exist even when they are not manifested, and may sometimes exist even after they are manifested: points that he is at pains to emphasize in Chapter Two.

The surprising identity between the dispositional and qualitative sides of properties is proposed as an alternative to the problems of pure dispositionalism in § 6.7. However, if a purely dispositional account of properties seems entirely too promissory, then an account in which the dispositional and qualitative are surprisingly *identical* ought to suffer from the same problem also.

Martin deals with the linguisticization of properties and the property/predicate distinction and reiterates his claims from Martin (1987) in Chapters Seven and Eight. In Chapter Nine, Martin focuses on the nature of both mental and nonmental “use”, and argues that directiveness and selectivity or readinesses are found along with use in any dispositional system, whether this system is psychological or non psychological (111), where “use” roughly equates to “regulatory, adjustive, combinatorial, spatially, and temporally projective reactivity to input and formativenesses of output” (111). Having already rejected levels of being (and thus emergence between levels), in Chapter Ten, Martin retains the idea of uni-level emergence as a way of avoiding the pipeline conception of causality (that is, causality in which all intrinsic properties of an effect must be found in and ultimately come from the cause), arguing macro-properties are nothing over and above “complexes of simpler micro-properties” (130). This is a strange understanding of emergence, given that it is an essentially reductionist claim. More promising is his argument that the complexity of a system’s representational system cannot determine whether a system is conscious, based on the example of the thermoregulatory system: a non conscious system which functions in a very similar way to many conscious systems in our bodies.

Martin focuses on perception and the nature of experience in later chapters of the book, claiming that an emphasis on inner life can be used to develop a physicalist, although not materialist, account of conscious properties. He argues for the dispositionality of perception, where “an observer and the observer’s immediate environment are *reciprocal* disposition partners for the mutual manifestation of the perception” (144). In his “Two Jokes” of Chapter Twelve, Martin targets behaviourist theories of the mind for dealing only with outward behaviour, and ignoring inner sensations. He goes on to defend tactile-motor-kinaesthetic perception as a genuine mode of perception in Chapter Thirteen, basing this on the idea that hallucinations, illusions and after-images are all central to perception, and that tactile-motor-kinaesthetic hallucinations, illusions and after-images are all possible. Chapter Fourteen suggests that imagery-tokening is somewhat akin to perceiving a speech utterance, and that such imagery has “the same declarative, descriptive uses” (167) that speech has.

The dual-sided nature of properties is emphasised by Martin and the directedness that results from this is utilised to form the basis of his account of conscious qualities in Chapter Fifteen, explaining the directedness of thoughts, beliefs, hopes and other mental states. Rejecting both behaviourism and functionalism, Martin places emphasis on sensory feedback and the notion of ‘use’ previously developed in Chapter Nine. He asserts that there are available non-psychological parallels to the ‘opacity’ that is often taken to be distinguishing feature of psychological states, as well as to negation and assertion (179–180). What turns use into mental agency is the input’s being sensate. Furthermore, the importance of sensory input and imagery is that it is the material for direct use, not for direct knowledge. Ultimately, Martin argues that where others have failed in their accounts of the mind are in ‘poverty-stricken accounts of percepts and percept-like imagery’ (193). Whilst aspects of this are decidedly promising, this account of the mind rests on some assumptions and vague claims which undermine the force of an otherwise attractive argument.

In the final chapter Martin rejects the notion of mutually exclusory objects, arguing (§ 16.2) that our notion of objects turns out to be contradictory because the lack of sharply defined edges in objects entails that whether or not a given object exists at a particular space-time region is unclear (195–6). Instead, field properties and regions of space-time explain and replace objects. Fields are blurry entities, and can vary in force. This “helps somewhat towards making the fit between the very large (relativity) and the very small (quantum physics), so long as we avoid the disastrous conflation of the ontic and the epistemic that bedevils so much of the philosophy of science” (194). It is disappointing that Martin does not explain or defend this statement.

Throughout *The Mind in Nature* Martin makes use of the notion of reciprocal disposition partners. An improvement on this would be to adopt the notions of polygeny and pleiotropy proposed by Molnar (2003), whereby dispositions do not come in pairs, but can manifest in any number of combinations; this could considerably help in elucidating his claims about the multiple readinesses of dispositions. It would also help to avoid possible misunderstanding resulting from the combination of his claims that (i) dispositions cannot manifest without their disposition partners and (ii) dispositions are capable of manifestation with an infinite number of other dispositions. In other places in the book Martin appears to conflate dispositions with the objects which have these dispositions (for instance, on page 91 he describes a smiling face as a reciprocal disposition partner). This is of particular concern given Martin’s eventual abandonment of the notion of objecthood.

Whether or not Martin’s account of the mind is promising, it is only as good as the account of dispositionality it rests upon, which is not clearly outlined in some areas, and needs more development in others. I find Martin’s idea of taking most ‘ontologically substantive’ concepts to be based in dispositionality an interesting claim, but for this to work, Martin needs to clarify what a disposition line is (let alone what a kinky disposition line is), why we need to understand dispositions as having reciprocal disposition partners and a number of other claims. For his claim that causation can be understood in terms of dispositionality to be plausible, he needs to address a number of different cases, and not take as his one example of causation the putting together of two paper triangles to form a square. It is only when his position is totally clear that a more substantive critique can be made of it.

A new book by a philosopher of such caliber as Martin is certain to have been eagerly anticipated by many metaphysicians and philosophers of mind alike. However, Martin’s book is slightly disappointing in a number of areas, not least because much of the book is old material for Martin, reiterating claims that he has already made in previous publications. It is perhaps as a result of this that in some key places in the book Martin assumes claims without providing argument for them. However, the effect of this is that the reader is left with a sense that Martin is not prepared to give away justification for some of his views, even if such justification does exist. Both the structure and writing style could be improved, with the most clearly written sections of the book tending to be areas in which he is reiterating previously made claims. Despite these shortfalls, *The Mind in Nature* contains some very interesting and attractive claims which follow on from aspects of Martin’s early work, even though these claims do not constitute the main bulk of the book. In addition to this new material, *The Mind in Nature* will be of interest to both philosophers of mind and metaphysicians desiring an overview of Martin’s excellent earlier work.¹

¹ Grateful thanks to members of the Nottingham Metaphysics of Science group (including David Armstrong, Stephen Mumford, Markus Schrenk, Rani Lill Anjum and Matthew Tugby) for helpful discussion of Martin’s book, and especial thanks to Markus Schrenk for invaluable help and useful comments on earlier drafts of this review.

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Alexander Bird: *Nature's Metaphysics: Laws and Properties*. Oxford/New York: Oxford University Press, 2007. ISBN 978-0-19-922701-3; \$ 70.00, £ 29.00 (hardback); 231 pages

Nature's Metaphysics articulates and defends a view known as dispositional essentialism: the view that the fundamental properties of nature are essentially dispositional. Bird is not the first to hold this view, a situation which he notes in the preface has its advantages, allowing him 'to work at length on the details of a view that is to a greater or lesser degree shared', for instance, by Brian Ellis and Caroline Lierse, Stephen Mumford, and George Molnar (p. viii). And indeed the book provides a wealth of interesting details, helpful distinctions, and valuable clarifications, as well as considered, scientifically informed and in-depth argument. Anyone interested in the metaphysics of dispositions, laws of nature and causation will find the book highly illuminating, whether or not they agree with its main theses.

It is not possible in the scope of this review to do justice to the many contributions made by Bird's book, and for this reason I would like to concentrate on the central claims: what dispositional essentialism is, and why it should be adopted. I will conclude that the case made for dispositional essentialism is incomplete because a crucial feature of properties and laws has not been addressed. Nonetheless, the problem does not seem to affect dispositional essentialism any more than its competitors; and it remains a merit of Bird's book to have made the metaphysics of dispositional essentialism explicit enough for this point to become apparent.

After a useful introduction, Bird begins with an exposition of dispositional essentialism, stating what dispositional properties are (including a fresh look at the debate about conditional analyses of dispositions), and how they can account for the laws of nature (ch. 2–3). He then provides indirect argument for dispositional essentialism: first, by rejecting the rival view of categoricism (ch. 4); second, by dispelling objections to dispositional essentialism (ch. 5–9). A concluding chapter summarises the argument and outlines further work for dispositional essentialism (ch. 10).

Dispositional essentialism is the claim that '[a]t least some sparse, fundamental properties have dispositional essences' (45). Bird himself subscribes to a stronger view, which he calls 'dispositional monism': *all* sparse, fundamental properties have dispositional essences. For a property to be fundamental is for it to be part of 'the non-redundant basis of causal relations' (14), or to figure in the true fundamental science. (The fundamental properties may not, and as it turns out do not, exhaust the sparse or natural properties.) For a property to be dispositional is for it to relate a stimulus and a manifestation property such that, if an object *x* instantiates the dispositional property, would yield the manifestation in response to the stimulus (*ceteris paribus*, i.e. in the absence of finks and antidotes).

Unlike Brian Ellis, the originator (with Caroline Lierse) of the term 'dispositional essentialism' (cf. Ellis and Lierse 1994), Bird is not concerned with the essences of objects, or