Symposium on *From an Ontological Point of View* by John Heil

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Towards an Ontology for the Mind

A presentation of John Heil's
From an Ontological Point of View

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In the last fifty years philosophy of mind has developed and established as a broad area of contemporary philosophical reflection. This is a huge area, whose boundaries are not easily defined because the themes and problems involved in it occupy interdisciplinary regions. The relationship between *mental and physical*, *intentionality*, *consciousness*, are questions in relation to which investigations about the theory of knowledge, philosophy of science, action theory, moral philosophy, etc. overlap and may transform into questions debated by empirical sciences.

There are several approaches to the different subject matters of philosophy of mind. On the one hand a personal and hermeneutic approach to the study of the mental aetiology of action may be advantageous; on the other hand the sub-personal strategy of the representational and computational theory of mind might seem more suitable. By means of this second strategy many authors, inspired by the classic paradigm of cognitive psychology, have attempted to explain how the mind works (cf. Pinker 1997; Fodor 2000). In some cases such a strategy has attained remarkable and indisputable results.

Regardless of their approach, scholars who deal with the main topics in the philosophy of mind are crucially involved with one basic problem, and that is, the *nature* of the mind, even though this question has often been evaded more or less implicitly. To know *what the mind is*, or, better, *what the mental is* (that is, not to know *how the mind works*, *what is the mark of the mental*, *how the mental should be characterized*) means knowing some robust conceptual coordinates which can be used in order to set up (and hopefully to solve) most of the other problems that are connected with the *mind* and the *mental*. Clarifying the nature of the mental is a task that concerns theoretical controversies which are rooted in a past more remote than the last five decades. What we are dealing with is a problem that is genuinely philosophical: it is a "*what is?*" problem, therefore is an exquisitely metaphysical, or more precisely 'ontological', problem. John Heil has understood and embraced this consideration ever since he began exploring problems in the philosophy of mind. For years he has maintained that: "… the fundamental philosophical questions concerning the mind remain metaphysical questions – where metaphysics is understood as something more than the a priori pursuit of eternal verities: metaphysics takes the sciences at their word. More particularly, the fundamental questions are questions of ontology – our best accounting of what, in the most general terms, there is." (Heil 1997: ix).

The idea of characterizing some of the more important problems of the philosophy of mind as metaphysical and more particularly as ontological problems has deep implications. In fact, if we approach the mental with a metaphysical methodology, then we have to justify the metaphysical

assumptions on which such a methodology is grounded, and we need to buy into the theoretical consequences to which those assumptions lead. In other words, a more rigorous metaphysical (and ontological) framework is needed in order to deal with the implications of a metaphysical definition of problems in the philosophy of mind. Indeed the formulation of any philosophical problem is based on, or presupposes, a system of metaphysical assumptions, regardless of whether these assumptions are required by the intuitions of common sense or are postulated by those principles upon which scientific knowledge is built.

In his book *From an Ontological Point of View* Heil elaborates an ambitious project as a strategy to solving the problems in the philosophy of mind with solid metaphysical foundations. This is the first and foremost goal that he pursues in the construction of a basic ontology; he is not intimidated about making the metaphysical feature of his program explicit. Heil subscribes to an *all-Australian* "ontological seriousness", that he thinks absolutely necessary when dealing with the rigours of the discourse about the philosophy of mind and the metaphysical difficulties with which they are regularly involved as well as with any other philosophical discourse. Therefore understanding the characterization of *an ontological point of view* is crucial in order to engage in problems concerning the mental: this is a primeval and foundational task that has to be made in the light of day. And it is with this spirit that Heil has written his book.

The articulation of Heil's project, even though written in a style that is sober and accessible, is rather complex. Here I propose a synthetic interpretation of it, that perhaps does not reflect the expository dynamics of the original text. With its brevity I hope it will provide the reader with a quick but direct look of the book. On the one hand Heil insists on the necessity of constructing a clear ontological basis in order to answer problems in the philosophy of mind, on the other hand he claims that such a metaphysical basis has to be compatible with knowledge of the empirical sciences; even better, this metaphysical enterprise should reconcile our ordinary experience and the sciences (cf. also Heil 1998 and Heil's *Précis*). Indeed, in order to overcome the divergence between scientific knowledge and our intuitions we have to appeal to a unified ontological framework. This hypothesis has been neglected for a long time because of an inaccurate characterization of ontological questions.

Heil thinks that the inaccuracy in the characterization of ontological questions is due to what he calls the '*Picture Theory*'. The *Picture Theory* is more of an abstraction than a real formulation, but it is an abstraction of a conviction that is deeply rooted and that underlies great deal of the (mainly Anglophone) philosophical reflection of the past century. According to this convincement, in order to grasp the true nature of reality we need to analyse the characterizations that we make of it with language. The *Picture Theory* holds that if we are able to rigorously define the predicates that we use to talk about the world, then we are able to define the features of the world, *because, even though sometimes in an indirect way, real properties of the world correspond to the predicates of our language.* Therein lies the first and most serious perplexity in relation to the *Picture Theory*.

Of course some predicates that are formulated through language are taken to mirror real properties, but it is wrong to assume that *every* predicate mirrors a real property, even though every characterization of some aspect of the world is likely to be expressed with the attribution of some predicates on the basis of the identification of real properties. Thus, Cyran may think that his nose is awkward without there being any effective property that corresponds to the awkwardness of his nose.

Obviously the adherents of the Picture Theory will not directly defend the reality of a property such as *awkwardness*. They have a prompt and ready explanation at their disposal that is based on the idea that awkwardness is, indeed, a property, but is a property placed at a different level, likely at a level that is higher than those properties, of lower level, on the basis of which it is possible to claim that Cyran's nose is awkward.

Clearly a certain layered conception of reality is the direct consequence of the Picture Theory. This is also the conception of reality that prevails in the philosophy of mind, also known as

'*Analytic Functionalism*' (cf., e.g., Goldman 1993). But while this conception is intuitively plausible, thorough scrutiny reveals problematic areas. The idea of a layered reality has to account for the relationship among the different layers that constitute it: a difficult task indeed. It is from here that the deep-seated problems of Analytic Functionalism arise: the risk of epiphenomenalism of the mental on the physical, the possibility of causal overdetermination of the physical on the mental, the many cases of multiple realizability, etc. (cf. Kim 1998, 2005).

Heil believes that the basic principle of the Picture Theory, that is, the idea that to every predicate there is a corresponding property, is highly misleading, and it is the very culprit of our being in deep ontological waters. Why do we think that a property corresponds to a predicate? Because, as Heil states at the end of an articulate argumentation (cf. ch. 12), we –wrongly- presuppose that predicates *photograph*, that is, exactly reproduce, actual aspects of reality which are identified with *universals*. At the same time we think that universals are involved in making predicates true; although we are not sure how (cf. ch. 7). This undue assumption makes us forget very often that "… If there are levels, these are levels of complexity or organization, or, alternatively, levels of description or explanation, not levels of being." (Heil 2003: 67).

In his criticism of the Picture Theory Heil attacks implicitly, but unmistakably, universals. He attacks in particular the idea of universals by virtue of which when there is a predication, such as «The beetroot is red», there is also a certified participation/sharing by the entity, the beetroot, with the quality *red*. With this idea we encounter a big problem: we do not know what *red*, meant as *universal*, is, in addition to ignoring the ways in which different entities might participate/share in the concept *red*[1]. The hypothesis that *red* is something common, which is shared by, or participated in by many different entities is a strange idea. Therefore it is necessary that the question of the universals be clarified. But if the hypothesis of a strange reification of the universals as *things* is rejected, an alternative conception is needed.

Heil's alternative posits that our predication procedures do not, in fact, individuate a particular property, but that they individuate a (not defined) number of properties that are collected together by some degree of similarity. A beetroot and a red cabbage are both red. They are red because the have similar properties that make them appear red to us. Since properties determine objects, both as the objects are and how the objects appear to us, an explanation, or at least a characterization of properties is required. Heil claims that properties are *powers* of objects (cf. ch. 8): that is, properties are dispositions[2] that make the objects be the way they are.

In this characterization properties seem to have a purely dispositional nature. Yet Heil proposes something different that is heavily indebted to a former hypothesis of C. B. Martin (1980; 1994; cf. anche Martin e Heil 1998). On the basis of a rather simple and intuitive consideration Heil claims that properties are neither exclusively dispositional, nor exclusively intrinsic (or qualitative). Properties must be dispositional as well as intrinsic (or qualitative). This reflection is based on the following claim: an essential property of an object is identifiable by virtue of the dispositions that this property endorses to individuate in relation to that object. At the same time dispositional aspects that make us ascribe a certain property to that object cannot be pure powers, because a power is the disposition *of something* to express some of its aspects in relation to some other aspect. Therefore a certain entity must have properties which are at the same time both dispositional and intrinsic (Heil has labelled this idea '*identity theory of properties*'). Take, e.g., a sphere[3]. What are the indexes that lead it to be considered a sphere? Likely we think of it as a sphere in relation to its spherical consideration, to its sphericity. What does lead us to identify it? Likely in adequate conditions a sphere has the disposition to roll. Heil's characterization of "property" is derived from considerations like these: "Properties are *ways*: ways objects are." (Heil 2003: 126); or, in order to

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1 It should be clear that the problem of multiple realizability in the philosophy of mind, on the basis of this consideration, seems to propose again (although in a different guise) the ancient and venerable problem of the universals as it was originally formulated: cf. *Parmenides*, and *Philebus* of Plato.

2 Heil makes no distinction between "power" and "disposition" (cf. Heil 2003: 76, fn. 1).

3 This has to be considered an exemplification, nothing else.

reaffirm the warning against universals, properties are to be considered "… 'particularized' ways particular objects are." (ibid.: 127). Properties are specific modes in which specific objects are determined.

Properties determine objects, thus one could think that there is nothing else but properties: entities which are observed in the world would be nothing other than collections of properties. Heil rejects this hypothesis, because he claims that properties, meant as modes in which objects are characterized, cannot be conceived of without the presence of objects: "Properties require substrata. Modes, ways objects are, cannot exist independently of objects." (Heil 2003: 169). There must be objects for properties to be realized. Therefore it is worth knowing what the minimal requisites of objects are so that they can realize properties. This is Heil's rough and ready explanation: "… properties or modes […] are neither the kinds of entity that could exist independently of objects possessing them; nor the kinds of entities out of which objects could be made. […] … if a mode exists, it must be a mode *of* something. This something is a substratum: an unobservable support for observable properties." (Heil 2003: 171).

From this consideration of Heil's basic ontology there is a point left out: Is the substratum that underpins properties an indistinct and undifferentiated substantial magma or is it a dimension in which we can individuate simple, ultimate and discrete constituents? "Perhaps this is a purely empirical matter …", Heil claims (2003: 174). Also the question related to the possibility of defining the identity of basic objects of this ontology seems to be empirical (cf. ibid.: 177). Heil outlines a hypothesis: simple and discrete objects could arise from the substantial substratum because they are characterized by properties that define their ontological boundaries, as happens in a field of force, which is basically and globally homogeneous, in which, however, local alterations can be recognized. "Objects could be fields. Perhaps there is but a single object: space, or space-time, or some all-embracing quantum field. If that were so, then ordinary objects would turn out to be modes of the one all-inclusive object." (ibid.: 177).

So to summarize in one sentence the foundations of Heil's ontological theory: the world is made of an extended primeval substance through space-time, in which basic objects are localized as elementary regions; these are characterized by particular properties which are, by nature, both intrinsic (or qualitative) and dispositional. All of the features of what exists develop and are articulated on this primeval and substantial platform, so to become more and more complex: they are recognizable now as discrete, then as homogeneous, thanks to the relation of brute similarity that occurs between *particular* properties.

Once he has built this simple, but clear and robust ontological apparatus, Heil wants to show its efficaciousness by testing it with four well known problems in the philosophy of mind: colour, intentionality, consciousness and *zombies* (cf. chaps. 17-20). Rather than explicit solutions of the problems related to these themes Heil suggests the strategies to take, in order to formulate them in a (relatively) new and promising perspective.

The philosophy of colour, for Heil, has to show "… how what we know about the mechanisms of colour comports with our pre-theoretical conception of colour …" (ibid.: 207). The strategy that deals with this task has to appeal to the dual nature (both intrinsic and dispositional) of the properties of objects. Among the properties of a beetroot there is also the one that makes it appear red to the human visual system. According to this conception the colour *red* that is attributed to the beetroot is neither an intrinsic feature of the beetroot (one that could be described in with scientific terms) nor the sole outcome of the subjective experience of those who observe the beetroot. *Red* is the disposition that the beetroot has in virtue of its properties to cause experiences of red in those who observe it under standard conditions (mainly of light): "… colours are dispositions of objects to produce experiences of distinctive sorts in observers. Colour experiences are mutual manifestations of structured light radiation and the visual systems of observers. Structured light radiation is itself a mutual manifestation of relatively unstructured radiation and properties of illuminated objects." (ibid.: 205).

Heil puts intentionality "-the capacity for representational thought" (ibid.: 208) through a treatment that relies on his conception of dispositionality. He starts with the "*self*", which he characterizes as a necessary postulate of the cognitive structure of human beings: "… In representing the world around us, we take up a point of view. Our taking up a point of view is a matter of our orienting or locating ourselves within the world as we represent it. Our self-concept includes as an essential element this egocentric orientation: you are the agent with *this* point of view." (ibid.: 212). Once Heil has defined an agent as a subject able to take a *point of view*[4], he holds that the intentionality that we ascribe to him can be explained in terms of his dispositions to react to a certain actual or possible element or circumstance (what in Heil's jargon is a 'disposition partner'; cf. ibid. pp. 219-222). For example, the intentional relation between a frog and a fly is explained with the disposition of the frog to snatch the fly. Likewise, a *similar* disposition explains the intentional attitude of the frog towards any other entity that exhibits properties *similar* to the ones of a fly. The frog has acquired a dispositional mechanism that is based on the *similarity* of stimuli with which it is presented and on the *similarity* of its behaviour towards *similar* stimuli.

Heil thinks that his ontological picture can provide a strategy to solve the problems relative to qualitative or phenomenal consciousness. His analysis of what makes a certain entity phenomenally conscious relies on the idea that qualitative properties are not exclusively mental properties, as many philosophers would have it (cf. ibid.: 229-230). It is worth remembering that according to Heil qualitative properties are everywhere; they belong, together with objects, to the ontological fabric of what exists. These properties also include the qualities of conscious experience, which are likely to be qualities of the nervous central system. Like any other property, qualitative properties of conscious experience have a certain dispositional power. The dispositional contribution of qualities of conscious experience is not a distinctive trait that ontologically characterizes the dimension of subjectivity. In fact, the particular status with which an individual access his/her own conscious experience is not ontological but simply epistemological. What makes us believe that the conscious experience of a subject has a *special qualitative dimension*, that requires a special ontological characterization, is the simple fact that that person is in a particular observational condition with respect to his/her experience, because in fact s/he *is*, s/he happens to be in that special experiential state: "… when water freezes, it goes into a distinctive crystalline state. You can observe this state (or the water's being in this state), but this is not a matter of your being in that state. […] An agent's states of consciousness cannot be distinguished from an agent's awareness of that state." (ibid.: 237).

The last topic of Heil's book is a reflection on the possibility of *zombies*, a hypothesis recently bolstered by David Chalmers (cf. Chalmers 1996). It is common knowledge that zombies in philosophical imagery are creatures which are practically identical to human beings, differing only in their lack of conscious experience. For Chalmers, as well as for the other authors who think of this as a sound mental experiment, the possibility of conceiving of unconscious zombies proves a radical ontological otherness of consciousness with respect to all of the other things that belong to this world. If a person accepts the existence of a zombie who is completely identical to him/herself, except in consciousness, then we need to understand why in imagery that person is endowed with conscious experience while the zombie counterpart (who is physically identical with that person) is not. Since between this person and his/her zombie counterpart there are no physical differences, an explanation of the person's consciousness is needed, and such an explanation has to be alternative to an explanation that is formulated only with physical terms (this would lead to a dualist perspective). If we remember the basic constituents of Heil's ontology (objects and qualitative/dispositional properties), we have no problem understanding how he rids himself of this hypothesis. The nature of a property, which is both dispositional and qualitative, does not allow properties of conscious experience to be separated from the basic ontological status of a subject. If a certain entity possesses basic properties, then it is characterized only by those properties and not by

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4   Without recognizing any substantial identity to this *point of view*.

others. If we ascribe conscious properties to a certain entity, these conscious properties are built on other basic properties from which conscious experience is derived; lacking these basic properties, there would be no conscious experience. The rejection of the ontological possibility that intrinsic properties can be distinguished from dispositional properties makes zombies inconceivable. In this case, as in the other cases, the application of Heil's ontology determines the strategy to deal with another thorny question in the philosophy of mind.

This summary of *From an Ontological Point of view* is partial, limited and opinionated. However, I hope it will be enough to rouse the interest of those who think that philosophy of mind sweeps too much *metaphysical dust* under the carpet of excessive logical and scientific technicalities. They are hereby urged to read Heil's book. His proposal is innovative and thought-provoking; nonetheless it is a true and systematic ontological program that aims at radically founding (or re-founding) the interpretation of several theoretical problems (mostly in the philosophy of mind). As such Heil's program has the features of a traditional metaphysical program, and like any other traditional metaphysical program it requires binding commitments, whose evidence cannot depend purely on intuition. For example, the thesis of *brute similarity* as well as the one of the identity between dispositionality and intrinsicalness of properties are both controversial. In his book Heil defends these theses in depth, and he reworks and clarifies them in his *précis*. Notwithstanding his explanatory effort, these and other ideas are debated by the commentators of this forum.

- Ross Cameron and Elizabeth Barnes fully embrace Heil's anti-linguistic bias and his rejection of the layered ontology that is implicit in the Picture Theory. Cameron and Barnes think of the Picture Theory as a metaphysical ideology whose roots reach even into the austere Ockhamite position of Quine –indeed, Quine's conception of the "ontological commitment" suggests that we accept those entities over which the *sentences* of our best theory quantify; Quine does not propose that the sentences of our best theory have to quantify over those entities that we take as existing. Cameron and Barnes replace the principle of *direct representationalism* of the Picture Theory, which requires a photographic correspondence between linguistic elements and elements of reality, with the principle that could be labelled *'direct realization'*, which is implicit in Heil's metaphysics. According to this principle a sentence or a predicate is true if something makes the sentence or the predicate true. This 'something' determines the truth of a sentence or of a predicate on the basis of its properties. These, let us remember once again, are always unique properties, never universals. Once Cameron and Barnes have extracted this principle from Heil's ontology, they apply it to several topics: the ontological status of numbers, the *Special Composition Question*, the existence of holes, the problem of ontic vagueness, the theme of emergentism, etc. Even though they propose solutions that might not naturally and directly follow Heil's original conception (cf. Heil's *reply* to Cameron and Barnes).

- The commentary of Heather Dyke starts with positive considerations about Heil's criticism of the Picture Theory which are similar to those of Cameron and Barnes. Dyke provides arguments against the Picture Theory that are even stronger than Heil's, underscoring a crucial error on which it relies: the confusion between *truth conditions*, namely the conditions under which a sentence is true, and *truthmakers*, which *make* a sentence true. Furthermore, this error according to Dyke reflects an even a greater mistake: "… conflating descriptions of reality with the reality they describe …" (cf. Dyke's commentary: § 3). Such an error results from the idea that for any predicate there is a corresponding real property. Dyke, in agreement with Heil, thinks that Chalmers errs in the same manner when he argues in favor of the irreducibility of conscious experience. However, Dyke also finds fault with two of Heil's notions that are keystones of his metaphysical architecture: *brute similarity*, which is not an easy concept to take as primitive, and *truthmakers*, which should be

explained in non linguistic terms. Here Dyke sets up a formidable challenge for Heil.

- Sharon Ford appreciates Heil's new approach to metaphysics, but she suggests a relevant modification of it by questioning the *identity theory of properties*, according to which a property cannot be characterized in dispositional terms without involving its qualitative aspect: therefore the dispositional is identical to the qualitative (this is one of the theoretical pillars of Heil's ontology). This conception, according to Ford, should be replaced by a *monistic theory of properties*: the qualitative aspect of a property is thus reduced to a purely dispositional, better, purely potential aspect. In order to explain her proposal Ford claims that Heil's identitary strategy is justified only by the conviction that is necessary to distinguish the individual objects of the world from their *powers*. If such a justification does not hold, as she would like to prove, then also the identity of the *dispositional* with the *qualitative* does not hold. At the same time Ford proposes an alternative solution to the characterization of objects on the basis of *modes in which they are*, as Heil does. She holds that space/time conditions are enough for the individuation of any entity, without appealing to any qualitative feature of properties.|

- In his essay, Sandro Nannini compares Heil's ontology with the position of *scientific realism* of W. V. O. Quine and his followers. Nannini acknowledges Heil's innovative criticism of the Picture Theory and its implications. However, he strongly disagrees with Heil's seeing Quine as an unaware victim of the Picture Theory. For Nannini the task that Quine assigns to linguistic and conceptual analyses in defining the ontological commitments of a theory always has to adjust to critical and pragmatic criteria. Therefore it is not our knowledge, and especially not our scientific knowledge, that justfies the structure of our language; it is our language that adjusts to the findings of scientific research. Nannini also observes that another noticeable difference between Quine and Heil is how they treat properties. Quine holds that properties are universals (or classes), Heil thinks that properties are particular items. However the conception of properties as particulars entails several difficult problems, such as the characterization of similarity meant as characterizing and irreduceable feature of reality: a fact that for Nannini is totally implausible[5]. After all Nannini prefers Quine's ontology to Heil's, because it offers the same advantages of Heil's without its inconveniences.

- Heil's ontology provides a strategy to deal with some embarassing classical problems in the philosophy of mind. Neil Williams takes into consideration the way in which Heil approaches the mental experiment of the Zombies. Zombies for Heil cannot be conceived of, because on the basis of the identity theory of qualitative and dispositional it is not the case that, e.g., there is an individual who is totally identical to another one but for a single feature, that is, consciousness. Williams holds that Heil's strategy works with only one kind of Zombie, namely, *physical Zombies*. Physical Zombies are in fact just perfect duplicates, physical particle per physical particle, physical property per physical property, of human beings. Consciousness is the sole property which differentiates humans from Zombies. Heil's strategy however does not work with another kind of Zombie, which might be defined 'functional Zombies'. These are (almost) perfect *functional* duplicates of human beings. Also in this case the sole aspect differentiating them from human beings is their lack of consciousness. Williams intends to challenge Heil's monist ontology of properties, claiming that there can be entities which are functionally identical even though they may differ from a qualitative point of view. His argumentation is based on the hypothesis that the

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5   Here, though, I notice, with a neutral attitude, that Nannini reproves to Heil what Quine thought had to be taken as necessity: namely, that similarity is something primitive and irreducible (cf. Quine's 1969: "Natural Kinds").

identity of properties between two entities does not necessarily imply the functional identity of these entities. *If* this argumentation holds, then Heil's argument against the possibility of Zombies is limited.

The sheer volume of discussion brought forth by the commentators of *From an Ontological Point of View* testifies to the book's standing as an inspiration for philosophical reflection. The commentaries raise several very deep theoretical doubts, which challenge Heil's philosophical framework. Heil replies with philosophical strength and argumentative vigour (indeed, see the *replies*). These authors exchange their ideas, which at times differ significantly. A comparison might stimulate the development of new debates whose scope cannot be addressed in depth in this forum. I will therefore limit myself to highlighting the ideas discussed by Heil, as well as by his reviewers, which I find thought provoking and deserving of further analysis. Finally I will add a general remark.

I believe Heather Dyke has grasped two crucial questions regarding Heil's ontological theory: the characterization of "brute similarity" and of "truthmakers". Heil tells us that two objects, for examples two billiard balls, are similar by virtue of their properties. However the similarity between the two balls is not due to the two balls sharing one or more properties: in this case properties would be considered as *universals*. Heil rejects this hypothesis. For him the two balls are similar due to intrinsic features of the individual properties of each of them, "One billiard ball's shape is numerically distinct from another billiard ball's shape, although the two shapes might be precisely similar. *This similarity must, so to speak, be intrinsic to the properties. Similarity, on this view, is not reducible to identity; similarity is basic, primitive, not further explicable.*" (Heil 2003: 151). The intrinsic properties of two objects make the two objects similar; yet the properties that make the two objects similar *are not* similar: "Objects are similar by virtue of possessing similar properties; *properties, in contrast, are not similar in virtue of anything.*" (ibid.: 152). I wonder whether we could imagine a universe (more or less abstract, anyway a logically possible universe) in which there are only two elementary objects which occupy only one dimension and which posess only one property –we could think of two points. How could we know whether the two objects are similar/dissimilar? If the two objects are not similar/dissimilar, they must be similar/dissimilar by virtue of the property of each of them. Yet we have no clear ideas about what makes those objects similar/dissimilar which possess respectively either property, and which are similar/dissimilar by virtue of either property. It seems there would be a third property (according to a version of the *Argument of the Third Man*) on the basis of which the two points are similar/dissimilar. I am sure that Heil would have an easy answer for this question (he discusses this problem in ch. 14), but I believe that if doubts such as these are raised in a quick and superficial reflection like this, then deeper reflection might very well reveal more intriguing perplexities. Of course the trouble in accepting Heil's *brute similarity* derives from his rejection of properties as universal. I think that his antipathy (cf. the *précis*) for universals should be justified more thoroughly.

The other question, which Dyke considers open (although "open" does not necessarily mean "unsolved"), is even more thorny and is related to "truthmakers". Contrary to Dyke, I think that the difficulty with truthmakers is in their nature, as identified by Heil in the basic dispositions of basic objects. I think that the trouble with truthmakers is in the relationship between these and what they make true; in other words, the inner workings of "truthmaking". If in his attack of the Picture Theory Heil criticizes (rightly) a presumed direct correspondence between predicates of language and real properties, he does not make clear what and why a set of properties makes a certain predicate true. For example, why is «Cyran's nose is awkward» made true by a set of properties that are relative to Cyran's nose. The relationship between truthmaking factors seems to suggest some form of correspondence, but there are no available characterizations of it, at the moment. Heil admits, honestly, that he has no explanation for the relation of truthmaking: "It is an open question what the ultimate truth-makers are for true descriptions of the world we unselfconsciously

deploy." (ibid.: 189; cfr anche ibid: 67). Since truthmakers and truthmaking play a crucial role in Heil's ontological apparatus, they require a detailed explanation.

A further point on which Heil has insisted in his book is the difference between *tropes* and *modes*. Theorists of *tropes* (cf. Campbell 1990, Simons 1994) identify objects with sets of properties. Heil, however, maintains that *objects* and *modes* are distinct, and that one cannot be built upon the other. If objects are different from the modes in which they happen to occur, in principle we can conceive an object by extracting it from the properties that characterize it. Therefore an object would be nothing else but a neutral property bearer, waiting to be determined by its properties. However, if objects meant as property bearers are logically acceptable, it is hard to conceive of them from a perspective other than a logical one. In fact, if objects can only be identified by virtue of the properties that characterize them, how can objects be identified apart from their properties? Heil holds that *modes* are characterizations of objects, and vice versa, objects are entities which are characterized by the *ways they are*. As a bolster to this idea he recognizes objects as *substrata* (in accordance with Locke; cf. Heil 2003: 173); but in this case he has to make the relation between objects meant as *property bearers* and *the properties that objects bear*; especially if the *theory of modes* is opposed to the *theory of tropes*. This clarification would help to understand the assumption of substrata meant as property bearers; in fact, they are intuitively distinct from sets of properties or from simple properties, yet such a distinction has to be justified in a more complete way both at a logical and argumentative level.

Finally, I wish to warn those who perchance superficially read *From an Ontological Point of View*. A quick skim through the book could leave the reader disappointed mainly in relation with Heil's several declarations of intent about the coherence and convergence between his metaphysical challenge and scientific progress. In the beginning of the volume the author claims that what he wants to say "… fits well with what we have learned or might learn from the empirical sciences and […] with ordinary canons of plausibility." (Heil 2003: 2). Elsewhere, and more than once, in the text, Heil evokes empirical sciences, and in the incipit of his précis he affirms that one of his central aims is "... to outline an ontology that makes sense of the world and our place in it in light of both scientific observation and ordinary experience." (cf. Précis: *Introduction*). However explicit references to science and especially to recent findings in cognitive science are scarce. Yet the cognitive sciences can provide important knowledge about mind and brain, which should be relevant for Heil and his ontology intended to be subordinate to the philosophy of mind.

Actually, Heil's ontological discourse seems to be at such a basic foundational level that it is meant to precede the relationship between scientific knowledge and the conceptual structure of our convictions which are grounded on intuition. Most likely, it is for this reason that the appeal to scientific findings in general and to the cognitive sciences in particular are rare in this book. The sciences, at least the sciences at an advanced level, are endowed with specific ontological platforms that Heil wants to make compatible with a general, superordinate ontology that should be shared both by the sciences and by common sense. If this is one of Heil's aims, the hypothesis of a general ontology inclusive of every discourse, the scientific one as well as the one of common sense, then, maybe, he is a little guilty of an excess of foundationalism. A more cautious and less bold ontological challenge might conceive of the relationship between knowledge of common sense and science in terms of an osmotic relationship, in which neither is founded on the other but both rely each on the other on equal terms. A shared ontology should be derived from a synthesis of this mutual conceptual underpinning; it should not be postulated *a priori*. Recently Alvin Goldman (2007) has applied a strategy of this kind looking towards cognitive research, but he has reached a pluralist (or at lest dualist) ontological result that seems to confirm the distinction between two categories. Whereas one is grounded on the intuition of common sense, the other is more based on scientific knowledge. Maybe, in order to obtain a more balanced metaphysical framework, it is worth exploring the possibility of conjoining Goldman's strategy, which confidently employs the findings of the cognitive sciences, with Heil's approach, which is set up on a level of abstraction

required by a (perhaps excessively) foundational project.

From an Ontological Point of View proposes a program for the systematic construction of an ontology which should above all facilitate the re-formulation of many problems in the philosophy of mind. The authors of the commentaries in this forum have shed light on some of the weaker aspects of Heil's program. However, all five of them agree that the program has its merits, and are unanimous about the necessity to make a clean break with the overly-linguistic legacy in metaphysics inherited from the past century. My hope is that Heil develops more articulate and organic answers in response to the criticism presented against him in this forum. Perhaps he could write another book for this occasion. It would be most welcomed by myself and the authoritative philosophers who have taken an interest in this topic. While *From an Ontological Point of View* may not have singled out *the* right ontology for the mind, it has decisively pointed us in the right direction from whence to continue our search.

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Précis of *From an Ontological Point of View*

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1   Introduction

One of my central aims in setting out to write *From an Ontological Point of View* was to outline an ontology that makes sense of the world and our place in it in light of both scientific observation and ordinary experience. Many of the core ideas were absorbed from C. B. (Charlie) Martin, a longtime friend and philosophical mentor. I am happy to say that a major work of Martin's, *The Mind in Nature*, will at last be published in the upcoming year (Martin 2008).

Martin, himself, was heavily influenced by Locke. One way to read my book is as an attempt to update and spell out what seems right in Locke's general metaphysical approach. I see that approach as congenial to another of my Enlightenment heroes, Spinoza. I like to think of Locke and Spinoza as differing mainly on the question whether the world includes one or many substances. From one perspective, this is not a deep difference.

2   Properties

Let me begin by mentioning one topic on which Enlightenment philosophers generally agreed, but which is nowadays regarded with considerable suspicion. Descartes, Spinoza, Leibniz, Locke, Priestley, Berkeley, Hume, even Kant all included properties in their ontologies, but denied that properties are universals. They regarded properties as *modes* (from the Latin *modus*, way), ways objects are.[1] Nowadays, D. C. Williams's term 'trope' has replaced 'mode' in the philosophical lexicon, but I shall continue to honor tradition and speak of modes here as I do in the book.[2]

My antipathy toward universals is grounded neither in an a priori argument as to their impossibility, nor a taste for desert landscapes. I admit that I don't 'get' universals. Once we abandon the idea that universals are molds God wields to stamp out kinds of particular, I don't understand what role Platonic, transcendent, universals could possibly have in the spatio-temporal world, what they could possibly explain. Nor do I understand how Armstrong-style, immanent universals could be wholly present in each of their spatio-temporally distinct instances. You could chalk this up to a failure of imagination. My more immediate worry concerns the role of universals in philosophical theorizing: I cannot see what advantage universals enjoy over collections of similar modes (see Heil 2005 for discussion).

Proponents of universals tell us that objects behave, or would behave, similarly in virtue of possessing *one and the same* property. I have never quite seen how this is supposed to be an advance over the idea that objects behave, or would behave, similarly in virtue of possessing *similar* properties. In the case of the fundamental things, the similarity is precise. If similarity is

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1   Jerrold Levinson has informed me (in correspondence) that he characterized properties as 'ways of being' in Levinson 1978 (see also Levinson 1980). My first encounter with the idea that properties are ways came in a lecture on Spinoza's 'vacuum argument' delivered by Jonathan Bennett at the University of Virginia at about the same time.
2   E J Lowe is also partial to 'mode'; see his 2006.

understood to include both dispositional and qualitative elements, then it is hard to see why we should need to posit a category of being that differs dramatically from particularity (which we require in any case).[3]

Enlightenment philosophers did not argue against universals so much as get along without them. Something else they got along without was the idea that the fundamental ontological facts about concrete objects could be extracted from linguistic facts. Yes, we regard trees, persons, and planets as substances, but we could be—and probably are—wrong in this. A tree for Descartes, Locke, or Spinoza, for instance, was not a substance but a mode: a way the corpuscles were organized or a local 'thickening' of space. The idea that language is a telescope through which we view the world was not on the table.[4] The thought that our best, or in some cases only, route to objects and their properties is via language is a product of the twentieth century linguisticization of philosophy. Yes, we talk about and describe objects. Yes, we use words to identify extra-linguistic reality. But we also interact with objects in endless nonlinguistic ways. Take trees. We plant and cultivate them, stand in their shade, climb them, crash automobiles into them, cut them down, build furniture and dwellings from them, turn them into paper.

The idea that our comprehension of the furniture of the world is fundamentally and irreducibly linguistic, the idea that we encounter the world through a veil—or lens—of language, is one that could only have originated in Oxford. Language evolved in the course of our interacting with the world. Predicates we introduce to describe worldly goings-on mirror salient similarities. Differences among predicates can indicate important worldly differences. The mistake is to construe linguistic categories as legislating, rather than roughly reflecting, boundaries and divisions in the world. Language is a vehicle of thought, an intentional medium, not a philosophical be-all and end-all.

In *From an Ontological Point of View*, I rail against what I call the Picture Theory, the doctrine, roughly, that we can ascertain important features of the world by carefully studying our ways of talking about the world. This is not something I want to turn into a crusade. I would be content if we could agree on the much less controversial idea that it is unlikely that there is a one–one predicate–property correspondence. Many (most, practically all) the predicates we use to characterize ourselves and our world do not designate properties. Yes, these predicates typically apply truly to worldly items in virtue of those items' properties. But the further thesis, the idea that realism about *F*'s requires that we take 'is an *F*' as designating a property possessed by everything to which it applies and in virtue of which it applies, is much too strong.

I see our failure to appreciate this simple and (I hope) uncontroversial point as responsible for many of the most egregious extravagances of contemporary metaphysics, chief among them the idea that the world consists of hierarchically ordered levels of being. This idea is at the heart of the multiple realizability craze and the accompanying doctrine of 'non-reductive physicalism'. Both are children of a linguisticized metaphysics according to which significant predicates, or at least those predicates we take seriously as vehicles of unadulterated truths about the world, must 'express' properties. If we have reason to think the predicates in question fail to pick out respectable physical properties, we are faced with a choice. On the one hand, we could opt for some form of anti-realism: an 'error theory', expressivism, or out and out eliminativism. In the case of mental states and properties, these options appear unpromising. On the other hand we could insist that the

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3 Having expressed doubts about universals, I should point out that much of what I say here (and in *From an Ontological Point of View*), is perfectly compatible with the thesis that properties are universals.

4 The telescope metaphor is invoked by Timothy Williamson. 'Philosophers who refuse to bother about semantics, on the grounds that they want to study the non-linguistic world, not our talk about that world, resemble astronomers who refuse to bother about the theory of telescopes, on the grounds that they want to study the stars, not our observation of them. Such an attitude may be good enough for amateurs; applied to more advanced inquiries, it produces crude errors. Those metaphysicians who ignore language in order not to project it on to the world are the very ones most likely to fall into just that fallacy, because the validity of their reasoning depends on unexamined assumptions about the structure of the language in which they reason.' (Williamson 2006: 182) Heather Dyke called my attention to this quotation.

predicates do indeed designate properties, just not straightforwardly physical properties. Rather they express 'higher-level' properties, properties possessed by objects in virtue of those objects' possession of assorted 'lower-level' physical properties.[5]

Once we jettison the idea that favored predicates *must* designate properties, however, *both* anti-realism and levels of being go by the board. We can be realists about states of mind without thereby encumbering ourselves with dodgy higher-level items. Your being in pain is a matter of your being in some (presumably neurological) state; an octopus's being in pain is a matter of the octopus's being in a similar, but not *precisely* similar, state. To the extent that functionalism is right in individuating states of mind by their causal profiles, pain states will exhibit *similar* causal profiles. There are properties answering to predicates, all right, *similar* properties, just not a single property possessed in common by all the items to which each predicate applies.

3   Dispositions and Qualities

Many philosophers nowadays turn up their noses at talk of modes or tropes. Properties, they think, must be universals. I have suggested that this attitude would not have been shared by our Enlightenment forbearers, who were all but unanimous in regarding properties as particular ways objects were: modes. But what is included in a mode's nature? We are used to distinguishing dispositional and categorical properties. Are some modes dispositional, others categorical?

The dispositional–categorical distinction is, I contend, another product of linguisticized metaphysics. The origins of the distinction lie in a confusion between dispositions and their manifestations. The thought was that some properties, the categorical properties, are here-and-now, 'categorically' present in their possessors. Other properties, however, are not categorical, not here-and-now. These properties are if-thens. To say that lime is soluble in water, is just to say that *if* you were to put lime into water, *then* it would dissolve. Because the solubility of lime apparently depends on certain of its categorical, here-and-now properties, we will have to say that dispositions are 'grounded in' categorical properties. Further, it looks as though the same disposition—solubility in water—could be possessed by objects in virtue of those objects' possession of very different categorical properties. In a twinkling we have a multiple realizability argument for dispositional properties.[6]

I have explained already why I think arguments for multiple realizability fail. The case of dispositions is especially egregious. You might like the idea of dispositions because you like the idea of objects' exhibiting causal powers in virtue of their properties.[7] A ball rolls or would roll because it is spherical, a paint soaked rag ignites or would ignite because it is flammable. But if dispositions are 'grounded in'—realized by—categorical properties, how could *dispositions* come to play any sort of causal role? It looks as though objects do or would do what they do, not in virtue of their dispositional properties, but in virtue of the categorical realizers of those properties. The point is made explicitly by Frank Jackson, a founding father of the 'higher-level' conception of dispositions. Jackson regards the view that dispositions might themselves be causally efficacious as implying 'a curious and ontologically extravagant kind of overdetermination' (1977: 202; 1998: 92). If the categorical realizers of dispositional properties are doing the causal work, why imagine that dispositions they ground could make a causal difference?

This line of thought strikes me as especially baffling. Dispositions are introduced in part because of an interest in objects' causal powers. It then turns out that dispositions themselves are powerless. If the categorical grounds of dispositions are doing the causal work, however, why not

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5   Higher-*level* properties are often called higher-*order* properties. But higher-level properties, mental properties, for instance, are not thought to be properties of properties. Mental properties are taken to be properties possessed by objects in virtue of those objects' possession of distinct realizing properties. Functionalists put this by saying that a mental property is the property of having a property that plays a particular kind of causal role.

6   The argument, succinctly formulated by Prior, Pargetter, and Jackson (1982), has proved remarkably influential.

7   'Disposition' and 'power' are used interchangeably in the discussion to follow.

just collapse the disposition into its categorical ground? So far as I can see, the only reason not to do this is the conviction that dispositions are multiply realizable. If it is true that this vase and that gramophone record are both fragile, they must share some property in virtue of which they are fragile. But the vase and the gramophone record share no lower-level physical property in virtue of which they are fragile: what grounds the vase's fragility is very different from what grounds the fragility of the gramophone record. So the property, being fragile, cannot be identified with any lower-level physical property of fragile objects. Being fragile must be a higher-level property realized by diverse lower-level properties. And, unless you are sanguine about overdetermination or violations of closure, you will doubt that any higher-level property could make a causal difference.

But why go along? Why not think that 'is fragile' is true of the vase and the gramophone record, not in virtue of their possessing the *very same* (or, if properties are modes, an exactly similar) property, but in virtue of their possessing *similar* properties? This is not a form of anti-realism about fragility. It is true, literally true, that objects are fragile. Objects, however, can be fragile in different ways. A gramophone record is not fragile in quite the way a vase is fragile. You could think of the different ways objects can be fragile as determinates of the determinable 'is fragile'.

Suppose this is right. Suppose that 'is fragile' is made true by objects' possession of any of a (possibly open-ended) family of similar properties and suppose we want to be realists about dispositions. Dispositions would be identified with the lower-level 'realizing' properties. The resulting view amounts to the view of properties defended in *From an Ontological Point of View*. There I describe properties as powerful qualities: properties are qualities *and* powers. Powers and qualities are not distinct second-order properties, they are the very same property, differently considered. Properties make a qualitative *and* dispositional difference to their possessors.

The idea is that, in virtue of possessing a property, *P*, an object has a particular quality, *Q*, and a particular power, *R*. But now we are bound to ask how *Q* and *R* are related to one another, and how they are related to *P*. I say that *Q is R* and that these *are P*.

4   The Relation between Qualities and Dispositions

Some readers find this thesis incredible. I fail to see the problem. It is, as I interpret him, Locke's position, and it is embraced by Spinoza as well.[8] This should at the very least give pause to those who dismiss the view out of hand. I spend considerable time in the book motivating the quality–disposition identity thesis by pointing out costs accompanying its competitors. Suppose, for instance, you thought qualities and dispositions were different species of property. This would make qualities causally impotent. How could we then account for our apparent ability to perceive qualities? You might accept that qualities are unperceivable, but that would render most of what we think of as qualities of objects either unperceivable or purely mental 'projections'. Pushing the qualities into the mind threatens a unified conception of the world, an option to be explored only when other options have been exhausted.

Peter Unger has recently argued at length that we need physical qualities if we are to have a coherent conception of physical reality (Unger 2006). This strikes me as right. Unger, however, is unwilling to identify powers and qualities. These, he thinks, are related only contingently. I believe that there are deep problems for Unger's Big Picture (see Heil 2007). I shall touch on those problems in the discussion to follow. First, however, let me note in passing that there are two positions you might take if you like the idea of tying powers to qualities. You might take the tie to be contingent as Unger does, or you might regard the tie as necessary.

Suppose you embrace the second option, suppose you embrace the idea that powers and

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8   Locke, I contend, regards properties as powerful qualities. Spinoza differs from Locke chiefly in holding that there are not many substances (the corpuscles), but only one. This substance has infinite attributes. Imagine that I am right and that two of the attributes (the only two accessible by us) are dispositionality and qualitativity. How are these attributes related? It is natural to read Spinoza as holding that the attributes are strictly identical. Differences are differences in conception, not ontological differences.

qualities are necessarily conjoined. You might like this second option because you like the idea that a property's nature is qualitative and dispositional; properties make a causal *and* a qualitative difference to their possessors. The question now is, what is the nature of this necessary connection? One possibility is that it is a primitive, 'brute' necessity: the *F*'s and *G*'s co-vary of necessity, end of story. Perhaps we need such primitive necessities. It is preferable, however, to avoid them if we can: they have an *ad hoc* feel about them. Suppose, in contrast, that the *F*'s *are* the *G*'s. Then, although it will be true that the *F*'s and *G*'s co-vary of necessity, the necessity is transparent.

So I see the identity thesis as offering an ontologically perspicuous account of an otherwise puzzling necessity. You might agree, but insist that the account is, on the face of it, implausible. But is it? Let me try to soften your resistance to the thesis by looking more closely at contingency.

Hume thought it obvious that qualities and powers are at best contingently related. Much of the rhetorical force of Hume's examples, however, depends on his considering complex objects as wholes. An object's qualities and its powers depend on *all* its properties and their interrelations. You might vary some of these without varying others. The result would be a qualitatively similar, differently behaved, object. A billiard ball could be hollowed out and filled with helium, packed with an explosive, or made magnetic without changing in outward appearance. It is scarcely surprising that balls differing in this way would behave differently when struck by a billiard cue or by another billiard ball.

More significantly, what an object does, how its dispositions manifest themselves, depends on its reciprocal disposition partners. If we change an object's circumstances while holding its powers and qualities constant, what the object does could change as well. A ball that would roll down an inclined plane on the Earth's surface, would not do so in other circumstances—if it and the inclined plane were placed in orbit, for instance, or in a wind tunnel.

We can, then, entertain coherent thoughts of objects remaining qualitatively unchanged, but behaving differently, if we allow other factors to change. It is much harder to imagine objects behaving differently if these other factors are held constant as well. Rather than using colliding billiard balls as our model, consider two gears engaged in such a way that the one's rotating clockwise causes the other to rotate anti-clockwise. Is it really so easy to entertain the possibility of the gears' remaining qualitatively unaltered, yet the one's clockwise rotation causing the other to rotate clockwise?

If you are a dyed in the wool Humean, you might dig in and insist that this is certainly imaginable. In that case we have dueling theories. Bear in mind, however, that Humeanism did not fall from the sky. Humeanism is an *-ism*, a theory. Unlike the heavyweight champ, Humeanism does not win by default unless decisively defeated. This simple thought—the thought that, in philosophy, there are no default theories, no heavyweight champs—is easy to lose sight of in the thick of metaphysical debate. In the end we have competing theories that need to be evaluated on their own merits. One theory is to be preferred, not if it decisively unseats its competitors, but if it is more resourceful than its competitors, if it does a better job of articulating a coherent picture of the world and our place in it.

On my view, the appearance of contingency among powers and qualities could diminish as we refine our investigations into, what Locke called, 'the finer interstices of nature', a point Charlie Martin has long been fond of making. Robust contingencies, no less than necessities, must, as Martin puts it, earn their keep.

5   Motivating the Identity Thesis

Stirring rhetoric, perhaps, but *can* I make plausible the idea that properties are powerful qualities? Is such a thesis even a *contender*? As noted already, in the book I hoped to show that the alternatives are worse. I expect resistance here, but let me return to an earlier point about the thesis that dispositions are grounded in (realized by) non-dispositional categorical properties. On such a view, dispositions reside at an elevated level of being relative to their grounds. One way to think about the

grounding properties is to regard them as qualities.[9] If you find my criticism of the multiple realizability argument cogent, however, you will locate the dispositions among the 'grounding' properties, the 'realizers'. This takes us part of the way toward our goal: including the dispositions among the realizers turns the qualities into powerful qualities. The only question remaining is whether the very same qualities could *fail* to incorporate these powers. If the quality–power relation is, as I claim, strict identity, the relation could not be contingent.

Well, suppose I am right: qualities *are* powers. Were this so we could account for cases in which we evidently perceive qualities. If you think that a ball's sphericity and the ball's redness are qualities of the ball, and if you think that these qualities are perceivable, then you are coming close to the thesis that the qualities are powers. I find that, in conversation, philosophers are willing to go part way with this thought. Rather than drawing my conclusion and identifying the qualities with the powers, however, they prefer to conclude that redness and sphericity must not be qualities after all: they must be powers. You *would* conclude this if you started with the assumption that qualities and powers are mutually exclusive. But this is precisely the point at issue. My contention is that a very natural way of thinking regards qualities as causally efficacious.

Although I have appealed to perception and knowledge in these comments, my aim is not to invoke any form of verificationism. At this stage, I hope only to have dampened the appeal of the idea that qualities and powers are mutually exclusive. Return to the ball's redness and sphericity. In virtue of being red and in virtue of being spherical, the ball looks red and spherical. But equally, in virtue of being red, the ball reflects light of a certain wavelength, in virtue of being spherical the ball rolls and makes a concave impression in soft clay. If you think that the ball's redness and sphericity are not proper qualities, I invite you to introduce your own qualities. Then ask of these: are they perceivable? Do they make a difference in how the object possessing them behaves or would behave?

Perhaps you still think that it is not the ball's redness or its sphericity that is at work when the ball rolls or reflects light in a particular way. You might think that the causal work is being done by powers contingently conjoined to these qualities. Were that so, a quality, the ball's redness, for instance, would not be the cause of your perceptual experiencing. Your experience would be caused by a distinct power. In what sense, then, would you be perceiving a *quality* when you perceived the ball's color? Or consider the power to roll contingently possessed by the ball. The ball does not roll because it is spherical but because it has this power, a power it could lack while retaining its sphericity. This is what those who think powers and qualities are contingently related appear to have in mind.

Let me call attention to certain ill-understood consequences of the contingency thesis, however. Suppose that shapes are qualities. It is natural to think that the ball rolls because it is spherical. The thought now is that sphericity and the power to roll are only contingently connected. But is the power to roll—the *very same* power—a power that could have been possessed by a cube? Cubes might roll, no doubt, and indeed cubes will tumble down inclined planes with sufficiently steep slopes. But in a world in which cubes tumbled down gently sloping inclined planes, their tumbling bears only a crude resemblance to a ball's rolling.

Bear in mind that, if we are allowed to change the circumstances, we can imagine an object behaving in dramatically unexpected ways while retaining all its original powers. Spheres can be stopped in their tracks, cubes can freely tumble about when subjected to invisible forces. Their so behaving is no indication that they have lost powers they once had. On the contrary; they behave as they do precisely because they have *retained* those powers.

What of the individuation of powers? I hold that, in virtue of its sphericity, a sphere would roll, would reflect light so as to look spherical, would make a concave impression in soft clay. This looks like a problem for the quality–power identity thesis: we have one quality, three powers.[10] Or

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9 This is what Rae Langton (1998) apparently has in mind in her interesting book on Kant.
10 This is Unger's chief complaint against the identity thesis; see Unger 2006, 100–105.

do we? The manifestation of a power is typically a mutual affair. *How* a power manifests itself depends on both (a) the nature of the power, and (b) the nature of its 'reciprocal manifestation partners'. One power can manifest itself in different ways with different kinds of manifestation partner. We are apt to lose sight of this important aspect of powers so long as we rely exclusively on conditional locutions to individuate powers.

(1)   If it were placed on an inclined plane, the ball would roll.

(2)   If it were dropped into soft clay, the ball would make a concave impression.

The thought is: two conditionals, two powers. The Picture Theory in action. Yes, there are two conditionals, but these conditionals are merely two ways of picking out a single power, a power that manifests itself differently with different reciprocal partners.

Let me pause briefly to interject a reminder. If you accept the idea that the manifestation of a power is, typically anyway, a reciprocal matter, you will not want to distinguish 'active' and 'passive' powers. Nor will you want to think of manifestations as patiently waiting to be 'triggered' or 'enabled' in the company of assorted 'background' conditions. Such terms misleadingly impute an element of asymmetry where none is present. The manifestation of a power is most often the *mutual* manifestation of many powers. Your continuing to exist in a stable state, for instance, depends on a large number of factors including your intrinsic makeup and ambient atmospheric and gravitational conditions. Talk of 'triggering' and of 'background' or 'enabling' conditions reflects pragmatic factors pertaining to explanation, not the ontology of what is explained.

Now return to the idea that qualities and powers are merely contingently related. The ball's power to roll *is* its power to reflect light in a particular way so as to look spherical, *is* its power to make a concave impression…. If this power is only contingently related to sphericity, then we must suppose it could be possessed by objects lacking sphericity. It is one thing to imagine tumbling cubes, something quite different to imagine tumbling cubes that reflect light so as to look spherical, that make the kind of impressions in soft clay resembling those made by spheres, that….

I hope that the idea that qualities and powers are only contingently related is beginning to lose some of its initial charm. Now that I have your attention, let me point out another apparent difficulty for the contingency thesis. I have said that the way a power manifests itself is a function of two factors: the nature of the power, and the nature of the reciprocal power (or, more likely, *powers*).[11] The ball rolls down an inclined plane owing to its sphericity *and* owing to the inclined shape of the surface down which it rolls *and* on its being located in a gravitational field. Change these, and the ball no longer rolls—although of course it retains its power to roll. If sphericity and the power to roll are only contingently related, so are the shape of the inclined plane and the reciprocal power to allow for rolling.

Strictly speaking, however, on the contingency thesis the ball does not roll down the plane owing to its shape or to the shape of the plane, but to powers contingently associated with each of these. But what are these powers? How are they individuated? It's no fair individuating them by reference to qualities of objects possessing them. These are merely contingent accompaniments of the powers. But how are we to think of a power to make a certain kind of concave impression in soft clay without thinking of the clay's shape—a quality of the clay? We must have powers individuated by reference to other powers: *pure* power individuation.

I am skeptical of pure power individuation. The difficulty here parallels difficulties Martin has pointed out with various reductive programs in philosophy, including phenomenalism and attempts to reduce dispositions to conditionals (Martin 1997). In articulating these doctrines we find it impossible not to appeal to items we are trying to banish. In the case of phenomenalism, the items in question are physical objects: the tree is in the quad just in case *were your sense organs in good working order*, and *were you in the quad*, you would have a treeish perceptual experience. In the

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11 Unger (2006) endorses this thesis, but seems not to have digested its implications.

case of conditional reductions of dispositions, the recalcitrant items are qualities: the ball has the power to roll if, *were it placed on a gently sloping inclined plane*, it would roll. In each case, the italicized phrases incorporate reference to the very things we had hoped to eliminate.

My suggestion, then, is that the individuation of powers involves an ineliminable qualitative component. This is what you would expect if you thought, as I do think, that the qualities *are* powers.

The line of reasoning here suggests a surprising connection between longstanding worries about conceptions of properties as 'pure powers' and the contingency thesis.[12] If I am on the right track, what has made philosophers uneasy about the pure powers thesis is best understood as stemming from concerns about power individuation. As it happens, these same concerns beset the seemingly weaker contingency thesis. If you have doubts that properties might be purely powers, then you should have doubts that properties embody powers contingently. The existence of such a connection, although perhaps surprising, is not entirely unexpected. In ontology, one thing leads to another. Picking and choosing ontological theses without a clear grasp of their interrelations is a recipe for shallowness.

We can now see that several strands of thought on properties, qualities, and powers begin to converge. The individuation of powers apparently involves qualities. This pushes us in the direction of the idea that properties and powers are necessarily, not contingently, related. If qualities enter into the individuation of powers, and if powers are best understood as manifesting themselves mutually, this speaks in favor of the identity thesis: properties are powerful qualities: a property's nature includes qualitative and dispositional elements. These elements reflect different ways of classifying properties, not deep ontological divisions. You could say that properties have qualitative and dispositional *aspects*, provided you go with Spinoza (or Spinoza as I have interpreted him) and allow that the relation of these aspects is that of strict identity.

Let me mention one residual worry some readers might have. I have said that the ball rolls, reflects light in a particular way, makes a concave impression in soft clay in virtue of its sphericity. But can this be right? A ball made of sticky tape might fail to roll; a black velvet ball might reflect no light at all, a marshmallow ball might fail to make any impression when dropped into soft clay.

What any object would do depends on all its properties. If we are interested in the causal contribution of particular properties, however, we need to look at particular features of manifestations. The ball's rolling depends on, among other things, its having a sufficient mass and the support of a sufficiently rigid surface. But the ball's rolling, its rolling in just this way, as distinct from its sliding or remaining stationary, depends on its sphericity. The ball's making an impression in soft clay depends on its being rigid; it's making a particular kind of concave impression depends on its sphericity.

6 Ontological Candor

I have thus far focused largely on substantive ontological matters that arise in *From an Ontological Point of View*. Let me conclude with some comments on ontology generally and truthmaking in particular.

My criticism of the Picture Theory is at bottom a plea for what Australians call *ontological candor*, the idea that when you advance an ontological thesis, you should be prepared to say something about what might make that thesis true. Ontological candor demands ontological seriousness. Most philosophers find unsettling Ryle's famous discussion of dispositional ascriptions as truths that lack truthmakers. 'Dispositional statements are neither reports of observed or observable states of affairs, nor yet reports of unobserved or unobservable states of affairs' (Ryle 1949: 125). Dispositional statements, Ryle contends, do not answer to features of the world, but

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12 See, for instance, Campbell (1976: 93–4); Swinburne (1980); Foster (1982: 67–72); Blackburn (1990); Martin (1997: 213–17). A closely related argument is advanced by Armstrong (1961, chap. 15; and 1999).

function as 'inference tickets'. If it is true that this white powder is water soluble, then you are entitled to infer that, were the powder placed in water, it would dissolve. Your being so entitled is in no way traceable to the makeup of the powder, however. There is nothing about the powder in virtue of which it is true that it would dissolve in water.

I suspect that most readers would find Ryle's lack of ontological candor unappealing. I regard as no less unappealing the want of ontological seriousness in today's analytical metaphysics. Possible worlds provide a nice example. David Lewis, whose ontological candor was exemplary, regarded alternative worlds as concrete self-contained entities. Among other things, alternative worlds provided Lewis with truthmakers for modal claims.[13] What strikes me as objectionable about most philosophers' appeals to possible worlds is not the fancifulness of the doctrine. What is objectionable is to say (as I myself once said) that, although alternative worlds do not *really* exist, we can still appeal to them in explicating modal claims. If counterfactuals are true by virtue of goings-on in other worlds, but those other worlds do not exist, then they must be true in virtue of something about *this* world. The question is, what might that something be?

I believe that dispositional features of the actual world can ground numerous modal claims. I could be wrong, but I am inclined to think that some (many? all?) modal claims require truthmakers of some kind. You can embrace the need for truthmakers without thereby taking on any particular conception of what those truthmakers might be.

Some philosophers distain talk of truthmakers. One worry is that it is hard to know what the truthmaking relation might be. John Bigelow says that truth 'supervenes on being' (Bigelow 1988). The idea is that, if truths about the world were different from what in fact they are, the world would have had to be different. This has an alluring ring to it, but I think it advisable to resist appeal to supervenience here. Part of the reason is that supervenience as standardly characterized is a purely modal notion, and it would be good to know, when we are told that the *A*'s supervene on the *B*'s what it is in virtue of which the *A*'s supervene on the *B*'s (Heil 1998). Do the *B*'s *cause* the *A*'s? Are the *A*'s *made up of* the *B*'s? Are the *A*'s *identifiable with* the *B*'s? None of these relations is apt for truthmaking, but then what *is* the truthmaking relation?

Another, less obvious reason to resist talk of truths supervening on being, is that talk of *A*'s supervening on *B*'s leads naturally to the idea that the *B*'s in some way necessitate the *A*'s. But what is necessitated? To have a truth, you must have a truth *bearer*, something made true. Does the world's being as it is necessitate true representations? Some philosophers will not find this prospect repellant. Why not let propositions be the bearers of truth (Armstrong 2004)? But what are propositions? Are propositions *abstracta*? Whatever they are they must be the sorts of thing that could be true or false; propositions must be representations.

Whatever your views on *abstracta*, there are excellent reasons to doubt the existence of propositions. We know that intentionality and representation do not attach to entities. An entity, mental or otherwise, comes to have a particular sense when it is *used* representationally by an intelligent agent. Propositions appear to be impossible entities: entities with their meanings built in. If we are going to have truth bearers, they had better not be propositions.

I follow David Armstrong in thinking that the truthmaking relation is an internal relation (Heil 2006). An internal relation is, roughly speaking, one in which, if you have the relata (just as they are), you thereby have the relation. An internal relation is no addition of being over and above the relata. Suppose *A* is three meters tall and *B* is two meters tall. If you have *A* and *B* (as they are), you thereby have *A*'s being taller than *B*. This is how it is with truthmaking. If you have a truth bearer, a representation that the world is a particular way, and you have the world's being that way, you have the truth bearer's being true.

Truth, on this conception requires *both* a truth bearer and a truthmaker. Truth bearers are concrete representations, utterances, thoughts, and the like, not *abstracta*, not propositions. If this is

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13 In speaking of Lewis's worlds, I prefer *alternative* to *possible*. This avoids the suggestion that the other worlds are in some way less real, less actual, than our own.

right, it is no wonder that we have no meaty accounts of the truthmaking relation—and, by extension, no meaty accounts of truth. The difficulty is not in working out a dark truthmaking relation, but in providing an account of intentionality or the capacity to represent ways the world is. Once you have the representations and the world, you have the representations being 'made true' or not, you have the truths.[14] This means that there are no unrepresented truths, but not because truth in some way depends on us. The world includes features that will never be represented. Those features are as real as any. We 'discover truths', not by bumping into abstracta, but by discovering how the world is.

7   Concluding Remark

These brief remarks cover only a few of the topics addressed in *From an Ontological Point of View*. I have wanted to focus on matters that have broad implications for metaphysics generally. Many readers will remain unconvinced. That is how it is with philosophy. We defend positions that seem to us, at the time, invulnerable, only to have pointed out to us difficulties we hadn't anticipated. This can make the pursuit of truth in philosophy seem hopeless. Yet despite it all somehow there *is* progress, somehow we *do* refine our conception of the world and our place in it. Philosophical advance is not incremental. We approach the truth by stumbling on better ways to think thoughts that many have had before us. To expect more is to ride for a fall, to be guilty of that most philosophical of sins, *hubris*.

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14 See Lowe 2006, chap 12 for an apparently similar view. According to Lowe, *T* is a truthmaker for a proposition, *p*, just in case it is an essential feature of *p*, that if *p* is true, *T* exists.

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A Critical Study of John Heil's *From an Ontological Point of View*

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Metaphysicians eager to engage with substantive, thoughtful, and provocative issues will be happy with John Heil's *From an Ontological Point of View*. The book represents not only a sustained defence of a specific metaphysical theory, but also of a specific way of doing metaphysics. Put ontology first, Heil urges us, in order to remember that the original fascination of metaphysics wasn't the question 'what must the world be like in order to correspond neatly to our use of language?', but rather the altogether more fundamental 'what must the world be like?'.

Heil constructs his book as a systematic argument for specific ontological commitments, but the insights of his methodology are far more wide-ranging. We're fully on board with Heil's way of doing metaphysics, so what we'd like to do here is give some indication of the scope of Heil's way of doing things. We'll outline what we take to be the overarching 'Heil Programme' for metaphysical investigation. We'll then gesture towards some applications of it, ranging from the standard (the special composition question), to the unexpected (emergence, the ontology of mathematics and holes), to the downright bizarre (ontic vagueness). Our aim is to show how Heil's methodology can (sometimes radically) recast metaphysical debates, highlighting certain difficulties and pseudo-problems and focusing our attention back on the place where, as metaphysicians, it was always meant to be – the world.

1   The Heil Programme, part 1 – Against an Ontology of Levels

A man walks into a bar. Ouch! – it was a steel bar. A Vulcan walks into a bar. Ouch! – it was a dilithium bar. When the man and the Vulcan each exclaim 'Ouch!' it seems they have something in common. Call that something 'pain'.

What is this thing they have in common? Putting the Vulcan aside for the moment and concentrating on the man, it seems tempting to identify this mental state with a brain state, say c-fibre stimulation. The problem is, there are no c-fibres in the Vulcan's brain (let us suppose), and so if the man's pain really *is* identical to his c-fibre stimulation then he doesn't have something in common with the Vulcan after all.

What to say? Perhaps the mistake was to identify the mental state with anything physical. Perhaps there is a dualism between mental and physical properties; perhaps there is even a dualism between mental and physical substances. If either dualism is true then there is no problem in ascribing the mental property of being in pain to both the man and the Vulcan. Things can be as physically dissimilar as you like and yet, for all that has been said, be mentally similar. The man and the Vulcan can share mental properties even if they share no brain-state properties. Indeed, there seems to be nothing to stop us merrily attributing pains to stones, galaxies or art collections either, or even letting them float free in the void.

While the identity theory seemed to err by making the relationship between mental properties

and brain-state properties too close, dualism seems to err by making it not close enough. Perhaps we should aim for a middle ground then. We do not want to say that pain is identical to a brain-state because we want to say that the man and the Vulcan are both in pain, and yet they (we may suppose) share no brain-states in common; but nor do we want to let pains float free of brain-states, for we do not want it to be a remarkable coincidence that pain seems to correlate with c-fibre stimulation in men or with, say, d-fibre stimulation in Vulcans. Perhaps, then, pain is a 'higher-level' property, realisable by multiple 'lower-level' properties. In humans, pain is realised by c-fibre stimulation, but in Vulcans it – that very same property – is realised by d-fibre stimulation. The man and the Vulcan do share a property after all then: they share a higher-level property. They simply do not share their respective realisers of that property.

If we take this route we buy into an ontology of properties that is layered. Properties at one level realise properties at higher-levels. Perhaps there are some basic properties that are unrealised. Perhaps not. It's hard to know until someone tells us what the realising relation is, and explanations do not seem to be forthcoming.

Let's look at another example. In an art gallery, frequently visited by metaphysicians, lies a bronze statue. One could look at the area the statue is located in and say 'there is a statue' and speak truly, and one could say 'there is a lump of bronze' and speak truly. What is the relationship between the entities thereby said to be located there? Could it be identity? No, we are told; because while the lump of bronze could survive squashing, the statue cannot, and Leibniz's law tells us that a difference in properties between a and b entails numerical distinctness between a and b. Perhaps there's no relationship between these two things other than that they share the same location. That seems unlikely, though, because that would leave it a mystery why, whenever we take the statue away to get cleaned, we cannot leave the lump of bronze behind. Perhaps we should aim for a middle ground, then, relating the statue and the lump by something less intimate than numerical identity but more intimate than mere co-location. Call this relation 'constitution', and say that the lump of bronze constitutes the clay. Luckily, since constitution has simply been introduced to solve my problems, I can happily stipulate that a can constitute b and yet have properties that b lacks, so I avoid the problem the identity theorist faces from Leibniz's law; and since (we hereby declare) the statue must be constituted by something, this explains why I can't take it away and leave the clay behind.

If we take this route we buy into an ontology of objects that is layered. Objects at one level constitute objects at higher-levels. Perhaps there are some basic objects that are not constituted by anything more fundamental. Perhaps not. It's hard to know until someone tells us what the constitution relation is, and explanations do not seem forthcoming.

These are two examples of reasoning that quickly leads to a conception of reality as layered. But such a conception faces difficulties. What is the nature of the so-called 'higher-level' entities? We need to decide whether they (strong, weakly, globally) supervene on the lower-level entities. We need to decide whether they are ontologically reducible to the lower-level entities (and while we're at it, we should probably decide what we mean by 'ontological reduction'). And, perhaps most problematically, we need to decide how they can have any non-redundant causal powers, or indeed whether they in fact have any causal powers at all; if everything in a physicalist ontology is ultimately explainable simply by the interactions of the basic constituents of matter, then the 'higher-level' entities those bits of matter constitute begin to look epiphenomenal at best. These are only a few of the many puzzles engendered by the introduction of a stratified ontology of levels, and explanations do not seem forthcoming.

John Heil thinks the lines of reasoning that land us with ontological levels to be mistaken. He lays the blame on what he calls the Picture Theory: the view that features of the world mirror features of our language – that how the world is can be read off from how we represent it.

Let's return to the case of pain. The aspect of the Picture Theory that is causing the problem here, thinks Heil, is the view that whenever we can truly say of something that it is a certain way,

that this is so because the thing has a property that is shared by all and only the (possible) things that could truly be said to be that way. Given that we want to say of both the man and the Vulcan that they are in pain then, given this principle, we are committed to there being a property that they share. Since they don't share brain-state properties this leaves us with few options: either pain is a non-physical property, or it is a higher-level physical property that is realisable by multiple brain-state properties. Heil wants to resist the dilemma by rejecting the principle that says that, because the man and the Vulcan both satisfy a certain predicate, they must have a property in common in virtue of which they both satisfy that predicate.

Heil's position is best put in terms of truthmakers. There must be something that makes it true that the man satisfies the predicate *is in pain* and there must be something that makes it true that the Vulcan satisfies the predicate *is in pain*. What makes these true will be an instantiation of a property by the man and an instantiation of a property by the Vulcan respectively. But there is no reason at all to think that the property that is instantiated in each case must be the same: to think otherwise is to fall victim to the Picture Theory. Just because we group these two properties together in our language by using the same predicate to describe things with one property and things with the other does not mean that they are the same property. There are simply two distinct brain-state properties, both of which are such that the instantiation of them by an individual a is a suitable truthmaker for the claim that a is in pain. No higher-order properties are needed; instead of distinct lower-order properties realising the same higher-order property we have the much more familiar case of distinct entities making true the same proposition.

Discussions of the ontology of the mental have gone awry, thinks Heil, because of the pernicious influence of the Picture Theory. It tells us to posit shared properties when there is co-satisfaction of a predicate. Once we abandon the thought that language mirrors reality – once we accept that different things can satisfy the same predicate in virtue of different ontological features – the ontology of the mind looks a lot simpler, and there is no longer any temptation to posit a hierarchy of properties.

The aspect of the Picture Theory that Heil seems to think is to blame for the confusions in the statue/bronze case is the view that what objects there are mirrors our usage of sortal terms. It is true that, were the bronze statue squashed, we could still truly say 'there is a lump of bronze' but could no longer truly say 'there is a statue'. But why should we think as a result of this that there was some object there that is there no longer? Why not simply say that there has been one thing all along, but that it is no longer a statue? The puzzle only arises, it seems, if we think that the persistence conditions of objects mirrors our usage of the sortals under which those objects fall: earlier something fell under the sortal 'statue', but now nothing does, therefore there was a statue there that's no longer there; earlier something fell under the sortal 'bronze lump', and something still does, so a lump of bronze has remained there throughout; hence the statue and the lump of bronze are distinct. But why should we think that our usage of sortal terms tells us anything other than how we describe objects? Why should we think it reveals anything about persistence conditions? It is the subversive influence of the Picture Theory again – language mirrors reality, so we can move from facts concerning our representations of what is there to facts concerning what is there.

Again, thinks Heil, once we abandon the Picture Theory the case is a lot easier to solve. The data to be accounted for are just this: at time t both 'there is a lump of bronze' and 'there is a statue' are true; at time t*, only the former is true. What we need, then, is an ontology that makes both sentences true at t and only the former true at t*; but nothing about that forces us into saying that there is a lump of bronze that exists at both times and a statue that exists at t but goes out of existence some time before t*. There are plenty of ontological options that don't require this division of the world into a hierarchy of objects. It is a given that there are a bunch of bronze atoms that bear certain relations to each other at t and certain other relations to each other at t*. Why think anything more is required? There are more ways you can relate the bronze atoms such that they

make up a lump of bronze than there are ways to relate them such that they make up a statue; isn't that enough to explain why it can still be true to say that there is a lump of bronze even when it is no longer true to say that there is a statue? The possible truthmakers for 'there is a bronze statue' are just a proper subset of the possible truthmakers for 'there is a lump of bronze', since you can have bronze atoms make up a lump of bronze without them making up a statue, but you can't have them make up a statue without them also making up a lump of bronze. So at time t there's a truthmaker for both 'there is a statue' and 'there is a lump of bronze' – it is the bronze atoms related so-and-so; but at time t* there is only a truthmaker for 'there is a statue' – it is the bronze atoms related such-and-such. There is no need to posit a hierarchy of entities. One level of entity is enough; the way those entities are at a time makes true the true claims concerning what there is at that time, but if you change how the things at that level are you can change what existence claims are made true. That's why it's no longer true to say that there is a statue – we don't need to posit a higher-order entity floating mysteriously above those entities at some times and not at others.

2   The Heil Programme, part 2 – How to do Ontology

Consider the vast debate over the answer to the Special Composition Question (SCQ): Under what conditions do a collection of objects compose some complex object?

Van Inwagen denies that there are tables and chairs.[1] So utterances of the sentences 'there are tables' and 'there are chairs' do not express truths. Nevertheless, those sentences are assertable, for the conditions of assertance are not that there are tables and chairs but that there are atoms arranged table-wise and chair-wise. Since there *are* atoms arranged in those ways it is permissible to assert those sentences, even though we will speak falsely by doing so. These existence claims are to be contrasted with those such as 'there are humans' which *do* express truths. The difference: humans are living things. An existence claim, says van Inwagen, is true only if the thing said to exist is alive or is a mereological simple. All other existence claims are false, although some are assertable given how the world is with respect to the arrangement of the simples that exist.

Van Inwagen is opposed on both sides: some think he believes in too many things, some think he believes in too few. Among those who accuse van Inwagen of ontological profligacy are the mereological nihilists. Nihilists deny the existence of *any* complex objects – living or otherwise – and claim that existence claims are only true if what is said to exist is a simple, although they may well follow van Inwagen in claiming that there are existence claims that are literally false but which are assertable if they meet some subsidiary norm.[2] Those who claim that there are more things in Heaven and Earth than are dreamt of in van Inwagen's philosophy divide into two groups. There are the universalists – those who think that *every* collection of simples, and *a fortiori* those that are arranged table-wise, compose an object. And then there are those who agree with van Inwagen that some collections compose and some don't, but disagree over just *which* collections are favoured with composition.

All parties at the table agree, however, that there is a question to be answered as to which existence claims are literally true and which are (at best) merely assertable. But there are others who are frustrated with the debate and won't even sit down at the table (or even at the atoms arranged table-wise). These are the neo-Carnapians, who hold that the theorists at the table are simply talking past each other by using 'exists' in a different sense.[3]

We are frustrated with this debate as well, but for different reasons. We reject the neo-Carnapian claim that the various theorists who debate over how to answer the SCQ are talking past one another. Those theorists are having a genuine debate; but we disagree with them as to how we should go about settling existence claims. We think they are relying on a Quinean conception of ontological commitment which, it seems to us, rests on the Picture Theory and should be rejected.

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1   van Inwagen (1990).
2   See Rosen and Dorr (2002).
3   See Hirsch (2002).

Quine says that the way to find out what there is is to first settle, using more or less the method of the empirical sciences, one's best theory, and then to ask what the theory needs to quantify over in order for it to be true.[4] So we should believe in exactly the composite objects the theory needs to quantify over. All other claims concerning the existence of composite objects will, at best, be false but assertable.

This, we suggest, is a bad method. We grant that we should start by deciding on best theory, but instead of proceeding from there by asking what the theory has to quantify over in order to be true, we want to ask what must exist in the world to *make* the theory true. The ontological commitments of a theory, we claim, are what we need as truthmakers for the sentences of that theory.

Let's look at an example: the debate over whether or not there are numbers. On the one hand is the Platonist; happy to admit these abstract entities into her ontology to secure the literal truth of mathematical statements. On the other hand is the nominalist, who claims that sentences such as '2+2=4' are not literally true, although they may be assertable.[5] And (at least some proponents of) both parties seem to agree that the nominalist will win iff number talk is in principle paraphrasable away.

This, we submit, is another instance of the implicit reliance on the Picture Theory that Heil seeks to expose and denounce. Serious ontological questions – such as whether or not there are abstracta such as numbers – are being decided by whether or not number *talk* is eliminable from our *language*. Why should reflection on our language tell us anything about the world? Indeed, the whole Quinean ontological program seems to us to rest on the Picture Theory.

The important question to ask isn't whether or not we could do what we want to do without using number talk. We shouldn't be concerned – at least not *qua* ontologists – with whether we need to say 'the ratio of planets to stars is X', or whether we can paraphrase that away into some complex infinite disjunction that doesn't talk about mathematical entities. It's simply a datum that the ratio of planets to stars is X, and the important question to ask is: *what makes this true?* Do we need to believe in an entity that is a ratio to make this true? Or do we just need to believe in the planets and the stars. Or do we need the planets, the stars, and the totality fact? Or could it be something else entirely?

The Quinean program tells us to admit the existence of Xs if sentences in our best theory quantify over the Xs. But that's just to read ontology off of language. We *might* need Xs to make those sentences true, but we might not. Whether or not X talk is eliminable is neither here nor there; the question is whether or not Xs are needed to make X talk true or not.

Return to the debate over the SCQ. The debate has proceeded, largely, with arguments over what sentences we want/need to recognise as truths, with what complex objects there are being read off from this in the Quinean fashion. So we have the nihilist arguing that we don't need complex objects because sentences about them can be paraphrased away into sentences talking about arrangements of simples, and against them we have various arguments as to why we have to admit the literal truth of some sentences concerning complex objects, and hence that we do need complex objects.[6] But to carry out the debate under such terms blinds us to the possibility of what actually seems like quite an attractive option: that the nihilist is right about the ontology but that the universalist is right about what sentences are true.

The nihilist might be right that the world is nothing but mereological simples having certain intrinsic properties and bearing certain spatial relations to one another. But it doesn't follow from this that, for example, 'The Taj Mahal exists' is literally false. Maybe all it takes for 'The Taj Mahal exists' to be true – *literally true* – is for there to be simples with certain properties to be arranged a certain way at certain times. Maybe A and B are *everything we need* to make it true that

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4 See, *inter alia*, Quine (1953).
5 See Field (1980).
6 See, e.g., Uzquiano (2004), who argues against van Inwagen's organicist ontology by arguing against the prospects for the success of anything like the paraphrase strategy van Inwagen gestures at in his (1990).

there is some thing that is the sum of A and B. Complex objects may not be required to make true claims concerning the existence of complex objects.

The debate over whether talk of complex objects can be paraphrased away into plural quantification over simples is a complete red herring, just like the debate over whether number talk can be paraphrased away. The success or failure of such paraphrase strategies has no bearing on the ontological question. The important debate is over whether such sentences require complex objects as their truthmakers, or whether a nihilistic ontology is sufficient for their truth. The Quinean program has blinded to us the possibility of 'there are Xs' being true without us needing to admit Xs into our ontology; but once we accept that our representations of reality needn't perspicuously mirror what they represent, this becomes a serious option.

Applications are rife. Consider the debate over the existence of holes: on one side we have arguments to the effect that one can paraphrase away talk concerning holes into talk concerning the topology of material objects, on the other side arguments against the success of any such paraphrase strategy.[7] Again, we contend that this is utterly incidental to the ontological issue. It is a datum that there are truths involving holes, and the question is simply whether or not we need to admit holes as the truthmakers for such truths or whether the material objects and their topological properties are sufficient in themselves. Whether a certain fragment of language can be paraphrased away using some other fragment has absolutely no bearing at all on the ontological issue. This should come as no surprise – what would be remarkable is if such facts about language could tell us anything about mind-independent reality.

Or consider the debate on ontic vagueness. Many defenders of ontic vagueness have assumed, either explicitly or implicitly, that if we can show vagueness to be somehow ineliminable from our descriptions of certain entities, then we should consider those entities to really *be* vague, as opposed to just being vaguely described.[8] Understood this way, it's no wonder that ontic vagueness is so often derided as what Russell called 'the fallacy of verbalism'[9] – a practice of taking aspects of representations and applying them to what is represented. This is precisely Heil's complaint about the Picture Theory. We describe the world a certain way, and various things (like vagueness, perhaps) are essential to that description. But the mere fact that they're essential to the description doesn't give us license to think they're essential to what's described. That mistake was Russell's complaint against ontic vagueness in 1923 (a warning most of contemporary analytic philosophy heeded, with respect to that specific doctrine) and it's Heil's complaint against a very large portion of contemporary metaphysics now.

But the concept of ontic vagueness, reviled as it is, needn't be thrown out once the Picture Theory is rejected. Indeed, Heil's methodology shows us a perfectly sensible way of thinking about the ontic vagueness debate. The question of ontic vagueness, for any entity x, shouldn't be whether we somehow must describe x vaguely. Rather, the question should be set up in terms of truthmakers. What we want to know is what *would* happen *were* we to set precise truth conditions for x. Suppose we want to know whether there is any ontic vagueness involved in the vagueness of x's being F. The question would be whether there is an admissible *precisification* of 'x is F' (i.e., a set of exact truth conditions for 'x is F') such that the sentence still has no determinate truth-value. Semantic vagueness is simply a case of a sentence being indeterminate over a range of truthmakers – there are various truthmakers or sets of truthmakers that might do to make the sentence true, but we just haven't bothered to decide exactly which one(s) to go with. Ontic vagueness is, in contrast, a claim about whether or not a specific truthmaker *obtains*. And that's what the counterfactual test gives us. We have a situation (a precisification) where we've selected a specific truthmaker/set of truthmakers as *the* truthmaker(s) for the sentence – that, in effect, is just what precisifying is. So if

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7 See Lewis and Lewis (1970), Casati and Varzi (1994) and Lewis and Lewis (1996) for discussion of the issues surrounding holes.

8 See especially Hyde (1998) and Colyvan (2001).

9 See Russell (1923).

the sentence still has no determinate truth-value (given those exact truth conditions) it can only be because it's indeterminate whether or not that specific truthmaker in fact obtains. And that's a fact about the world, not about language.

Now, of course, whether or not such a scenario is motivated, or even possible, is another question entirely. The point is simply that Heil's methodology allows us to recast the debate, and finally start asking the question in a way that might make some sense.

Yet another area where Heil's rejection of ontological 'levels' in favour of a focus on truthmaking might prove extremely useful is in the debate over ontological emergence. Much of the philosophical discussion of emergence, it seems, concerns problems not with emergence per se, but with emergence couched in a stratified ontology. Once we take Heil's advice and reject the hierarchy of ontological levels, emergence may prove much less mysterious and problematic. The standard problems with emergence centre on the idea that emergent entities seem to be higher-level entities to which we attribute properties typically thought to be had only by basic-level entities. Emergent entities exist 'further up' the hierarchy of levels (they are caused and sustained by lower-level entities) but their behaviour is not derivable from the behaviour of the lower-level entities, they are not reducible to lower-level entities, their causal powers are unique, non-redundant, and can have an effect on the lower-level entities, and they are even, on some accounts, non-structural.[10] So we have the problem of how, within a physicalist ontology, a higher-level entity could causally impact the behaviour of basic-level entities ('downward causation'), the problem of how something not situated at the basic-level could be non-structural, given that it is not one of the basic constituents of matter, and so on.

Yet these problems arise for emergence only insofar as we tie emergence to an ontology of levels. If we are committed to there being a basic-level of smallest, indivisible bits of matter, and then subsequent higher levels constituting the objects composed of these fundamental building blocks in increasing degrees of complexity, emergence is indeed a problem. We have, on this picture, no clear grasp of where in the hierarchy to place the emergent entities (as they're not the basic things, but they don't seem to be quite like the other higher-level things). Once we forgo focus on levels for focus on truthmakers, however, the doctrine of emergence becomes much less mysterious. Heil puts a gloss on truthmakers as follows: they are all and only those things which God needs to create in order to make the world how it is. In other words, they are the minimal contents of God's 'ontological shopping basket'. Once we put the focus on truthmakers, we can understand emergence as simply a claim about what truthmakers can be like. The person who goes in for emergence will think that some truthmakers are not ontologically independent. That is, some of the entities which God has to create in order to make the world how it is are themselves caused and sustained by other things (God couldn't just create them by themselves). This is the emergentist idea that you get 'something new' from the collective activity of other things – a collection of entities, through their causal interactions, cause the existence of another entity which cannot exist without the continued activity of those other entities; but that 'new' entity is indeed *some thing* new, because it counts as one of the things we must include in our list of truthmakers. The new entity is ontologically dependent (you can't have it by itself), but it's as ontologically robust as can be, since you have to count it as a truthmaker.

Such an understanding of emergence has no problems with emergent causation, as once levels have been rejected the causal claim we have warrant to appears to be not 'all causation is explainable in terms of basic-level entities', but rather 'all causation is explainable in terms of truthmakers'. But, of course, the emergent entities count as truthmakers (that's why we need them as 'something new' in our ontology); it's just that they're not ontologically independent. Moreover, the understanding of emergence that Heil's methodology gives us can afford to remain blissfully neutral on the debates of what (if any) kind of supervenience emergent entities bear to the entities from which they emerge, whether or not emergent entities are structural, etc., as these issues (which

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10 For discussion of some of these issues see, e.g., Shoemaker (2002), Kim (1999), O'Connor and Wong (2005).

have commonly been used to *define* emergence within an ontology of levels) are largely orthogonal to a basic understanding of emergence.

Whether or not the idea that some truthmakers are not ontologically independent is in fact motivated is of course another question entirely. The point here is that, yet again, Heil's methodology allows us to reframe a debate, showing that many of the puzzles surrounding a doctrine aren't really puzzles specific to that doctrine at all, but rather problems that arise when you situate the doctrine within a stratified ontology.

3 Conclusion

John Heil's *From an Ontological Point of View* gives us a systematic exploration of an ontology-first style (he'd like us to call it an 'Australian style') of engaging with metaphysical questions. The insights this approach provides can (as we hope we've shown) be applied across a range of philosophical issues, to clarify debates and set conditions of success. We're certainly lucky to have a book that outlines these issues with such depth and care. Now let's hope we're lucky enough to pay attention to it.

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Words, Pictures and Ontology
A Commentary on John Heil's
From an Ontological Point of View[1]

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The title of John Heil's book *From an Ontological Point of View* is, of course, an adaptation of the title of Quine's influential collection of essays *From a Logical Point of View*, published fifty years earlier in 1953. Quine's book marked the beginning of a sea change in philosophy, away from ordinary language, armchair philosophising involving introspective examination of concepts, towards a more rigorous, analytical and scientific approach to answering philosophical questions. Heil's book will, I think, mark the beginning of another sea change in philosophy, this time, away from a focus on language, and towards a focus on ontology. For that reason, the replacement of 'Logical' with 'Ontological' in Heil's title is apposite. This is not to deny that Quine, and analytic philosophy in his wake, was interested in ontology. Some of the most fundamental philosophical questions that have vexed philosophers in the last fifty years are ontological questions: Are there numbers? Are there properties? Are there events? And if there are any of these kinds of things, what is their nature? But post-Quinean philosophers often set about answering these questions by looking at the language we use when we talk about numbers, properties and events. For example, philosophers engaged in the debate between realists and nominalists about universals would ask whether talk of redness could be adequately paraphrased by talk of red things. If so, the nominalist concluded that we are not committed to the existence of universals. If not, the realist concluded that we cannot escape commitment to them. Heil recommends that we abandon this methodology, for it leads us up blind alleys and conceals more acceptable positions from us. We should instead turn our attention directly onto ontological matters.

Heil expounds in this book a number of Big Ideas. One of these is the view that what he calls the Picture Theory is lurking in the background of much contemporary philosophical thinking, and that this has various unfortunate consequences. In what follows I first discuss the Picture Theory and its unfortunate consequences, as outlined by Heil, and I present a way of seeing more clearly that the Picture Theory is responsible for those consequences. One such consequence, and this is a theme that runs throughout Heil's book, is a tendency to conflate descriptions of reality with the reality they describe. I discuss such a conflation in one of Chalmers's arguments for his brand of dualism. Finally, I turn to Heil's suggested remedy for philosophers who find themselves in the grip of the Picture Theory, a remedy which depends heavily on the notions of truthmaking and brute similarity. I argue, first, that as presented by him, these notions are not sufficiently robust to do the work he requires of them, and second, that he does not say enough about how we are to go about finding the truthmakers of our true sentences.

1   The Picture Theory

In the first few chapters of *From an Ontological Point of View*, Heil identifies what he calls the Picture Theory, which is a family of loosely related doctrines concerning the relationship between language and the world. The core idea of the Picture Theory "is that the character of reality can be 'read off' our linguistic representations of reality—or our suitably regimented linguistic representations of reality. A corollary of the Picture Theory is the idea that to every meaningful predicate there corresponds a property" (Heil 2003, 6). The Picture Theory is thus more a philosophical tendency than a theory. It is the tendency to base our ontology on the language we use to describe the world, and this can manifest itself in various ways.

Heil notes that many philosophers would explicitly reject the Picture Theory, but nevertheless continue to endorse it implicitly in the manner in which they do philosophy. Here is one way in which that can happen. Philosophers of a realist persuasion think that much of our ordinary talk about the world is descriptive, and literally true. When doing ontology they want to provide an account of what it is in the world that makes this ordinary talk true. If the Picture Theory is lurking in the background when they attempt to provide such an account, they will be inclined to think that the elements of our ordinary linguistic representations will be indicative of the elements of reality in virtue of which those representations are true. This, in turn, leads them to focus on features of the linguistic representation itself in an attempt to come up with an account of what it is in the world in virtue of which the representation is true.

Such a philosopher might, when faced with the true sentence 'Bob (the adult, male human) is athletic and friendly', infer that Bob has the properties *being athletic* and *being friendly*. If this philosopher were, as well as a realist, a physicalist, she might further believe that *being athletic* and *being friendly* were physical properties. But then she may come across the following two additional true sentences: 'Shona the dolphin is athletic' and 'Scruffy the dog is friendly'. Now, it is reasonable to think that whatever it is about Bob that makes it true to say he is athletic, it is not the same as whatever it is about Shona that makes it true to say she is athletic. And similarly for Bob's and Scruffy's friendly disposition. What is our philosopher to conclude? The predicate 'is athletic' applies truly to Bob and Shona even though they have no physical property in common in virtue of which it applies to them. The predicate 'is friendly' applies truly to Bob and Scruffy even though they have no physical property in common in virtue of which it applies to them. The options, according to Heil, appear to be these: (1) reject realism and conclude that the sentences describing Bob, Shona and Scruffy are all false. There are no properties of athleticism or friendliness, so sentences attributing these properties to organisms are all false. (2) Keep searching for some physical property that Bob shares with Shona in virtue of which they are both athletic, and then claim to have 'reduced' athleticism to that physical property. And similarly for friendliness. (3) Claim that athleticism and friendliness are higher-level properties that can be 'realized' in different organisms by their possession of different physical properties.

Heil is no fan of the view that there are higher-level properties, for reasons he goes into in some depth in both *From an Ontological Point of View* and his précis above. Neither is he at all attracted by reductionism or anti-realism. But if these are the only options, what is he to do? All is not lost, argues Heil, because these are not the only options. It is a mistake to see them as exhaustive, a mistake encouraged by the grip that the Picture Theory has on philosophical thinking. Here's how. If one thinks that there must be a property answering to every predicate that truly applies to some entity, one might be tempted to think that the predicate 'is athletic' picks out the same property possessed by both Bob and Shona in virtue of which they are both athletic, and that the predicate 'is friendly' picks out the same property possessed by both Bob and Scruffy in virtue of which they are both friendly. And the Picture Theory motivates the thought that there must be a property answering to every predicate.

There is another way of seeing that the range of philosophical positions is not exhausted by these alternatives, one which also illustrates how the view that they *are* exhaustive is motivated by

the Picture Theory. Consider the following argument.

The argument from language to levels of reality

1. Some sentences involving higher-level predicates are irreducible to sentences involving lower-level predicates.

2. If there are sentences involving higher-level predicates which are irreducible and true, then there are corresponding, higher-level properties.

3. There are sentences involving higher-level predicates which are irreducible and true.

4. Therefore, some higher-level properties exist.[2]

The three responses to the philosophical predicament outlined above can all be illustrated as responses to this argument. The realist accepts the argument as sound. According to her, the fact that there is no analytical route from higher-level predicates like 'is athletic' and 'is friendly' to lower-level, physical predicates, but sentences involving the higher-level predicates are true, means that the higher-level predicates must denote higher-level properties. The reductionist rejects the conclusion by rejecting premises 1 and 3, arguing that there are true sentences involving higher-level predicates, but they are not irreducible; a successful reduction from these sentences to sentences involving lower-level, physical predicates can be achieved. The anti-realist, or eliminativist, described above, rejects the conclusion by rejecting premise 3. She takes sentences involving higher-level predicates to denote higher-level properties, but since there are none, those sentences are all false. Another response, not mentioned by Heil, would be to reject premise 3, but rather than hold that all sentences involving higher-level predicates are false, hold instead that they are not capable of truth or falsity, and thus adopt a non-cognitivist approach to those sentences. Adopting this position would involve holding that, while sentences involving such predicates appear to be descriptive, and capable of truth or falsity, they are not really. Instead, they perform some other linguistic function, such as expressing approval or disapproval. This may not be a particularly attractive route for predicates such as 'is athletic' and 'is friendly' which, on the face of it, are nothing if not descriptive. Nevertheless, there are domains of discourse for which it has been adopted, chief among them, moral discourse.

Of the positions we have looked at, none of them saw fit to take issue with premise 2 of the argument. This is surprising given that, as Heil has noted, few philosophers would explicitly endorse the Picture Theory. Yet it is here that the Picture Theory is at work. Premise 2 is a conditional whose antecedent concerns linguistic facts, but whose consequent concerns ontology. It would be false if its antecedent were true and its consequent false. If there are true, irreducible sentences involving higher-level predicates, while there are no corresponding higher-level properties, then we can reject Premise 2. And this is precisely the strategy that Heil adopts. According to him, a sentence involving a higher-level predicate can be true, and irreducible to any other sentence, even if there is no property answering to that predicate whenever it applies.

2 Truth Conditions and Truthmakers

One manifestation of the Picture Theory, I want to suggest, is the tendency to think that, once one has identified a sentence's truth condition one has thereby identified the ontological ground of that sentence; its truthmaker. This is a particularly knotty instance of the Picture Theory because of a further conflation: that between truth conditions and meanings, which I suspect is an unfortunate legacy of Tarski's important work. Truth conditions thus stand in a peculiar middle ground between

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2 The first premise in this argument is logically redundant, in that the argument would be valid without it. But it is not dialectically redundant, as it allows us to distinguish two different ways of challenging premise 3: either by denying that there are any true sentences involving higher-level predicates that are irreducible, or by denying that there are any irreducible sentences involving higher-level predicates that are true.

meanings on the one hand, and ontology on the other. If one is influenced by the Picture Theory, one might then think that a focus on the meanings of our sentences will lead us, via their truth conditions, to ontological conclusions.

The conflation of truth conditions with meanings was easy to make, as the sentences for which Tarski formulated his T-scheme had no token-reflexives or tenses. In the oft-used example, we can state the truth condition for S, the sentence 'Snow is white', as follows:

TC: 'Snow is white' is true if and only if snow is white

But it is often remarked that the right hand side of TC states the meaning of S. So we have:

M: 'Snow is white' *means that* snow is white

The fact that the right hand side of M is the same as the right hand side of TC encourages the thought that meanings and truth conditions are the very same thing. Furthermore, given that a sentence's truth condition is often thought to state its ontological ground, an incautious philosopher may end up thinking that the way to do ontology is to examine the meanings of our true sentences. But there are two conflations being made here that ought not to be made. First, meanings are not identical with truth conditions. Second, truth conditions are not identical with truthmakers.

Once we consider the truth conditions for sentences that contain token-reflexives or tenses, we can see that a sentence's truth condition is not the same thing as its meaning, since two sentences can differ in meaning, yet have the same truth conditions (Dyke 2003). For example, the tensed sentence, R, 'The leaves are falling', uttered at *t*, and the tenseless sentence, S, 'The leaves fall at *t*' do not have the same meaning, since it is possible to think that one is true and the other false. One might think this, for example, if one's watch had stopped and one didn't realise that it was now *t*. Nevertheless, R and S do have the same truth conditions, at least according to the new B-theory of time:

R is true if and only if the leaves fall at *t*

S is true if and only if the leaves fall at *t*

So it is a mistake to conflate truth conditions with meanings.

But it is also a mistake to conflate truth conditions with truthmakers. One good reason why we should not do this is that all meaningful sentences have truth conditions, whether they be true or false, but only true sentences have truthmakers. Another good reason for not conflating truth conditions with truthmakers is that it is plausible that the truth conditions of sentences are available to competent language users, but there is no reason to think that truthmakers are so available. When a language user grasps the truth condition of a sentence, she is able to use that sentence appropriately. For example, suppose that Bob is athletic and that the truth condition for the sentence 'Bob is athletic' is that Bob is physically active and strong. It is reasonable to think that a competent language user will have a grasp of that truth condition, which enables her to use the sentence appropriately. However, the truthmaker for that sentence may be a very complicated set of physical facts about Bob's physiology and further facts about his exercise regime and performance. In that case it would *not* be equally reasonable to think that competent language users *must* have a grasp of this truthmaker in order to use the sentence appropriately.

Similarly, suppose that Bob is friendly, and that the truth condition for the sentence 'Bob is friendly' is that it is true if and only if Bob is kind and supportive to people he knows, and well-disposed towards meeting new people. Once again, it is reasonable to think that a competent language user will have a grasp of that truth condition, which enables her to use the sentence appropriately. However, the truthmaker for that sentence may be a very complicated set of facts about Bob's neurophysiology, his accumulated experience, and the effect of that experience on his behaviour patterns. Once again, it would *not* be equally reasonable to think either that competent language users *must* have a grasp of this truthmaker, or that language users competent in the use of

the sentence 'Bob is friendly' in general *do* have access to this truthmaker. So, language users generally have a grasp of the truth conditions of the sentences they use competently, but there is no reason to think they have a grasp of the truthmakers of those sentences. To discover what those truthmakers are we have to do some empirical investigation. As Mulligan, Simons and Smith remark "A knowledge of truth-conditions takes us at most one step towards reality: one can, surely, envisage understanding a sentence (knowing its meaning), whilst at the same time having only partial knowledge of the nature of its possible truth-makers" (Mulligan, Simons and Smith 1984, 299).

The sentences 'Bob is friendly' and 'Bob is P' where 'P' is some very complex physical predicate denoting salient features of Bob's neurophysiology, experience and behaviour patterns, may have the same truthmaker, even though they are clearly not synonymous, and convey very different information about Bob. But from the fact that the predicates 'is friendly' and 'is P' convey very different information about Bob, it does not follow that there is some feature of extra-linguistic reality (the property of being friendly for example) that corresponds to that different information.

Adherents of the Picture Theory see the direction of fit between representations and reality as being *from* the representations *to* reality. They think that we can examine our linguistic representations and derive ontological conclusions from them. However, the true direction of fit is *from* reality *to* the representations. There is much talk, in contemporary philosophy, of language 'carving reality at its joints'. I take this to mean that our language picks out significant, real divisions existing independently in the world. I think this is right. But language is not privileged in the way many philosophers take it to be. There are many divisions in reality, and some of them are salient to us. To enable us to mark them out we develop concepts and predicates which signify them. The reason why they are salient to us is due in part to the fact that they exist in the world, and we encounter them, and in part to features of us: our perceptual and cognitive make-up, and our interests in reality. The language we use to describe the world has evolved partly as a result of the way we are and partly as a result of the way the world is. Had either of these been different, our language, and our concepts would probably have been different too.

All this should make us wary of thinking that just because we have a predicate or a concept, that there must therefore be a property uniquely corresponding to that predicate or concept. As Heil notes, "The philosophical mistake is to imagine that sameness of word implies sameness of worldly correspondent" (Heil 2003, 49). But we should add to this a further philosophical mistake, which is to think that *difference* of word implies *difference* of worldly correspondent. Just because the predicates of some domain of discourse apply literally and truly to certain objects, and are not reducible to the predicates of basic physics (or some other acceptable reductionist base), it does not follow that there must be some additional feature of reality to which they correspond. The difference in information conveyed by two different predicates may be a result of a difference in *our* contribution to the applicability of those predicates, rather than a difference in the contribution made by the world to their applicability.

It is possible that a number of different, true sentences all accurately describe the same portion of reality, but since they do so in different ways, they are not synonymous with each other. Of such sentences we may be able to say that they all have the same truthmaker, but that does not entail that they have the same meaning. So meaning is underdetermined by truthmakers. Since it is possible for two or more sentences to have the same truthmaker but not the same meaning, it should be clear that an investigation into the meanings of true sentences will be unable to yield any certain information about the nature of their truthmakers. And if meanings are even merely closely related to truth conditions, an investigation into the truth conditions of true sentences will similarly be unable to tell us much, if anything, about their truthmakers.[3]

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3   I discuss these issues surrounding the difference between truth conditions and truthmakers in more depth in Dyke (forthcoming 2007).

3   Conflating Descriptions with Reality

The conflation of truth conditions with truthmakers, described in the previous section, is one instance of a more widespread phenomenon: that of conflating descriptions of reality with the reality they describe. This is a further strand of the Picture Theory, and one that keeps cropping up in *From an Ontological Point of View*. The thought that there must be a property answering to every predicate is one instance of it. There the fallacious step is to think that just because the predicate 'is friendly' applies to Bob and Scruffy, there must be a property answering to that predicate, in virtue of which the predicate applies, and which is possessed by both Bob and Scruffy. In Chapter 8, when Heil develops his identity theory of properties, according to which properties are both qualitative and dispositional, the notion of the conflation of descriptions with reality arises again. One way of understanding Heil's critique of the qualitative/dispositional distinction is to see him as urging that the theoretical divide between those who see properties as fundamentally qualitative and those who see them as fundamentally dispositional only exists because of this conflation. From the fact that we can *characterise* properties both qualitatively and dispositionally, and the further fact that it is not possible to reduce one of these ways of characterising properties to the other, or to any further way of characterising properties, it does not follow that the fundamental nature of properties must answer to just one of these ways of characterising them to the exclusion of the other. It is illegitimate to move from facts about our ways of describing or characterising properties to conclusions about the nature of those properties themselves. Rejecting this move allows Heil room to develop his view that properties are fundamentally *both* qualitative *and* dispositional.

Heil rejects the thesis that dispositions are relations on similar grounds. To think that dispositions are relations is encouraged by the fact that we often characterise them conditionally. For example, we characterise fragility as the disposition to shatter if struck by a solid object, and solubility as the disposition to dissolve if placed in a suitable liquid. By characterising them this way, we relate objects via their dispositional properties to the actual or possible scenarios in which those dispositions are manifested. It is relatively easy to slide from this to the conclusion that the disposition *is* a relational property whose relata are an object and the disposition's actual or possible manifestations. But it is a slide we must resist, argues Heil. Even if it is true that the best, or even the only way of characterising dispositions is conditionally, it doesn't follow that dispositions *are* relations (Heil 2003, 82).

The conflation of representations with what they represent on the one hand, and with what does the representing on the other positively runs amok in contemporary philosophy of mind. In Chapter 19 Heil criticises Colin McGinn who "despairs of our ever understanding 'how technicolor phenomenology could arise from grey soggy matter' (McGinn 1989, 349)" (Heil 2003, 233). McGinn's problem is to understand how brains, which are grey and soggy, could give rise to a vivid conscious experience of a technicolour scene. These two things, brains and conscious experiences of colour, have such different qualities that it seems inconceivable that the one should give rise to the other. Considered this way, this seems to be an exceptionally poor argument.[4] Spiders and spiders' webs have completely different qualities, but it's not inconceivable that the one should give rise to the other. Perhaps McGinn's problem would be better stated as that of understanding how a brain state (which is grey and soggy) could be *identical with* a conscious experience (which is technicolour). Heil rightly points out that while McGinn claims to be comparing "neurological qualities to qualities of conscious experiences . . . [he] is in reality comparing qualities of one kind of experience (visual experiences of soggy grey brains presumably) with qualities of another kind of experience (visual experiences of the sort that might be had by the brain's owner in observing a 'technicolour' scene)" (Heil 2003, 233). McGinn has thus made the mistake of imputing qualities of an *experience* of a brain state to the brain state itself, and concluding that, since these qualities are

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4   It should be noted that this is not an argument that McGinn actually advances. It is simply a component of his attempt to set out the mind-body problem and what seems intractable about it.

incompatible with the qualities of a conscious experience, that the conscious experience and the brain state cannot be the same thing.

The mistake made here can be characterised in a slightly different way, allowing us to see how to avoid it. A description of a conscious experience may be utterly different from, and not translatable by a description of a brain state, but it would be a mistake to conclude from this that the conscious experience and the brain state are numerically distinct. It would be to succumb to the Picture Theory; to think that fundamental features of descriptions dictate what reality is like. The right response is to say that the two descriptions, although not synonymous with each other, may have the same truthmaker. That truthmaker can be variously described as a brain state and as a conscious experience. All this can be seen more clearly still by examining the following argument, which is an analogue of the argument from language to levels of reality discussed above.

The argument from language to property dualism

1. Some descriptions of conscious experiences are irreducible to descriptions of brain states.

2. If there are descriptions of conscious experiences which are irreducible and true, then there are corresponding, nonphysical conscious states.

3. There are descriptions of conscious experiences which are irreducible and true.

4. Therefore, some nonphysical conscious states exist.[5]

The property dualist who insists that conscious experiences are features of the world over and above the physical features of the world can be interpreted as endorsing this argument. The reductionist rejects premises 1 and 3, arguing that descriptions of conscious experiences are reducible to descriptions of brain states, so the argument is unsound. The eliminativist argues that since descriptions of conscious experiences require the existence of nonphysical conscious states to be true, but there are no such conscious states, those descriptions are all false. She thus rejects premise 3. Once again, none of the standard positions consider rejecting premise 2. And once again, it is here that the Picture Theory is at work.

But we can reject premise 2. We can say that descriptions of conscious experiences and descriptions of brain states are not synonymous with each other, and neither is one reducible to the other, but they refer to the same kind of thing. One thing can variously be described as a conscious experience, or as a brain state. That thing is the truthmaker for both the description of the conscious experience and the description of the brain state.

4   Chalmers and the Picture Theory

One of the arguments deployed by David Chalmers in support of his brand of dualism echoes the argument presented above. Chalmers argues for the conclusion that "No explanation given wholly in physical terms can ever account for the emergence of conscious experience" (1996, 93). His argument from the absence of analysis goes as follows: "For consciousness to be entailed by a set of physical facts, one would need some kind of analysis of the notion of consciousness—the kind of analysis whose satisfaction physical facts could imply—and there is no such analysis to be had" (1996, 104).

Chalmers thinks that the existence of consciousness is not fully determined by physical facts. It's possible, according to him, for there to be a world which is physically identical to this world,

5   As with the analogous argument, the first premise is logically, but not dialectically redundant. It allows us to distinguish two different ways of challenging premise 3: either by denying that there are any true descriptions of conscious experiences that are irreducible, or by denying that there are any irreducible descriptions of conscious experiences that are true.

but in which the conscious facts are completely different, or indeed, in which there is no consciousness at all. The argument from the absence of analysis proceeds by assuming that, if consciousness *were* determined by physical facts, then it would be possible to give an analysis of the concept of consciousness in entirely physical terms. So, his thinking on the ontological level is that consciousness is not determined by physical facts, and he concludes that if this ontological relation *did* obtain, (i.e. if consciousness *were* determined by physical facts) a relation at the representational level would also obtain. That is, if consciousness were determined by physical facts, then it would be possible to analyse the notion of consciousness in physical terms. Alternatively, one would be able to derive all the truths about consciousness from the truths describing physical reality. So Chalmers's argument is effectively an argument for some close relation of the conjunction of premises 1 and 3 of the argument from language to property dualism outlined above. He is arguing against the reductionist who insists that one can 'reduce' consciousness to physical facts.

The conclusion Chalmers argues for is that some true descriptions of conscious experiences are not derivable from descriptions of physical facts. If we had all the physical truths, we would not be able to infer the truths about consciousness from them. What he overlooks is that it is consistent to agree with him on this, while still rejecting his conclusion that conscious states are something over and above physical states. One can do this by rejecting a close relation of premise 2 in the argument above, namely, the claim that if there are true descriptions of conscious states that cannot be derived from descriptions of physical states, then there are ontological counterparts to those true descriptions, ones that are distinct from any physical states.

It turns out that what is driving Chalmers in his argument from the absence of analysis is something very close to the Picture Theory. He arrives at certain conclusions regarding the nature of truths about consciousness, specifically, that they cannot be derived from or analysed into truths about physical states, and he concludes that there must be ontological entities uniquely answering to those truths, ones that don't also answer to some physical truth. But we can reject that. We can hold, instead, that one may not be able to reduce a truth about consciousness to a physical truth, and that it may not be possible to derive the truth about consciousness from the physical truth, while also maintaining that both truths have the same truthmaker. If that were the case then admitting that there can be irreducible truths about consciousness would not commit one to the existence of any kind of nonphysical entities, or any facts over and above physical facts. It's possible to hold that physicalism is true (the physical *facts* are all the *facts*) without having to provide any kind of analysis of the *truths* of consciousness in terms of the physical *truths*.

5   Brute Similarity and Truthmakers

According to Heil the sentences 'Bob is athletic' and 'Shona is athletic' can both be true even though there is no property answering to the predicate 'is athletic' possessed by both Bob and Shona in virtue of which they are both athletic. The truthmakers for these sentences will involve Bob and Shona possessing similar, but not precisely similar properties. This introduces two notions about which I would like to raise some questions in this final section: truthmakers and brute similarity.

One of the most important lessons we can learn from Heil's book is that we should not expect to learn ontological lessons from studying language. We should not rely on there being isomorphism between the structure of our true linguistic descriptions of the world and the world itself. The example above concerning Bob and Shona is one instance of this: we should not expect Bob and Shona to share a property in virtue of which they are both athletic simply because the predicate 'is athletic' applies to both of them. The predicate applies to both of them in virtue of their possessing similar, but not precisely similar properties. Heil assures us that similarity is an objective matter—it is not up to us whether two objects are similar in a certain respect. Neither is it up to us whether two properties are similar or dissimilar (2003, 152). My worry is that this notion of objective similarity

may not be robust enough to bear the theoretical weight that Heil requires it to bear in every case. I shall illustrate this worry using as an example the predicate 'is in pain', as Heil does in Chapter 14 and in the précis above.

The predicate 'is in pain', according to Heil, applies to actual and possible creatures in virtue of their possession of one of a range of similar properties. As he states, "Your being in pain is a matter of your being in some (presumably neurological) state; an octopus's being in pain is a matter of the octopus's being in a similar, but not *precisely* similar, state" (Précis, 5). The similarity relation thus obtains, in this example, between states of the organisms to which the predicate 'is in pain' applies. We can think of a state as being, perhaps, a very complex property. For Heil, of course, properties are fundamentally *both* qualitative *and* dispositional. Qualitativity and dispositionality are two respects in which we can characterise the very same property. The question that arises is: does similarity obtain between these states or properties in virtue of their being qualitatively similar, or in virtue of their being dispositionally similar?

Suppose I stub my toe and the predicate 'is in pain' applies to me. Let's say that, when I stub my toe I am in neurological state P and I am disposed to wince. According to Heil my being in neurological state P and my being disposed to wince are the very same property differently considered. Now suppose an octopus snags its tentacle on a shipwreck and the predicate 'is in pain' applies to it. When the octopus snags its tentacle it is in physical state Q and is disposed to squirm. Once again, its being in physical state Q and its being disposed to squirm are the very same property differently considered. But given that there are these two very different ways of characterising properties, which means of characterising them are we to employ when ascertaining whether two properties are similar or not? Should we consider their qualitative characterisation, or their dispositional characterisation? Is the similarity that is supposed to obtain between me and the octopus a similarity between states P and Q, or between my being disposed to wince and the octopus's being disposed to squirm? There are obvious problems with both choices.

If we say that the predicate 'is in pain' applies to me and the octopus in virtue of the similarity of states P and Q, we face the problem that prompts levels-metaphysicians to go in for levels in the first place. Considered physically there is nothing that I and the octopus have in common in virtue of which the predicate 'is in pain' applies to each of us. My physiological makeup and that of the octopus, and that of all the other actual and possible pain-capable organisms is so fundamentally different that there is no hope of locating a single property that we all share, in virtue of which the predicate applies to us. But neither is there any realistic hope of locating a range of similar properties one of which we each possess and in virtue of which the predicate applies to us.

Perhaps the more promising option is to look for the similarity that obtains between me and the octopus in terms of our dispositions. There is some evidence that this is what Heil intends. He says, for example, in the précis above, "to the extent that functionalism is right in individuating states of mind by their causal profiles, pain states will exhibit *similar* causal profiles" (Précis, 5). But just how similar *is* my wincing to the octopus's squirming, or to someone else's screaming, or stoically biting their lip, or to some alien entity's pulsating, and so on? There are countless different behaviours that organisms may be disposed towards in virtue of being in pain. What is it about them that is similar? My feeling is that we are inclined to say that they are all similar *because* they all arise from an organism's being in pain. That is, I suspect Heil gets the order of explanation the wrong way round here. More needs to be said about similarity, and about how we are to ascertain whether or not, and in virtue of what, it obtains.

My other remaining worry concerns what Heil says (or more precisely what he doesn't say) about truthmakers. As mentioned above, if we follow Heil we should not expect truthmakers to be isomorphic to the truths they make true. An example discussed by Heil is the sentence 'This key would open a lock of kind K'. A crude application of the Picture Theory to this sentence would deliver a truthmaker consisting of the key, a possible lock of kind K, and the relation _would open_ obtaining between them. A quick and dirty route to Meinongianism if ever there was one! So what

is the truthmaker for this sentence? Heil suggests it is "just the key itself's being a particular way: its being rigid and its possessing a particular shape" (2003, 124). That seems right to me. But why does it seem right? And more importantly, might some alternative putative truthmaker 'seem right' to someone else? My point is that we are not offered any systematic method for ascertaining the truthmakers of our true sentences. Indeed, we are not offered anything in the way of reasonable constraints that a sentence might place on what sort of entity could count as its truthmaker.

Heil admits that he has no positive account of truthmaking (2003, 67). But an account of truthmaking (i.e. of what truthmaking is) is not really what is missing. Rather it is some concrete claim about what truthmakers, in general, are, together with some procedure for homing in on the truthmakers for particular truths. Of course, such a procedure cannot be one that permits us to 'read off' the truthmaker from the sentence; that would be to invoke the Picture Theory. But we should, at the very least, expect that it permits us to *rule out* certain candidate truthmakers. But we are offered nothing that would enable us to do that. Heil has pointed the way out of the constraints of the Picture Theory, and of rampant linguisticism in metaphysics, and for this we should be grateful. But he has not offered us much in the way of a replacement methodology. More needs to be said.

6   Conclusion

In my view, one of the most important 'take home' messages in Heil's book is encapsulated in the following quote: "Perhaps it is time to re-examine certain of our fundamental assumptions. These constrain the space of possibilities we find open to us" (2003, 125). One of the fundamental assumptions that we must re-examine, and indeed jettison, is the Picture Theory. With the Picture Theory in the background it becomes impossible to see that there is at least one further metaphysical position to take on most debates. The space of possibilities is not confined to a choice between a 'levels' view, reductionism and eliminativism. Since none of these alternatives is very appealing, this is a welcome conclusion. My intention has been to make the availability of this hidden position even more apparent, by illustrating the available positions as responses to various instances of an argument from language. This also illustrates that the hidden position has been hidden due to the influence of the Picture Theory. What it reveals is that the slide from language to ontology is contained in the second premise of that argument. However, since the available positions have not generally been considered as responses to an argument of this sort, it has not been apparent that this premise is a candidate for rejection.

I remarked at the beginning that Heil's book will mark a sea change in philosophy. It is early days in this process, and there is much work to do. I have tried to indicate where I think more needs to be said. Nevertheless, it is a welcome sea change.

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An Analysis of Properties in John Heil's *From an Ontological Point of View*

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Abstract

In this paper I argue that the requirement for the qualitative is theory-dependent, determined by the fundamental assumptions built into the ontology. John Heil's qualitative, in its role as individuator of objects and powers, is required only by a theory that posits a world of distinct objects or powers. Does Heil's 'deep' view of the world, such that there is only one powerful object (e.g. a field containing modes or properties which we perceive as manifest everyday objects) require the qualitative as individuator of objects and powers? The answer depends on whether it is possible to account for the manifest objects and the ostensible spatial primacy of our perceived world without recourse to the qualitative. In this paper I outline just such an account with the intention of extending Heil's efforts to incorporate fundamental power in the world while providing a coherent explanation for our strong intuition of spatial, as against relational, priority.

John Heil's book, 'From an Ontological Point of View' (2003) is a tour de force in its contribution to analytic metaphysics in general, and to the philosophy of properties specifically. Heil defends a substance ontology of the world. His starting point is a world of objects that are basic entities, whose properties are 'modes' or *ways* that these objects are. Complex objects are constitutions of objects which are constitutions of objects and so on. Given that it is an empirical issue, Heil is largely noncommittal about the existence of some simple, indivisible object, although he maintains that it is hard to imagine it not existing.

Heil correctly highlights the tension between the needs to account for the world in terms of both qualitativity and power or dispositionality. We have an overwhelming sense of the world being spatially-oriented, and this seems to derive from the properties of objects such as shape, size, solidity and so forth, commonly thought of as their qualities. Yet, without the power or ability of things to affect us in the ways they do, we would not experience this ostensible spatial primacy.

A central focus of Heil's ontology, therefore, is to claim that the properties of objects must be both powerful and qualitative. There can be no size or shape to objects unless they possess intrinsic and non-relational properties to *individuate* them from their surrounds. Yet such properties are detectable and the ability to *be detected* is a power. Heil's response is to defend a strict identity between an object's qualities and its dispositions or powers.

1 Heil's Identity Theory of Properties

Heil uses the term 'qualitative' to specify intrinsic, non-relational properties of objects. He adopts John Locke's account of *qualities*, which he regards as both qualitative and powerful. Locke writes:

Whatever the Mind perceives in it self or is the immediate object of Perception, Thought, or Understanding, that I call *Idea*; and the Power to produce any *Idea* in our mind I call *Quality* of the Subject in which the power is. Thus a Snow-ball having the power to produce in us the *Ideas* of *White*, *Cold* and *Round*, the Powers to produce those Ideas in us as they are in the snow-ball I call *Qualities*.

Locke famously distinguishes between primary and secondary properties: Primary properties are those revealed to us *as they are in their objects,* e.g. shape; whereas secondary properties (Locke's 'pure powers') are those that cause perception of certain properties that are not intrinsic to the object, e.g. colour. For Heil, however, all Locke's qualities are power-bestowing, and therefore the distinction between primary and secondary qualities should not be carried over to create a corresponding distinction between qualitative and dispositional properties. Hence, Heil collapses what some have considered higher-level properties to just a single level such that every property of a concrete spatio-temporal object is 'simultaneously qualitative and dispositional' [1]

For Heil, power or dispositionality[2] is built into the universe and a property's dispositionality is strictly identical with its qualitativity, and both are strictly identical with the property itself (p. 111). The formulation is set out as follows:

If P is an intrinsic property of a concrete object, P is simultaneously dispositional and qualitative; P's dispositionality and qualitativity are not aspects of properties of P; P's dispositionality, P_d, is P's qualitativity, P_q, and each of these is P: $P_d = P_q = P$.

The strict identity requires a denial that either the purely qualitative or the purely dispositional exists. Rather, these must be regarded as unrealizable limits of different ways of being that property. Neither is it the case that properties *combine* dispositional and qualitative aspects, nor can the two be somehow prised apart. This leads to the stance that it is not possible to vary dispositionality without varying qualitativity and vice versa (p. 115).

2   Why the dispositional is not reducible to the qualitative

Of the reasons that Heil outlines for denying that dispositions supervene upon a purely-qualitative base, three stand out: First, purely qualitative properties would not be detectable, and so we would never know of their existence; second, higher-level dispositions lack a causal role; and third, strong causality requires irreducible dispositionality to be built into things.

1   Pure-qualities are not detectable

If there were pure qualitative properties, we could certainly know nothing about them. This claim takes us back to Locke's *qualities* whereby detection requires the ability to be detected—which is itself a power. We can never experience pure-qualities. Our experience extends only to qualities that are powerful. Why postulate entities that we can know nothing about?

2   Higher-level dispositions lack a causal role

Attempting to supervene dispositions on a purely categorical or qualitative ground encounters the problem of over-determining the role of dispositions. If, as Prior, Pargetter and Jackson claim , the categorical base is the 'real' causal agent for an object's possession of power, then it seems that qualitative properties are causally and irreducibly powerful, so any distinct higher-level dispositions are causally impotent. If the microstructure plays the causal role, there is no need to postulate dispositions over and above the microstructural base. This leaves a microstructure that is both qualitative and powerful.

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1   The term 'higher-level' is described by Heil to mean 'a property possessed by an object in virtue of that object's possession of some distinct, lower-level realizing property'.

2   Heil sometimes uses these terms interchangeably.

3 Strong causality requires irreducible dispositionality to be built into things

Rather than being built into qualities themselves, power might be provided by contingent laws of nature. This view would be consistent with the categoricalism of David Armstrong. But accounts that rely on contingent laws of nature fail to provide a satisfactory explanation for necessity in the world.

Armstrong attempts to account for necessity by proposing a system of universals (or repeatables) and contingent laws that link (or forward-link) these universals in repeatable patterns: *the same relations between the same universal instances*. However, Charlie Martin and others have shown that this 'connecting' or 'forward linking' relies on some 'connectability' in the properties themselves. Thus irreducible dispositionality is built-in to properties, rendering them power-qualities after all. If irreducible dispositionality is not built-in, then it must come from the laws. Herbert Hochberg and Alexander Bird have shown that Armstrong's proposal, for strata of higher-order laws to accommodate such an explanation, ultimately fails.

3   Why the qualitative is not reducible to the dispositional

In this section I discuss three main points that Heil makes against the existence of purely non-qualitative worlds: First, relations need relata; second, such worlds leave no room for the counterfactual nature of dispositions; and third, we cannot distinguish empty space from space with non-qualitative objects.

1 Relations need relata

Heil discusses world-models put forward by Richard Holton and Randall Dipert in which we have networks of relations without relata other than perhaps dense nodal points that are intersections of relations. Heil asserts that relations need relata, and denies that these relata can be merely dense nodal intersections that are characterised entirely in terms of their relations to other such nodes (pp. 99, 103). One reason why relata must be independent of their relations is to avoid a situation of interdependence: If relations did not exist except between relata that are only dense nodes of intersecting relations, then we readily end up with neither relations nor relata (p. 104).

As I see it, however, this problem occurs only for a world that has no relations in the first place. In a proposed purely relational world, relations are fundamental. They *do exist*, and therefore intersections among them also *do exist*.

2 The counterfactual nature of dispositions

Heil discusses a second problem: Dispositional ascriptions are fundamentally modal but worlds composed of pure power must suppose necessary relations, and thus cannot account for a sense of possibility or the counterfactual nature of dispositions. A tumbler possesses the disposition of brittleness, because it will shatter when dropped in suitable circumstances, but this incorporates possibilities that need not be fulfilled. A purely relational world has no room for modal truths, since it is composed of relations that are already *actual*. Put another way, if objects are *nothing but their relations* (or dense nodal intersections of relations), then the existence of an object ensures that the relations comprising it already exist. We get a static universe rather than one open to possibilities, making it difficult for objects to possess dispositions in the first place.

In reply, the fact that a purely relational world is a static world does not remove the aspect of possibility. It can be argued that the counterfactual employment of dispositionality is epistemological, whereas fundamental power or potential is ontological. Taking a 4-dimensional block universe (4-D) view, we can provide for 'possibility' even though, as in a purely relational universe, the view is static. In such a universe, the intersections of object world-lines represent interaction. At any given time slice, the possibility of two world-lines intersecting is defined by the conjunction of their respective 'future light cones'. The extent to which light cones overlap pertains

to the distribution of mass-energy associated with power or potentiality. However, the notion of 'possibility' embedded within our use of counterfactuals is pertinent because we are blind to the future. We do not possess a 'God's-eye point of view' to know 'the end from the beginning' (see: Isaiah 46:10). Observing whether any two world-lines actually intersect, God has no use for possibilities.

In a 4-D view, 'possibility' arises due to the inability to see time slices 'ahead'. In a purely relational universe, 'possibility' arises similarly, due to the inability to see beyond a certain radius within the relational net. In either case, possibility is merely an epistemological abstraction, and need not enter into ontological considerations.

3   Cannot distinguish empty space from space with non-qualitative objects

The third problem Heil raises for non-qualitative worlds is derived from an argument supplied by David Armstrong.[3] Heil argues that properties such as shape, size, position, duration, divisibility, solidity and so on cannot, of themselves, give us a physical object because these properties could just as easily apply to any region of space (p. 106). Even motion can be treated as a body 'occupying' adjacent spatial regions over successive intervals, and solidity as applying to one region of space being impenetrable to another. He concludes that something additional is required for distinguishing the presence of these properties from 'empty space'. This something is that which allows us to sense—to see, hear, smell, touch and taste—the objects of the world. Lacking this additional ingredient, we are left 'without a coherent conception of material bodies' (p. 107), since a non-qualitative world would supply insufficient conceptual resources (p. 100) to differentiate between space which is empty and space occupied by material objects. 'If an object's qualities are reduced to or replaced by pure powers,' writes Heil, 'anything resembling substantial nature fades away. Substances wholly bereft of qualities are difficult to envision' (p. 99). A non-qualitative world is, to all our sensibilities, 'empty of concrete objects' (pp. 76, 102).

In such a world, then, could objects be merely conglomerations of spatial points rather than substantial points? Drawing on an argument analogous (p. 98) to Richard Swinburne's regress critique of Sydney Shoemaker's Causal Theory of Properties, Heil says no. The world that lets us *experience* individuated objects as having shape, size, motion, solidity and so on incorporates either material objects or some 'field' of 'granular substance'. This argument relies on the premise that even if properties like shape, position, duration, divisibility and solidity, *of themselves*, could be accounted for dispositionally, then the qualitative would still be required with respect to how these properties are *detected*.

A related argument is that in a world of pure powers, qualities are needed in order to differentiate powers. Otherwise we lack an explanation for how objects are distinguishable from one another; for a world of pure power does not, of itself, provide for objects to be individuated *as* objects. Accordingly, the qualitative is required for the individuation of powers such that object-hood is possible. This idea is reflected in Heil's words, 'qualities inescapably enter into the individuation of powers, and in a way that makes it hard to see how these could vary independently' (personal communication, 2007, August 8). Martin expresses a similar thought in his view that, 'The qualities of shape and size are intrinsic and provide the form and extent of the "shell" of the entities that have them'.

In response to these objections to non-qualitative worlds, I note that Swinburne's regress is an appropriate critique, that the qualitative may be required to individuate objects in a world containing multiple distinct objects. However, altogether, it seems that a requirement for the qualitative holds only for ontologies that assume distinct objects. The arguments against purely relational worlds, as discussed above, seem to rely on assumptions neither necessarily shared, nor required, by non-qualitative world-theorists, namely: i) that relata need to be distinct from their relations and therefore qualitative; and ii) that we need an ontologically-robust account of

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3   Heil is careful to make clear that this is no longer Armstrong's view.

possibility.

The task facing a non-qualitative theorist, though, is to account for our manifest individuated things. Heil poses a good question: If there are no qualities, what plays the substance role? I will return to this question shortly, but first I outline a tension in Heil's strict identity of the qualitative and the dispositional, namely, whether his power-qualities are truly singular or dual-natured. In what follows, I argue that they *are* singular, but fail to provide a satisfying explanation for what it means to be powerful. I go on to argue that Heil's 'deep' Spinozian view—of a world that contains only a single object whose modes or properties are the manifest objects of everyday life—does not encounter this explanatory lacuna.

4 The qualitative and dispositional – a mere epistemological differentiation?

The denial of pure qualitativity leads Heil to deny that dispositions can be reduced to the qualitative. And the requirement for something more than pure relations or power to individuate objects leads him to deny that the qualitative can be reduced to the dispositional. As mentioned earlier, his proposed solution is to collapse the dispositional and the qualitative as a strict identity. But this leads to considerable tension in his characterisation of properties, as evidenced in the passage below:

A property's dispositionality and qualitativity must be thought of as unrealizable limits of different ways of being that property. Because dispositionality and qualitativity are equally basic and irreducible, there is no asymmetry here. A property's qualitativity, for instance, does not "ground" or serve as a supervenience base for its dispositionality. A property just is a certain dispositionality that just is a certain qualitativity.

If the dispositional and qualitative are *irreducibly* different *ways of being* that property—much like the different properties of an object are *ways of being* that object—then it is tempting to view the dispositional and qualitative as supplying different 'natures' or aspects which inhere in that property. After all, each appears devoid of something crucial that the other supplies: The qualitative confers individuation, the 'shell'; while the dispositional bestows power on its bearer. But Heil rejects any dual nature. A property just *is* a certain dispositionality that just *is* a certain qualitativity and these are a singular nature—power-qualities that both enable and objectify the properties of things.

It appears contradictory to suppose that the qualitative and the dispositional are each 'irreducible' and yet strictly identical, since the meaning of strict identity is, surely, for things to be reducible to each other. One way to relieve this tension is to resort to some kind of epistemological explanation: that 'qualitativity' and 'dispositionality' are two different *terms* referring to the very '*selfsame thing*'. When considering an object in terms of its power we talk about its dispositions, and when considering how it is detected by our senses we talk about its qualities. Thus, we *talk* of the dispositional and the qualitative as each contributing to the world *uniquely*. Martin uses the example of an ambiguous goblet/two-faces drawing to illustrate how differently considering the selfsame object may render two different outcomes:

What is qualitative and what is dispositional for any property is less like a two-sided coin or a Janus-faced figure than it is like an ambiguous drawing. A particular drawing, remaining unitary and unchanged, may be seen and considered one way as a goblet-drawing and differently considered, it is a two-faces-staring-at-one-another-drawing. The goblet and the faces are not distinguishable parts or components or even aspects of the drawing, although we can easily consider the one without considering, or even knowing of, the other. The goblet-drawing is identical with the two-faces drawing.

Heil's example is along very similar lines: 'The model, if you want one, is an ambiguous figure —a Necker cube, for instance—that can be seen now one way, now another'. Construing the problem as a matter of epistemology seems consistent with Heil's view that 'A property's dispositionality and its qualitativity are, as Locke might have put it, the selfsame property

differently considered.

If the dispositional and the qualitative were each indeed contributing uniquely in some ontologically-robust manner, then the issue of whether properties were single-natured or dual-natured would be perhaps unresolvable. In the light of the above, however, we could regard the *apparently* unique contributions as merely abstractions from our conventions of talking about or 'considering' the properties of things. However, accepting the contributions of the qualitative and the dispositional as *non-unique* imposes the limitations of the qualitative upon the dispositional, problematising what it means to be a power. This is the topic of the next section.

5 Non-Relational Dispositionality

Heil gives reasons for accepting non-relational dispositionality: First, to view a dispositional property as a relation to some manifestation (or possible manifestation) is a mistake, for it would be to confuse the disposition with its manifestation (p. 81-83). Second, dispositional properties exist whether or not the circumstances are such that the power bestowed upon the property-bearer is manifested. As Heil notes:

There is, I believe, no compelling reason to regard dispositions…as relational. Dispositions can be conditionally characterized in a way that invokes their actual or possible manifestations. But this does not turn dispositions into relations. The existence of a disposition does not in any way depend on the disposition's standing in a relation to its actual or possible manifestations or to whatever would elicit those manifestations (p. 83).

I do not think that dispositional properties must be non-relational in order to account for unmanifested dispositions. Since 'dispositional partners' are necessary in the manifestation of power, given the absence of an appropriate dispositional partner, it is over-determination to further require a disposition to be non-relational in explaining the absence of its manifestation.

But accounting for the mere possibility of unmanifested dispositions is not the whole story. As Heil notes, critics of power theories may argue that because connections or relations have been re-located inside properties rather than being external and contingent, every property must include all its *possible* relations (p. 123). Unmanifested relational dispositions seem, therefore, to push in a Meinongian direction, since they appear to stand 'in relation' to the possible manifestation that does not yet, if ever, exist. A way to avoid Meinongianism, therefore, is to deny that dispositions are relational.

However, the power-net put forward by Martin and adopted by Heil , I submit, removes Meinongian possibilities even if dispositions *are* relational. The identity of a disposition is given by the contribution it makes to the powers of the object that bears it. But an everyday object is complex, with multiple properties, and as Heil notes, its power is due to its overall dispositional make-up. Its behaviour is determined by the interactions *among* its properties and the properties of other objects. So it is not the case at any time that the manifestation of any single disposition occurs. Rather, it is the power of an *object* that is manifested due to contributions from *all* its dispositional properties. Importantly, therefore, *whether* an object manifests its power is not an appropriate question, for no object is ever *not* in relation to something else. An object *always* manifests its power, in concurrence with the multitude of dispositional partners to which it stands in relation. Since its power results from its *complete* dispositional make-up, no disposition of the object is ever unmanifested. Accusations of Meinongianism are thus unfounded when viewing dispositions as relational.

But Heil does need non-relational dispositions for strictly identifying the dispositional with the qualitative. Since the qualitative by definition is intrinsic and non-relational, dispositions must be both intrinsic and non-relational.

Theories, like Shoemaker's, that propose an intrinsic but relational view of power, are under a burden to explain how distinct objects become individuated without qualities. Theories, like Armstrong's, that propose qualitative properties linked by contingent laws of nature, are under a

burden to explain the necessity in the linking pattern. Likewise, Heil's Identity Theory of Properties is under a burden to explain how non-relational power-qualities differ from pure-qualities (Armstrongian categorical properties), since both are intrinsic.

Heil's answer is roughly that pure-qualities (if they existed) would require, as Armstrong supposes, contingent laws of nature linking them. Together these categorical properties and laws would bestow power on the property-bearers. In contrast, Heil's power-qualities do not require contingent laws to bestow power. They do so through their own natures (p. 79) whose powers are 'built into' them (p. 124).

This answer leads to the problem of what it might mean to have a non-relational but powerful nature. This puzzle is closely tied to how such properties are supposed to bestow power upon their bearers. Heil claims it is simply a brute fact that his power-qualities bestow power: 'An identity theorist agrees that there is no further explanation for the fact that certain qualities endow their possessors with certain powers' (p. 117). But, as Heil notes, this is no more mysterious than competing views. Indeed, he presents only one brute fact: 'power-qualities bestow power on their bearers', whereas Armstrong presents both categorical properties and the laws of nature linking them, entailing at least two brute facts (p. 117).

Counting aside, the non-relational facet of Heil's dispositions demands some explanation of *how* power-qualities differ from pure-qualities. If that difference lies in their ability to bestow power without contingent laws of nature, then some detail of the action of 'bestowing' *is* required. Otherwise the theory presents essentially a deus ex machina leaving the notion of power-qualities incomprehensible.

There is further concern about positing power-qualities as non-relational: Given that an object's power comprises an overall dispositional make-up, how do non-relational power-qualities 'get-together' accordingly? Heil has ruled out contingent laws between properties, and there seems to be no room for necessary laws by dint of properties being non-relational. Therefore we lack the conceptual resources to formulate how power-qualities could constitute the overall dispositional make-up of objects.

There are, therefore, some very good reasons for considering dispositions as relational: First, when we talk of properties as the 'ways that objects *are*', surely we mean 'ways that an object *can relate* to other objects'. Properties must surely, then, be relational. Second, relational dispositions offer a rationale for the ability of dispositions, *of their own nature*, to bestow power on their bearers. The overall dispositional make-up of an object is comprehensible if its dispositions relate to each other in certain ways. However, by strictly identifying the dispositional with the qualitative, Heil binds the dispositional to a non-relational status. I find this a problematic outcome of his identity thesis.

6   3-to-1 Dimensional Asymmetry

As I claim, it is primarily the need to accommodate the qualitative that leads to the problematic characterisation of the dispositional in non-relational terms. I have also asserted that the role of the qualitative as individuator of powers is required only for theories that propose a world of distinct objects and distinguishable powers or potentialities.

Heil's 'deep' description (Section 16.8) of a world constituted by a field or space-time manifold as the single existing object does not seem to incur the problems engendered by one of multiple and distinct objects. If manifest everyday objects turn out to represent properties (modes)—ways that this field is—then, I argue, the world would not need the qualitative as individuator of powers. Nor would there be, in turn, the onus to resolutely account for power in terms of non-relational dispositionality. It makes no sense to ask of a monistic world whether power is relational *between* objects, since the field is everywhere, being the only object in the world. And since there is only one object, all relations are within it, making the distinction between intrinsic and extrinsic relations refreshingly irrelevant.

The question that remains active concerning Heil's 'deep' description of the world is whether we still need the qualitative to individuate the modes or properties of the field—our manifest everyday objects—which appear to be distinct or at least distinguishable from each other. If the qualitative is required for this individuation, then Heil's power-qualities are in play after all, and we return to the problems that are incurred by these being non-relational.

I suggest that we *can* explain how modes are distinguishable one from another, without recourse to traditional qualitative properties, by considering the space-time dimensional structure. (Perhaps, in echoing views put forward by Graham Nerlich , we can think of space-time dimensional structure as a 'unique ontic category' of *some* sort, but this topic is for another paper.) The ostensible spatial priority of the world is expressible in terms of space comprising (at least) three dimensions and time being a single dimension. This idea derives from an unpublished manuscript by Merin Nielsen[4] as a reasonable account of *why* we tend to regard mass, shape, size, solidity and so forth as requiring 'something qualitative' without falling back to a discussion of dispositional versus qualitative properties. Here I hope to support Heil's emphasis on accounting for both spatial priority and fundamental power in the universe, while avoiding the problems of non-relational power-qualities.

By virtue of space-time's numerical asymmetry, we are incidentally yet inescapably disposed to identify the world's contents first and foremost in terms of spatial arrangements of events. This presents an intuitively forceful, yet ultimately illusory, distinction of ontological status between arrangements of events in space and those in time. The former tend to be called 'qualitative', and the latter 'dispositional'.

Although derived from the prior 3-to-1 asymmetry, however, the distinction is really an artefact of the properties corresponding to our sensory perception.

Whenever it seems to manifest in 'space-only', power *appears* intuitively qualitative. Although power manifests always in space-time, we arrive most readily at the false impression that mere space-filling entails 'substance'. This impression arises because space, as a result of comprising three dimensions, seems more *primary* than time such that objects apparently 'sit still' in space, occupying certain spatial regions in an 'orthogonally extended' fashion, whereas they never sit still in time. Sitting still in space just is persisting as a physical 'particle'. Sitting still in time, however, corresponds to no physical state.

So how come objects may sit still in space (extending indeterminately through time), but not in time (extending indeterminately through space)? In other words, how come there are particle-like objects, that seem embedded in space, but no temporally-embedded counterparts? By way of an answer, please consider the following.

Given some point-moment event X and some quantity of time T, there are just two events located at the same point as X, and which are separated from it by T. These two events are located at T in the future from X and at T in the past from X. However, given some point-moment event X and some quantity of space S, there are many events located at the same moment as X, and which are separated from it by S. These many events are located at all the points forming a sphere of radius S around X.

Schematically, in the latter case, X is surrounded by a 'network' of events which are simultaneous and equi-spatial also from each other. Consequently, in the context of fundamental particles, we have the potential for a 'one-way circulation network' among the many events *equi-spatial* from X. Such a network, analogous to a circular-driveway, is available in two or more dimensions that supply an angular metric, more dimensions allowing more complex circulation. There is no prospect, however, for any similar circulation network among the merely two events *equi-temporal* from X, which exist at the same point as X. (One dimension allows for only a linear network, much like a drive-in-back-out-driveway.)

What is circulating? Suppose we consider equi-spatial events, at consecutive 'stages' of circulation, to be network vertices. Then each connecting 'edge' may be just an interaction of space

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4   This account has been discussed and developed in collaboration with Nielsen.

and time. If equal quantities of these are involved, then the absolute 'space-time interval' between vertices is zero. Such an interaction manifests as energy-momentum. Subject to scientific interpretation, what is circulating may be viewed as gauge bosons.

Now suppose that such circulation networks are 'self-sustaining'. Then *without loss of identity* they may self-sustain through time (thus 'persisting'), but not through space. This is because any stage of circulation maintains the equi-spatial separation from X, but involves a temporal translation equivalent to the time taken. The network is thereby a persisting object whose 'identity' is represented by its preserved spatial arrangement of events. 'Concrete' particles thus arise from the self-replication of such spatially confined networks, clusters of which appear as matter.

The upshot of the 3-to-1 Dimensional Asymmetry is that such networks may exist only as persisting *spatial* arrangements of energy-momentum. By virtue of this 'immanent causation', they appear as stuff that extends 'gratuitously' through time, upon which entropy imposes a well-defined direction. But we too are such spatially confined networks. As a result, we readily perceive motion-through-space, but not motion-through-time. We are 'primed' by expediency to perceptually encounter the world by interacting with other particle-like networks, giving rise to the intuition of spatial primacy. The 3-to-1 asymmetry is thus translated into a bias that favours identifying substance as spatially oriented.

7   Summary and Conclusions

Heil's attempt to integrate fundamental power into a world that we encounter as deeply and essentially spatial is a very important pursuit. I have argued that it falters in trying to unite the qualitative and powerful by arguing for non-relational power. Power-qualities and pure-qualities differ in terms of how they may bestow power. Yet, Heil offers no explicit account of this action of bestowing.

I have argued that a major reason for Heil requiring the dispositional to be non-relational is that his identification of the dispositional and the qualitative cannot otherwise proceed. However, requiring the existence of the qualitative is based upon the need to individuate distinct objects and powers, and therefore does not necessarily arise for monist theories. I have outlined a model addressing the need to account for the substance role, namely, the asymmetrical interaction of space and time. This works in the spirit of Heil's endeavour to characterise the world as qualitatively potent, removing from discussion the dichotomy embedded in terms like 'dispositional' and 'categorical' or, for that matter, 'qualitative'. We can adequately explain deep-seated intuitions concerning the role that substance plays while coherently positing a monist theory of properties.

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Levels of reality and levels of analysis
Commentary on John Heil's
From an ontological point of view

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I shall address some remarks to Heil's very important contribution to ontology from the point of view of a naturalist particularly interested in the ontology of the mind (Nannini 2006a). Heil's starting point is the criticism of the "Picture Theory of representation" (Heil 2003, p. 5 ff.). By speaking of a Picture Theory he is referring mainly to L. Wittgenstein of course, but not only, since he maintains that the whole of metaphysics after Kant has accepted such a theory. What is the central tenet of the Picture Theory? Heil formulates it in a very general way:

The core idea is that the character of reality can be 'read off' our linguistic representations of reality – or our suitably regimented linguistic representations of reality. A corollary of the Picture Theory is the idea that to every meaning predicate there corresponds a property" (Heil 2003, p. 6).

By specifying "[…] our suitably regimented linguistic representations of reality" Heil makes it clear that he does not include only Wittgenstein and the Neo-wittgensteineans but also logical empiricists and W.v.O. Quine among the philosophers who endorsed the Picture Theory. Heil objects to all of them in that "the idea that to every predicate there corresponds a property" generates a "hierarchy of properties" (Heil 2003, pp. 6-7). In other words, if I correctly interpret Heil's argument, the Picture Theory leads one erroneously to think that to every linguistic level of analysis there is a corresponding level of reality. Metaphysics is reduced to semantics; ontology becomes "an analytical enterprise" (Heil 2003, p. 3) and loses its essential tie to empirical sciences: according to the Picture Theory what is really possible in the world depends on what is logically possible and conceivable in language.

Up to this point I agree with Heil. What the ultimate structure of reality is cannot be established only by conceptual analysis. It is an empirical question. Heil speaks of the "inescapability of ontology" (Heil 2003, p. 2) or "ineliminability of metaphysics" (Heil 2003, p. 5) and makes it clear at the same time that metaphysical issues "include an ineliminable empirical element" (Heil 2003, p. 3). Therefore some central issues of Heil's position such as speaking of "ontological seriousness" (Heil 2003, p. 2) and of the empirical dimension of ontology, in spite of its identification to (a part of) metaphysics, are very similar to the major tenets of Quine's epistemological naturalism. After Quine one cannot any longer assert that the epistemological questions that can be addressed to the supporters of a scientific theory are reducible to 'What do you mean by that?' and 'How do you know that?' A third question must be added: 'What is there?', that is, 'What are the ontological commitments of your empirical theory?' Every empirical theory presupposes (and, as it were, 'posits') the validity of an ontological framework, which on the one hand is very similar to some old classical metaphysical theories (e.g. materialism or pluralism, realism or idealism) but on the other hand, thanks to the 'continuity' between science and philosophy and the collapse of analytic-synthetic distinction is itself an empirical revisable hypothesis, although too general to be falsified by a single crucial experiment (Quine 1969).

The title of Heil's book *From an ontological point of view* hints at Quine's collection of essays *From a logical point view* (Quine 1953). However, it is not completely clear to me whether by that title Heil wants to emphasize the similarity of his position to Quine's position about ontology or, on the contrary, if he is implicitly suggesting that his way of conceiving of ontology is an alternative to (or at least very different from) Quine's way. The latter hypothesis seems to me to be the right one, first of all, because Heil rejects the existence of universal properties (a central issue in his ontology) but admits to the existence of particular properties (or 'modes') without giving any importance to the eliminativistic hypothesis that properties do not exist at all independently of their being universal or particular, whereas it is well known how tenaciously Quine has upheld nominalism.

I would like to demonstrate that such an attitude toward Quine, if it is really Heil's attitude, is not correct. In fact Quine's and his followers' 'scientific realism' (e.g. Churchland 1979 and 1989; Dennett 1998, pp. 95-120) implies a conception of ontology that offers the same advantages of Heil's conception and avoids its defects.

First of all, contrary to what Heil at least implicitly suggests Quine's naturalism cannot be assimilated to the Picture Theory. Because of the continuity between science and philosophy and the collapse of analytic-synthetic distinction ontology is conceived by Quine and his followers as an empirical enterprise. It is true that according to Quine the ontological commitments of a scientific theory are highlighted by a linguistic analysis (regimentation, variables that are in the field of an existential quantifier etc.) but the choice between alternative ontological commitments and therefore between different empirical theories is made on the basis of empirical and pragmatic criteria (prediction power, Ockham's razor etc.).

Thinking that epistemological naturalism implies ontological relativism is a wrong working out of Quine's 'ontological relativity' by some of his followers such as H. Putnam and other 'epistemological pluralists' (see e.g. De Caro and Mcarthur 2004 and my discussion of this book in Nannini 2006b), not its logical consequence. According to Quine all ontological commitments depend on the theory they are included in. Thus, what a thing is depends on how such a thing is described within the theory of which its concept is part. For example what electrons are can be known only through quantum mechanics. However, such dependence does not imply that all theories, including their ontological commitments, have the same value and are equally acceptable. On the contrary Quine has made it clear that fallibilism is his keyword, not relativism (Quine 1981, pp. 33-34). According to Quine scientific theories are always revisable in the light of experience, that is, they can be falsified. But scientists revise them in order to find out theories that are true in an absolute sense with regard to an unknown unique external and mind-independent reality and not because theories that contradict each other might be true of their different theory-laden phenomenal 'worlds'. Quine's epistemology is very different from T. Kuhn's or P. Feyerabend's epistemology.

Therefore, first of all the Quinean naturalistic approach to ontology sketched above is compatible with (even better it promotes) a distinction between levels of analysis and levels of reality and rejects the existence of a plurality of levels of reality by preferring among the ontological commitments the commitments of natural and cognitive sciences as a fundamental representation of the real world.

Secondly such an approach to ontology is very different from 'epistemological relativism' as well. If, for example, you think like Putnam (1981 and 2005) that the ontological commitments of psychology are independent of neurosciences' commitments because the world of psychology and the world of physics are two distinct parallel worlds incapable of any causal interaction, then either you cannot any longer explain why in normal conditions your arm rises (a physical event) if you want to raise it (a mental event) or you must suppose that there are two independent physical worlds: the physical world of psychology and common sense in which my arm is *raised* by my intention to raise it and the physical world of hard sciences in which the *rising* of my arm is caused in last analysis by brain processes.

To sum up, from a naturalistic point of view the hypothesis that a level of reality corresponds to each level of analysis is wrong and brings about a lot of false problems. Therefore Heil is right when he maintains that if one is stating that two things are both red the use of the same predicate ('being red') in both statements does not imply the existence of redness as a unique universal property differently implemented in distinct things (Heil 2003, e.g. pp. 125-128). For example (the example is mine), let us assume that I see a red tomato in front of me and at the same time I am thinking of a red devil. In that case if I am saying 'This tomato is red' and 'The devil I'm thinking of is red' both my statements are true and there is something in reality that makes them true. Each sentence is true thanks to a relationship (whose nature is not to be discussed here) to its own truth-maker. So far no problem. But why should one admit that there is a unique truth-maker of *both* statements and that such a truth-maker is a universal property, that is [redness], belonging to both objects? Why should one assume that the fundamental structure of reality mirrors the structure of our language? Why should one think that the truth of the sentences mentioned above is assured by a perfect correspondence between the obtaining of a single predicate ('being red') in both sentences and the existence of a single universal property ([redness]) in both objects? Why should the truth-maker of a statement that describes a visual perception be identical to the truth-maker of a statement that describes (or expresses) a thought? The red tomato I am speaking of really exists whereas the devil I am thinking of exists only in my imagination. If the statement 'This tomato is red' is made true by the fact that a certain real object reflects light in a certain way, how can the same reason be given to justify a statement about an imagery object that cannot reflect light at all?

A supporter of the Picture Theory might reply that, if I am thinking of a red devil, in fact I am thinking of the *image* of a red devil and by saying that this image is red I am implicitly assuming that if the imagery object was real it would reflect light in the same way in which tomatoes reflect it. However, the fact that the supporter of the Picture Theory is obliged to give a so complicated justification of her point of view by means of counterfactual conditionals is sufficient to show that the states of affairs respectively necessary to assure the truth of the statement about the tomato and the truth of the statement about the devil are very different from an empirical point of view, that is, the truth-makers of the two statements are very different. One cannot cancel such a difference simply by inferring a priori the alleged existence of the same property in both objects on the basis of the fact that in the sentences used to describe them the same predicate obtains. How could one be sure that such a feature of our language is also a feature of reality?

Therefore – I repeat – Heil is completely right when he emphasizes the "ineliminable empirical element" of ontology (Heil 2003, p. 3). About that he implicitly agrees with Quine. However, he departs from Quine's continuity between science and philosophy by searching for a fundamental philosophical ontology based more on the conceptual analysis of common language than on the ontological commitments of natural and cognitive sciences. This difference between Heil's approach to ontology and a naturalistic approach inspired by Quine's scientific realism is particularly clear with regard to the existence of universal properties.

According to Heil if it is true that this tomato is red and also that that tomato is red the truth of these two statements is not due to the existence of a universal property, such as [redness], which would be 'inherent' to both tomatoes and to all other red things, but to the fact that each tomato has its own colour (that is, its own particular way of being red) and these two particular colours are similar 'modes' (on this conception of modes see e.g. Heil 2003, p. 3 and pp. 137-150). Let us say, more generally, that according to Heil the truth of the statement '*a* and *b* are *F*' (Fa & Fb) does not imply the existence of a universal property [F]. On the contrary the truth of that statement implies that the mode [$*F_a$] is inherent to the individual *a*, the mode [$*F_b$] is inherent to the individual *b* and such modes are similar. Moreover every mode has a dispositional aspect and a qualitative aspect, that is, a 'quale' (Heil 2003, p. 111 ff.). For example, if a tomato is red then it has the disposition to reflect light in a certain way and appears as red.

Now, from a naturalistic and nominalistic point of view Heil's conception of modes (that is,

particular properties) presents two defects. First of all, it is not clear to me why the realism of modes should be more acceptable than the realism of universal properties. By maintaining that the truth of 'Fa' implies the existence of $[*F_a]$ Heil is himself victim of the Picture Theory. How can one know *a priori* that there exists in reality a mode inherent to a certain individual only through the fact that in our language (or in the language of logic) a certain predicate is connected to a certain proper noun (or an equivalent expression such as 'this tomato', an individual constant etc.)?

Secondly, in order to make it clear what the similarity between two modes is Heil is obliged to introduce in his theory such a similarity as a primitive irreducible feature of reality. He himself emphasizes that after rejecting the existence of universal properties he may not any more define similarity as partial identity (Heil 2003, pp. 156-157). For example, if you say that the colour (a mode) of this tomato is similar to the colour (another mode) of that tomato because these two colours have something in common, you have already reintroduced the existence of [redness] as the part that the two particular colours have in common. More generally, if you maintain that the mode $[*F_a]$ is similar to the mode $[*F_b]$ because – by analysing $[*F_a]$ and $[*F_b]$ as identical respectively to '[F] & $[*G_a]$' and '[F] & $[*G_b]$' – you see that the two modes have a part [F] in common you have already assumed the existence of the universal property [F]. Therefore Heil must introduce in his ontology the similarity between similar modes as a primitive fact: "The friends of modes must regard similarity relations as primitive and irreducible" (Heil 2003, p. 157).

However, this is counterintuitive. Even if one *prima facie* accepts the similarity between the colours of two tomatoes as a primitive fact because it is directly perceived, that is, known 'by acquaintance' nevertheless one is inclined to think, after reflecting about that, that such similarity can somehow be scientifically explained and therefore it is really no primitive fact: for example, one might say that these tomatoes have similar colours because their surfaces reflect light in similar ways (I shall show later that such a theory about the origin of colours is in fact too simple). And also this similarity in the way of reflecting light can be better defined as the fact that certain electromagnetic waves have a length comprised within the same waveband. Why does Heil insist on thinking that the similarity between modes is a primitive unexplainable fact? I think he does so because all possible explanations or definitions of phenomenal similarity imply that certain tokens belong to the same type: these electromagnetic waves are similar because they have a length comprised of the *same* waveband; these distal stimuli are similar because they have effects of the *same kind* on our brain, etc. In other words, all explanations or definitions of similarity between modes seem to imply the existence of universal properties: [being comprised of a certain waveband], [having a certain effect] etc.

Is there a way to avoid such a dilemma between accepting either the existence of universal properties or the primitiveness of the similarity between similar modes? May one say for example that two objects have the same colour without implying either that colours are universal properties or that the similarity between the particular colours of the two things is a primitive fact? I think that this is possible if one looks at the neurophysiological theories of perception and especially of colour perception. It is not necessary to be a neuroscientist to know that human visual perception is an intermediate step in a causal chain of physical events that begins with the fact that the surface of a (sufficiently large) material object reflects light in a certain way (distal stimulus) and ends on a certain movement of the human body (motor response). For example a goalkeeper observes the trajectory of the ball that he wants to catch and moves his body in such a way that he can catch it. Perception is in view of action (Noë 2004). The perception of the ball is a step in the process of sensorimotor coordination that controls the movements of the goalkeeper's body. The light reflected by the ball produces a pattern of activation in the neurons of the goalkeeper's retinas (retinal images), such an activation produces in turn a certain train of electro-chemical signals that reach the motor neurons of the legs, arms etc. after having been worked out by the lateral geniculate nuclei, the occipital lobes and certain pre-motor and motor areas of the cortex (on colour vision see e.g. P.S. Churchland 2002, pp. 185-189). Moreover sometimes the stimulus is internal to the brain and

sometimes the motor response is an utterance (verbal behaviour): for example I see a red tomato and consequently I am saying 'This tomato is red' or I am thinking of a red devil and I am saying 'The devil I'm thinking of is red'.

So far it is not known with certainty what *conscious* perceptions are in the brain processes that implement sensorimotor coordination. However, it is probable that consciousness (or better *this* kind of consciousness) is a biological phenomenon of synchronisation between the oscillation frequency of the oscillatory neural groups whose respective activity implements distinct aspects of a perception: for example in the case of a visual perception the recognition of colours, forms and movements (see e.g. Engel 2003 and 2005, Monyer 2006). The goalkeeper sees *one* ball that is white, spherical and moving for example to the right upper corner of his goal. In distal stimuli (and also in proxy stimuli, that is, in retinal images) the information regarding colours gets mixed in with information about form and movement. The brain of the goalkeeper must work in such a way that he can catch *that* ball (a single object). Therefore, in order to achieve its task the brain must distinguish three kinds of information (about colour, form and movement), work them out through three distinct brain processes in different cortex areas and then *construct* the image of one *phenomenal* ball that is white, spherical and moving in a certain way by synchronising the processes that implement the recognition of a white colour with those that implement the recognition of a spherical form and a certain movement. Only by means of a mental representation that has a white and spherical ball moving in a certain way as its internal *phenomenal* object the goalkeeper can catch the *real* ball. The image of the phenomenal world that we human beings construct by means of certain brain processes is an intermediate step in the sensorimotor coordination that is necessary to us in order to be able to successfully interact with the real world (e.g. Nannini 2007b and 2007c).

However, if this is true then our confidence that the world is in fact as it appears to us must be rejected. The phenomenal world perceived by human beings is the internal object of the mental representations that are constructed for practical reasons in view of successfully interacting with that part of the real world that is our natural and social environment. Other animals are likely to see the world in other ways, that is, to live in phenomenal worlds that are adequate to their own form of life. For example frogs most likely recognize flies as *moving* black dots. A frog does not eat a fly if it is dead (even if it died only some seconds before) (Jacob 1998). It would be an error to think that flies really exist and we see them as they *are* whereas frogs see them as they *appear* to them. It is true that there is something in the real world that is the common source of our perception of flies and the frogs' perception of moving black dots. But why should our perception be better than the perception of frogs? They are simply two representations of the same real world constructed according to the needs of two distinct forms of practical interaction with it.

This conclusion becomes still clearer if human mental representations are compared to the activation patterns of hidden units in an artificial neural network (P.M. Churchland 1995, pp. 57-121 and P.S. Churchland 2002, pp. 273-319). Let us consider a three layer feedforward neural network such as G.W. Cottrell's network for the recognition of faces in a sample of pictures (Churchland 1995, pp. 38-55). The activation pattern of input units consists, for every picture, of a 64x64 matrix of pixels. After a training by trial and error (with the help of an external 'teacher') on a sample of twenty pictures the network can give a correct output for every input by means of five neurons: the first one discriminates faces and non-faces, the second and the third one respectively male pictures and female pictures and the last five neurons give the name of the person represented in the input according to a certain way of coding names. What is interesting here is the fact that during the training the network sets up the weights of its connections in such a way that every picture of the training sample triggers an activation pattern of the eighty hidden units (posed between the input-layer and the output-layer) which are in turn capable of triggering the *desired* activation pattern in the output units of the third level. In other words, the activation pattern of the hidden units is, as it were, a 'zipped' intermediate *representation* of the input functional to the

production of the desired output. The same sample of inputs would have produced other activation patterns of hidden units (and therefore other real outputs) if the teacher had based the training on other desired outputs. Applying this model to mental representations, that is, viewing them in a materialistic perspective as activation patterns of neural groups that are intermediate steps in the process of sensorimotor coordination the conclusion can be drawn that the *phenomenal* world in which human beings have the impression of living is the content of a mental representation of reality that makes human agents able to plan and execute in the *real* physical world the actions that are appropriate to assuring the achievement of their purposes (above all the probability of surviving).

Moreover mental representations can be scientifically meta-represented by means of vectors in nD-state-spaces. Every vector [a, b, …n] in a nD-state-space can represent the activation pattern of the neural groups belonging to a certain step in the process of sensori-motor coordination. In other words, every mental representation can be considered as a *functional* state (See Kim 2005 about this kind of 'functional reduction') whose neural implementation is meta-represented by a vector in a state-space. For example the vision of colours can be meta-represented by means of a 3D-state-space whose dimensions (black-white, blue-yellow and red-green) represent three features detected by the brain from the input coming from the retinas and worked out by three distinct brain processes (Churchland 1995, pp. 24-26).

I think that such a summary of the scientific theories on perception, although very simple and preliminary, is sufficient to reject the Picture Theory without introducing modes in our ontology and without considering the similarity between similar modes as a primitive fact.

Let us begin with the problem of similarity between some modes as a primitive fact. The vector meta-representation of the mental representations of colours offers a very simple solution to such a problem. The truth-maker of a statement such as 'These two things a and b are both red' is neither the fact that the same universal property [redness] is inherent to both things nor the fact that a certain mode [redness$_a$] is inherent to a, another mode [redness$_b$] is inherent to b and these two modes are similar according to a concept of similarity that is primitive and unexplainable. According to the vector meta-representation mentioned above the truth-maker of the statement 'a and b have the same colour' is the fact that the electromagnetic waves reflected by a and those reflected by b bring about in the *human* brain two states whose vector-meta-representations overlap or at least have close coordinates in the same state-space. The degree of similarity between the perceptions of two colours can be *measured* in every dimension of their meta-representation. The fact that two things have a similar colour can be clearly defined and has a convincing scientific explanation.

One might object that nothing changes from a metaphysical point of view with regard to the existence of modes if the truth-maker of the statement 'a is red' is a disposition of a to reflect light in a certain way or its disposition to cause certain processes in the brain of human beings. In both cases such dispositions are modes of a. However, this objection is not valid. First of all, the naturalistic hypothesis sketched above has the advantage that attributing similar modes to two so diverse objects, such as a red tomato and a red devil, is not any more a necessary condition of stating that this tomato and that devil are both red. Studies conducted by means of brain-images show that the neural correlates of the perception of objects of a certain kind largely overlap the neural correlates of imagining objects of the same kind (see e.g. Ganis, Thompson and Kosslyn 2004). Therefore it is at least plausible that perceiving a tomato creates, in the cortex areas that implement colour vision, a brain state whose vector-meta-representation is identical or very close to the vector-meta-representation of imagining a red devil. According to this hypothesis tomatoes and devils possess no similar *real* modes. This is in accordance with our intuition: how could a non-existing entity such as a devil be similar to a real physical object such as a tomato? Moreover how could a non-existing entity have real modes since – as Descartes said – the nothing has no properties? According to my own naturalistic hypothesis, the truth-makers of the statements 'This

tomato is red' and 'The devil I'm thinking of is red' are two distinct chains of physical events that have only a slight common ring in the brain of the speaker. The former chain gets started from the way in which a tomato reflects light and ends on the movements of the tongue (larynx, mouth etc.) of an agent who is saying 'This tomato is red'. The latter chain gets started in a completely different way (a picture observed in a book or an association process within the agent's mind etc.) and ends on the utterance of the statement 'The devil I'm thinking of is red'. Therefore these two truth-makers give us good reason to believe in the truth of the two respective statements and also in the truth of the statement 'This tomato and this devil have the same colour' without presupposing: *a)* an identity (or similarity) between the properties (or modes) of tomatoes and devils; *b)* the existence of devils in any sense whatsoever; *c)* the existence of properties or modes. The only condition that is presupposed is the similarity between two brain processes: a similarity explained by the overlapping of their vector-meta-representations.

However, this naturalistic hypothesis seems to be open to some objections. First of all, if the tomato and the devil we are speaking of possessed no similar modes (or no common universal property) how could we be justified in connecting their names to the same predicate 'being red'? This objection seems to be very plausible indeed but it comes out from the wrong presupposition that if *a* and *b* are *F* and therefore they belong to the extension of the predicate *F* then *a* and *b* must have something in common (or possess similar modes). Every extension is determined by an intension. For example, it is correct to say that *a* and *b* are red and therefore belong to the class of red things only if they are really red. However, according to nominalism exactly the contrary is true: some objects are red only in the sense that they have been included in the class of objects conventionally called 'red' by virtue of a choice justified by pragmatic reasoning.

'*Natural*' colours such as 'red' are in fact *artificial,* as are, for example, the colours assigned by meteorologists to pictures taken from satellites in order to delineate parts of the earth which have distinct temperatures. The only difference is that attributing colours to temperatures is the product of a meteorologists' conscious *choice* whereas attributing in the brain the same 'format' to a certain amount of information concerning the way in which the light reflected by material objects affects the human brain was an unconscious 'choice' of natural selection during the biological evolution of humans.

This implies that *qualia* are not properties or aspects of modes that belong to reality; they are the *format* that the brain gives to a certain amount of information in the course of a sensori-motor coordination process (Roth 1994, pp. 297-298). (The scope of this paper does not allow for an in depth exploration of this topic. For more details see Nannini 2007a, pp. 38-39). In other words, some objects are seen as red by human beings not because they are really red in the metaphysical sense that they possess the universal property of redness or because each of them possesses a particular colour (a mode) similar to the colours of other things but only because seeing them (or imagining them, thinking of them) effects the human brain in such a way that it will thereby provide the 'format of consciousness' and in that format the representations of such objects are coded by brain processes whose vector-meta-representations are overlapping. The brain automatically operates such a codification of the information coming from the external world and from the inside of the body because the brain itself has the structure (and therefore the way of operating, including the use of that particular format that is consciousness) that Mother Nature has selected by virtue of its adaptive advantages.

This response to the objection mentioned above might be accused of confusing "colours objects have" with "colours appearances" (Heil 2003, pp. 203). An object produces distinct 'retinal images' according to the intensity of the light by which it is illuminated. For example the colour of a suit changes if I see it outdoors instead of indoors. But – Heil might object – what really changes is the way the colour of the suit appears to me, not its very colour. The suit keeps its colour unchanged indoors and outdoors. Therefore colours are objective modes of things, not subjective ways things appear to us.

Of course objective colours and colour appearances must be distinguished from a phenomenological point of view. However, when attributing properties or modes to *real* objects it is not necessary to take into account such a difference. Our brain constructs a representation of the external world in order to interact with it. Two objects appear to us as having two distinct colours if there is a difference in the real physical world that our brain is able to detect (in order to improve the interaction of the organism with its environment) and to represent in the format of conscious vision by means of the difference between two 'colour appearences'. Therefore I concede that according to my interpretation colours are in fact colour appearances. But not all appearances belong to the same level of *analysis*. The mental representation of the world is a construction of the brain arranged in several levels of abstraction. Also the colour appearance of the suit that changes according to our *seeing* it indoors or outdoors is already the product of a complex brain process that has found out some 'invariables' in the flux of information coming from eyes. This abstraction process in search of invariables in our representation of the world goes on if I *think* that the colour of the suit does not really change whenever I bring the suit outdoors even if I see it as changing. In such a case I am shifting from a *perceptive* representation of the suit to a *thought* representation of it. In both cases the coloured suit is a phenomenal object, that is, the content of a mental representation. The real suit is the physical object that, by reflecting light in a certain way (or rather reflecting it in different ways if the lighting conditions change) is the real physical source of the information received by my brain. The real suit qua physical object has no colour. Only the phenomenal suit (that is, the suit as seen indoors and as seen outdoors) qua contents of the real suit's representations constructed by my brain have colours in the sense that my brain gives them a 'colour-format'. However, since distinct representations of the same object are constructed by my brain at distinct levels of abstraction it is possible that the *seen* suit changes its colour whereas the *thought* suit does not. To sum up, in my opinion, the distinction between colours and colour appearances is reducible to a distinction between two colour appearances belonging to distinct levels of abstraction.

I believe that an adversary of my eliminativistic conception of properties and modes might formulate her objection by saying: 'Even if we agreed that the naturalistic hypothesis sketched above would allow us to speak of objects that are equally red without assuming the existence of [redness] or the existence of similar modes of being red, nevertheless we should introduce in our ontology something that justifies the use of universal predicates in the language of physics and other hard sciences. And how could this 'something' be different from physical properties or similar physical modes? It is true that red tomatoes and red devils have nothing in common from a physical point of view. Therefore we may concede that they have nothing in common at all since the real world is identical to the physical world. But, even in such a physicalistic framework, if the two causal physical chains that end on the utterance of the statements 'This tomato is red' and 'The devil I'm thinking of is red' have in common two similar brain processes we need a justification for our statement that these brain processes are similar. Saying that they are similar because their vector-meta-representations are similar is not sufficient to avoid the existence of properties or modes since the attribution of the same predicate "being represented by a certain vector" to two distinct brain processes also needs a justification. And there seems to be no other justification except the fact that these two brain processes are really similar from a physical point of view. Therefore at least physical properties (or physical modes) do exist!'

The response to this objection is not easy to formulate and would require my working out a materialistic-eliminativistic ontology and epistemology. However, due to the scope of this paper, this is impossible here. I shall restrict myself to remarking that the Picture Theory is false also with regards to physics. It is true with regards to statements such as '*a* is red' that one can deny that the predicates of folk psychology mirror real properties or real modes of the physical world to which the truth-makers of such statements belong only because one can distinguish the level of analysis of folk-psychology and the level of analysis of physics. But if the ontological commitments of physics

are considered identical to the real world then such a distinction is no longer possible. I concede that. Nevertheless not even the language of physics is a mirror of reality. Even the hypothesis that the description of reality in physical terms is the fundamental framework to which all other ways of describing reality can be ontologically reduced is an empirical and (at least in principle) revisable hypothesis that can change with the development of physics and of the other natural and cognitive sciences. Such a hypothesis is preferred by physicalists *only* because at least till now it has offered a theoretical framework within which all empirical findings at our disposal can be coherently described and explained.

To sum up, the Picture Theory is to be rejected – as Heil proposes. However, this can be done in a naturalistic and materialistic perspective inspired by Quine without accepting the existence of modes and without considering their possible similarity as a primitive fact. As for the application of Heil's ideas to problems concerning the ontology of the mind (Heil 2003, pp. 195-249) I agree with him on many points and I believe that on the whole my proposal about the non existence of modes, although supported by a general assent to eliminativism that Heil instead rejects, is largely compatible with his 'ontological point of view'.

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Do zombies hunger for humean brains?
Commentary on John Heil's
From an Ontological Point of View

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1 Introduction

John Heil's *From an Ontological Point of View* (Heil 2003) is a tremendous philosophical work. The neo-Lockean ontology the reader finds within its 267 pages is a sensible and refreshing alternative to the neo-Humean ontologies which presently occupy the vast majority of the metaphysical literature. What Heil offers is a much needed change in perspective. Nor are the strengths of the book limited to Heil's willingness to approach central metaphysical problems in largely untried and unpopular way; the book is very clear in its presentation, accessible to wide readership, and tightly argued throughout. Heil's efforts in this book are to be applauded, and the result is one that warrants serious consideration by all those interested in serious metaphysics. But the interest should not end there: the lessons of Heil's book are ones that almost all philosophers ought to take seriously.

Despite the criticism that follows, my overall position should not be taken as anything short of a whole-hearted endorsement of Heil's book. Nonetheless, when philosophy is one's trade, there is always going to be something to disagree about, however much one is amenable to a view.

2 Metaphysics Comes First

One of the central theses of Heil's book is that in philosophy, metaphysics comes first. Once the metaphysics is in place, the problems of other various philosophical sub-disciplines are to be solved through applications of that metaphysic. For instance, Heil claims of the philosophy of mind that "if you get the ontology right, problems in the philosophy of mind take care of themselves." (Heil, 2003: 240). Heil puts this claim to the test by applying the ontology defended in the first two-thirds of the book to a variety of problems: colour, conscious experience, intentionality, and so on. Amongst the problems Heil seeks to tame with his ontology is that of philosophical zombies.

The purported possibility of zombies is the product of thought experiments in the philosophy of mind designed to draw out our intuitions about the nature of consciousness and conscious experience. In the final chapter of his book Heil applies his ontology to the question of zombies, arguing that despite appearances to the contrary, zombies are not possible. Heil claims that the mistaken belief that zombies are possible arises from treating qualities and dispositions as contingently related; as Heil's ontology is one that makes the relation between quality and disposition necessary, zombies are no longer a live possibility (nor an undead one for that matter). I

will argue that Heil manages to rule out the possibility of zombies in as much as they are relevant to a specific objection to physicalism, but that the zombie concept is wider than this, and under the wider interpretation the possibility of zombies is still in tact.

3 Philosophical Zombies

Philosophical zombies (also known as phenomenal zombies) are not the zombies depicted in countless horror films, nor are they the zombies of Haitian voodoo folklore. A philosophical zombie is human-like being who from the outside seems just like you or me: they act like we do, speak like we do, and spend long parts of the day complaining about chronic lower back pain, just like we do. To all appearances they are just like us. It is *internally* that differences arise. Whereas there is "something it is like" for you and me when we taste liquorice or smell a lit cigarette, there is nothing it is like for the zombie, for zombies are beings that lack conscious experience (see Nagel 1974). And so even though zombies act as if they have all the same experiences we do, their complaints about lower back pain are not accompanied by the sharp pangs of pain that ours are.

Zombies first appeared on the philosophical scene in as a purported counterexample to physicalism. It was thought that if zombies were possible, then consciousness must be a non-physical addition to the world (Kirk 1974). According to this line of thought, if it is true that the physical world is closed, then the non-physical 'extra' would have to be epiphenomenal. Since then zombies have been employed in a number of different arguments, including those: in favour of functionalism, in opposition to functionalism, that challenge the evolutionary value of consciousness, and that raise worries about knowledge of other minds; but however they are employed, zombies serve as useful device for considering the nature of consciousness and our intuitions about it. Most recently David Chalmers has employed zombies in a role much like that for which they were first employed, arguing for the non-reductive supervenience of the mental on the physical on the grounds that zombies are possible (Chalmers 1996).

To be clear, when we ask whether zombies are possible, we are rarely, if ever, concerned with their being *nomologically* possible. Most players in the debate concede that zombies are not nomologically possible. With the laws of nature fixed (or with the fixing of whatever ontological features substitute for laws), beings that are largely like us will enjoy similar conscious experiences. What matters is the *bare logical possibility* of zombies. "[T]he question is not whether it is plausible that zombies could exist in our world, or even whether the idea of a zombie replica is a natural one; the question is whether the notion of a zombie is conceptually coherent" (Chalmers 1996: 96).

Despite typically being lumped together, philosophical zombies are not all alike. In fact, philosophical zombies tend to come in two main varieties, with the difference in characterisation depending largely on the sort of example or argument for which the possibility of zombies is utilised. What I shall call 'Type-1 Zombies' are those most important for objections to physicalism. A type-1 zombie is a perfect (or near perfect) *physical* duplicate of her non-zombie counterpart. She is composed of just those same particles as her counterpart, and has all the same low level physical properties. Physically speaking, she is a particle-for-particle and property-for-property doppelganger of her non-zombie counterpart. Where she differs is in her psychology: the zombie lacks the conscious experience of her non-zombie counterpart.

Type-1 Zombie: A being that is a (near) perfect particle-for-particle and property-for-property physical duplicate of a human being that is entirely lacking in conscious experience.

Type-1 zombies have been widely employed in the 'conceivability argument' against physicalism (see Stoljar 2001). If we understand physicalism as (roughly) the thesis that any two worlds identical in their physical respects must also be identical in their psychological respects, then it cannot be the case that there are (or could be) 'zombie worlds' where all the beings are perfect duplicates of their human counterparts but lack conscious experience. But, the argument proceeds,

philosophical zombies are conceivable, and what is conceivable is possible. As this possibility is in conflict with the truth of physicalism, the conclusion of the conceivability argument is that physicalism must be false. As ought to be clear, the conceivability argument can only hope to succeed if the zombies in question are perfect (or near perfect) physical duplicates (that is, type-1 zombies); it is no threat to physicalism that worlds that differ physically from ours might also differ psychologically. (A near perfect duplicate world would suffice just in case that near duplicate world was populated by beings with central nervous systems very much like ours and was otherwise largely indistinguishable from the actual world (see Kirk 2005)).

Whereas a type-1 zombie is a perfect physical duplicate of its non-zombie counterpart, a type-2 zombie is a (near) perfect *functional* duplicate of its non-zombie counterpart. In terms of its behaviours and capacities, a type-2 zombie is indistinguishable from the real mccoy. The difference, as with all zombies, is an internal one. Despite being functional twins, one lacks the conscious experiences of the other. (Though it might be argued that type-1 zombies are just a very specific version of type-2 zombies—ones with a highly prescribed and restricted set of properties— they are so specific, and their role so particular, that they are worth distinguishing nonetheless.)

> **Type-2 Zombie**: A being that is a (near) perfect functional duplicate of a human being that is entirely lacking in conscious experience.

The possibility of type-2 zombies has a number of potential philosophical roles. For starters, it might be argued that the possibility of type-2 zombies poses a threat to functionalist theories of the mental. If mental states are just functional states (as many forms of functionalism contend), and the zombie and its twin have the same functional states but differ in their qualitative mental states, then their difference in qualitative state cannot be identical with any functional state, and so functionalism cannot be true (see Shoemaker 1975 and Block 1980). A second issue raised by the possibility of type-2 zombies concerns the evolutionary significance of consciousness. Under the assumption that zombies are in fact possible, consciousness is no longer metaphysically or logically necessary. In that case we can ask why consciousness arose in the actual world, what purpose it serves, and why it continues to be selected for (assuming it has been). What adaptive significance could conscious experience have for otherwise functionally identical beings? (Polger and Flanagan 1995). Finally the possibility of type-2 zombies raises worries about the status of other minds. If functional similarity can mask the absence of phenomenal consciousness, then what I recognise as pain might apply only to me. Perhaps the actual world is a zombie world (myself excluded), complete with functional doppelgangers, and even zombie monkeys and bats, who, contrary to much popular thought, have nothing it is like to be them.

The philosophical importance of the possibility of zombies cannot be overstated. I have provided a number of problems they give rise to, or can be applied to, but their general role in thought experiments in the philosophy of mind is much wider. The possibility—and likewise the impossibility—of philosophical zombies brings into focus our intuitions about consciousness, physicalism, properties, functions, and qualities. It is an important conclusion then when Heil claims that zombies are impossible.

4 Heil on Zombies

I should start by noting that Heil does not distinguish between the two types of zombie, treating philosophical zombies as a single group. And though Heil is not alone—most theorists treat philosophical zombies as if they all answered to a single well-defined concept—it is clear that the various roles zombies play in philosophical argument and thought experiments in the literature (not to mention whatever uses might yet still be devised) cannot be satisfied by a single zombie concept, and it is ultimately a mistake to treat them as if they do. Unfortunately Heil falls victim to this error, made all the more significant as Heil's argument against the possibility of zombies is only successful when applied to type-1 zombies.

Heil argues that in order for zombies to be possible one needs an ontology that separates the dispositional (or functional as some will say) from the qualitative. (The 'separation' here is of a logical sort; it might be the case that the two are *contingently* connected, but they will not be *necessarily* connected.) This typically comes in the form of a distinction between properties: there are various qualitative properties, or 'qualities', and these are distinguished from the dispositional or functional properties (Heil 2003: 245). It is only through the exploitation of this distinction that one can begin to speculate about having physical or functional similarity in the absence of qualitative similarity. This gets only worse, Heil contends, when it is combined with a 'levelled' ontology. A 'levelled' ontology is one that permits "levels of being": ontological strata whereby one sort of property (here the qualitative properties) is fundamental, and supports the 'higher level' properties (here the dispositional-cum-functional properties) when something is added to the former (Heil 2003: 244). It is not enough that the fundamental properties take on some arrangement (however complex), new laws of nature must also be added. It is generally part of such 'levelled' ontologies that the upper level properties are 'multiply realizable' (that is, many different configurations of the fundamental properties are capable of supporting them), another ontological thesis Heil argues should be rejected.

Ontological stratification is a defining characteristic of the neo-Humean ontology known as 'humean supervenience'. According to defenders of humean supervenience, the world is an array of strictly qualitative local matters of fact on which all other facts supervene (Lewis 1986). The dispositional facts are distinct—they supervene on the qualitative—providing ample logical space between the qualitative and the dispositional for the possibility of creatures that exactly resemble one another dispositionally, but nevertheless differ qualitatively. In other words, a neo-Humean world is the perfect breeding ground for philosophical zombies. Just to be clear, the most common Humean stratified ontology puts qualities at the most fundamental level, but these are not qualities of conscious experience, or 'qualia'. The structure is typically three-tiered: the fundamental level is made up of inert physical properties that are qualitative—often properties of shape, mass, spin, and so on; the second level is a functional level—where the multiply realised functional properties can be supported in a variety of ways by the first level; the third level is where consciousness and the qualities of conscious experience reside—these too can be supported in a number of different ways. Though not essential, it is often part of the story that the laws that dictate the actions of the fundamental entities and cause the second tier to arise from the first are not sufficient for the production of the third tier; it takes something more for that to occur (see Chalmers 1996).

Heil's arguments against 'levelled' ontologies take up much of the first third of the book. As our present interests concern whether or not zombies are possible within Heil's ontology, there is no need to rehearse his anti-level arguments here. It should suffice to note that Heil's preferred ontology is, in the relevant sense, entirely flat. The rejection of levelled ontologies leads into Heil's rejection of multiple realisability: without a levelled ontology there can be no upper level properties, hence there can be no upper level properties capable of support by multiple configurations of the fundamental properties. A flat ontology has no space for multiple realisability. According to Heil, levelled ontologies and multiple realisability are the products of a mistaken theory about the connection of word to world he calls "the picture theory," according to which ontology can be read off our language. As our languages have many different names for the same thing (such as lump of clay and statue, or mental and physical), the mistaken theory tells us we must find a place for the various properties corresponding to each, giving rise to ontological strata. From the rejection of the picture theory comes the rejection of ontological strata. In its place Heil proposes a flat ontology—just one level of properties—which serve as the truthmakers for a huge range of different facts and predicates. The statue is not distinct from the clay—facts about it are made true by the same particles and properties that make true claims about the clay—avoiding the need for ontological strata. (Heil also recognises the role various concepts play in our thinking about statues and clay, but they are not something we need bother with here.)

Rejecting levelled ontologies is Heil's first move against the possibility of zombies. Without a two-tiered (or three-tiered, or multi-tiered) ontology, one can no longer speak with ease about the possible absence of upper level properties. That a distinct layer within a stratified ontology might exist without the others seems perfectly clear, after all, the conception of distinctness is built into the ontology itself. It is with similar ease that one might begin to imagine that each lower tier could exist—just the way it is—without the next tier up resting on it. Once you have got that far, the thought that there might be physical beings with particles and physical properties that are fundamental-level or functional-level duplicates of humans but that lack the uppermost conscious level takes barely any work at all. In fact, the thought is so natural (and levelled ontologies of this sort so popular), that many opponents of zombies have conceded this much, and try instead to argue that the *conceivability* of zombies does not make for a genuine possibility (for example, see Hill 1997). (Though I myself have worries about the move from conceivability to possibility more generally, I have a hard time seeing how anyone who endorses a levelled ontology like the one described can deny that zombies are possible.) However, in the absence of a levelled ontology, this ease of reasoning is lost. That is not to say that zombies are not still conceivable, nor that they are no longer possible, but one very quick and easy route to the possibility of zombies has been blocked.

The rejection of levelled ontologies is Heil's first attack on the possibility of zombies, but his main argument is borne out of the ontology he develops in the core of his book. That ontology is a 'flat' ontology centred on properties whose nature is *both* qualitative *and* dispositional. According to Heil, it is not the case that there is a fundamental qualitative level and a distinct functional level with distinct properties in either, there is just one level, and it has both. But not only is the ontological landscape flat, the dispositional and the qualitative are both within each property. In fact, they are *identical*. There are no distinct dispositional and qualitative properties, nor are the dispositionality and qualitativity aspects of a property—they are one and the same thing. Or, more correctly, 'dispositional' and 'qualitative' are two ways of describing the same property.

Ontologies that separate the dispositional (functional) from the qualitative by making their connection at best contingent (like those defended by so many neo-Humeans) are far better suited to the possibility of zombies than those that do not; zombies simply prefer the kinds of brains Humeans think we have. Add levels to such an ontology, and it gets even easier to see how the possibility of zombies might arise. But Heil's ontology is nothing like this—the qualitative and the dispositional *cannot* come apart. There *cannot* be a creature that is property-for-property and particle-for-particle identical with you or me that has all the dispositionalities we do but lacks the qualitative aspects. Nor does it make any difference if we are speaking of the qualities of physical particles or the qualities of conscious experience: where we find qualities we find dispositions, and where we find dispositions we find qualities, regardless of the type of qualities we are talking about. The two go hand in hand: anything with all the same physical properties as a normal human has *everything* in common with a normal human, conscious experience included. "Agents or systems possessing identical powers must be qualitatively identical as well" (Heil 2003: 247). In other words, according to Heil, because the qualitative and the dispositional are necessarily connected, zombies are impossible.

As I have said, I have doubts about Heil's conclusion. Once we take seriously that there are two types of zombie, I think Heil has every right to claim that type-1 zombies are impossible, but his conclusion cannot be extended to type-2 zombies as well. In fact, though I agree with Heil's claim that within his ontology perfect duplicates could not differ qualitatively, I think it is entirely possible that two agents or systems might be *functionally* identical but qualitatively dissimilar. I will get to that argument shortly; for now I want to quickly rehearse the problem that Heil raises for type-1 zombies and what this means for those arguments that rely on their possibility.

A type-1 zombie, recall, is a perfect (or near perfect) physical duplicate of her non-zombie counterpart: she is composed of just those same particles as her counterpart, and has all the same

low level physical properties. Imagine such a being within Heil's ontology. As properties have a kind of double-life, property-for-property identity carries with it dispositional *and* qualitative identity. The necessary tie between the two rules out the logical space in which they could be separated. Because of the very specific way type-1 zombies are characterised, a property-for-property functional duplicate of a human is necessarily another human, conscious experience in tact. Hence, Heil's ontology renders type-1 zombies impossible.

The philosophical upshot of Heil's rejection of zombies is that the conceivability argument against physicalism cannot go through. The conceivability argument requires as a key premise the possibility of type-1 zombies; without this premise the conclusion cannot be reached. It should be noted, however, that the failure of the conceivability argument in no way constitutes a defence of physicalism. All the physicalist can claim is that one potential argument against physicalism has been countered—the threat of zombies has been defanged. But there is nothing in Heil's ontology that forces a physicalist reading at all. Due to Heil's dual-natured properties, a property-for-property duplicate is both functionally and qualitatively identical, but these dual-natured properties need not be physical. It might turn out that the only way to have mental capacities is to have mental properties, and that these carry with them mental qualities. The dual-nature of properties does nothing to rule out a division of properties into mental properties (with mental dispositions and mental qualities) and physical properties (with physical dispositions and physical qualities). Perhaps humans are a happy mix of the two. This is not to revert to a levelled ontology, as the properties in question would all reside at the same level, it merely takes seriously the thought that the fundamental level has a mixture of properties. (Despite Heil's ontology being open to such a reading, I suspect his preference is to think of properties as all being of one type. In fact, just as Heil suggests we read the identity of the dispositional and qualitative as really just being two ways to describe one and the same property, I suspect he would recommend that we think of 'mental' and 'physical' as two names for properties, where the distinction is lacking in ontological force.)

So much for type-1 zombies. But what of type-2 zombies? I suspect Heil would claim—especially given the quote above—that function and quality go together, so it is of little moment whether we are considering beings that are (nearly) property-for-property identical or beings that are (nearly) functionally identical. In other words, I suspect Heil would claim that it makes no difference if we are dealing with type-1 zombies or type-2 zombies; but I would have to disagree with him.

5 Zombies Resurrected

Despite Heil's claims to the contrary, zombies remain a live possibility—even within Heil's framework. What I will argue is that Heil's ontology allows for functionally identical things that can nevertheless differ qualitatively. The reason Heil can counter type-1 zombies but not type-2 zombies is that within Heil's ontology property identity is sufficient, but not necessary, for functional identity. This applies most obviously to objects far less complex than human beings, but once this is recognised it is clear that there is sufficient logical space for beings that are functional duplicates of humans but that differ qualitatively or lack conscious qualities altogether. That is, Heil's ontology provides sufficient logical space for the bare logical possibility of type-2 zombies, enough for the possibility of zombies to be alive and well. What needs to be shown is that property identity is not necessary for functional identity. (As an aside, Heil's preference for trope theory means that strictly speaking property identity is out of the question; those who are worried should substitute 'exactly similar' for identical.)

My argument starts with Heil's notion of 'overall dispositional make-up' (Heil, 2003: 93). An important part of Heil's account of dispositionality is that *all* the properties of an object contribute to the overall set of dispositions and qualities an object possesses. For any property P, if P is had by some object a, then P contributes to the 'overall dispositional make-up' of a. (As Heil takes all properties to be both dispositional and qualitative, P will contribute to both the overall

dispositionality of *a*, as well as the overall qualitativity of *a*: our concern for now is only with the former.) The key feature here is that of *contribution*: the dispositions that give *P* its identity (that is, whatever set of dispositions serves to characterise *P*) need not be the dispositions had by *a*. For example, let us assume that one of the dispositions that characterises *P* is water solubility. It does not follow from *a*'s having *P* that *a* will be water soluble. Borrowing an example from Heil, it might be the case that a certain sugar cube is soluble in water because it has the property *P*, but if we encase that sugar cube in Lucite, we have an object *a* (the cube-encased-in-Lucite) that is in possession of *P*, but is not itself soluble in water. The cube-encased-in-Lucite's possessing *P* will *contribute* to its set of overall dispositions, but they will not be in direct correspondence with the dispositions that characterise *P*.

As a second example, consider what happens when *P* is a property like being 'knife-shaped'. In combination with properties that confer the appropriate degree of hardness—such as 'steeliness'— *P* imbues its possessor with the disposition to cut. However, replace 'steeliness' with something more like a buttery consistency and the resulting buttery object has no such disposition (Shoemaker, 1980). The contribution of many properties to the set of overall dispositions of an object is what George Molnar has dubbed 'polygeny' (Molnar 2003: 1994). It is because of the polygenic nature of properties that we find an isomorphism between the properties possessed by an object and the set of dispositions it has.

To help make things clearer, let us say that a disposition is 'exemplified' by an object when that object is capable of manifesting the disposition in question. Hence, with regards to water solubility and the cube-encased-in-Lucite, the cube-encased-in-Lucite does not *exemplify* the disposition water solubility. In contrast, the (unencased) sugar cube *does exemplify* water solubility. To avoid possible confusion, note that 'exemplification' as I am using it is distinct from 'manifests' or 'manifestation'. For an object to *exemplify* a disposition is for it to have a disposition such that that disposition is 'ready to go' were the correct conditions to arise; to *manifest* a disposition is for those conditions to arise and the disposition in question to produce its prescribed effect. There are soluble and non-soluble substances (exemplification), and then there are soluble substances that go into solution, and those that do not (manifestation). (To avoid any early objections that might arise, let me point out that the isomorphism does not make for a new level of properties. The exemplified dispositions are capacities of the object that it has in virtue of just the one level of properties; the ontology remains flat.)

The point of thinking in terms of 'overall dispositional make-up' is to recognise that there is no transparent path from (1) the properties an object possesses to (2) the dispositions it exemplifies. Metaphysically speaking there is bound to be an incredibly complex set of recipes that take us from (1) to (2), but we are epistemically in the dark with regards to most of those recipes, and might always be. For starters, we are only able to guess at what the real properties are, and are largely clueless about how many different property types there might be. Our knowledge has come a long way, but our knowledge of what the real properties are is still highly inadequate. Moreover, even with a greater knowledge of properties than we currently possess, the nature of polygeny provides an additional hurdle to our knowledge.

In the case of the cube-encased-in-Lucite we see that the properties of the Lucite *inhibit* the dispositions that would otherwise be exemplified by the sugar cube. But this is just one of the potential polygenic interactions. Various combinations of properties can: (i) *inhibit*—block or reduce the exemplification of a disposition, (ii) *enhance*—increase the range of scenarios that a disposition could be manifested (think of super fragility), (iii) *combine*—some combinations might give rise to novel and surprising dispositions in a synergistic manner, (iv) *ignore*—certain combinations do nothing to inhibit or enhance. Lucite just has whatever properties Lucite happens to have, but when combined with the sugar cube the properties of each combine, inhibit, and so on, to produce the set of dispositions exemplified by the cube-encased-in-Lucite. The change we have noted (the lack of solubility) is a clear case of inhibition by the new properties brought in by the

Lucite, but others are bound to be influenced in other ways as well.

So far I have shown that the polygeny of properties means that by varying the properties we can have all sorts of different dispositions exemplified by an object. We have a property-to-dispositionality isomorphism. But in order to argue that property identity is not necessary for functional identity, it must be shown that similar or identical functionality can be achieved via non-identical sets of properties. In other words, what has yet to be seen is whether we can 'fake out' certain things by providing *different paths to the same exemplified dispositions*.

It only takes the briefest look at the world to recognise that different properties can support identical functions: my ceramic vase is fragile, as is my crystal stemware, my glass sculpture, and the plastic cases that hold my compact discs. Functional similarity is all around us, but the properties possessed by the parts that make up baked clay, crystal, glass, and plastic, all differ greatly. We do this all the time: we recognise in various objects similar exemplified dispositions, without thinking that (or it being the case that) those objects share the same properties. We tend, pre-theoretically, to group objects together in terms of these dispositions (fragile things, smelly things, green things, flammable things, etcetera). As Heil argues, it would be a mistake to assume that what all these objects have in common is a *dispositional property* (and conclude from that, like Jackson, Pargetter and Prior do that dispositional properties are second order properties that supervene on first order categorical properties (Jackson, Prior and Pargetter: 1982, Prior 1985, Jackson 1998)). That is not the point I am making. What I am pointing to is the raw empirical data that Jackson and company make use of: we group otherwise disparate objects together in virtue of their having (and manifesting) similar dispositions. But we do not take the objects to be similarly propertied otherwise (and again, it is a mistake to see this dispositional similarity as requiring, or evidence of, property similarity).

For those having trouble, or those reluctant to agree, consider a case of two objects whose functional similarity we might, *prima facie*, take to require similar properties. The case I have in mind is that of the water solubility of salt and sugar. This is what we might think of as a 'hard case' of property/dispositional disconnect, as the two are quite similar, in contrast with the clay/glass fragility case above. Most of us are quite familiar with salt and sugar, and though they differ in taste, they are both water soluble, and it is far from obvious that this should arise from a difference in properties. (Or at least it is far from obvious for those who have spent little time thinking about it; others might suspect that the different tastes betray the facts about the properties, and they would be right.) But, as it happens, the water solubility of salt depends on quite different properties than that of sugar. To explain how this is so, allow me to quote at length:

Both salt and sugar are soluble in water, but this similarity is coincidental, like the fact… that Davy Crockett and Franz Kafka shared a taste for raw dough. The crystal lattice of sodium chloride is held together by very strong electrostatic attractions between alternating positively charged (sodium) and negatively charged (chlorine) ions. In water, crystalline sodium chloride dissolves into individual sodium and chloride ions because the attraction between Na^+ and Cl^- is greatly exceeded by the electrostatic attraction between Na^+ and the partially negatively charged oxygen atom of a water molecule, and between Cl^- and one of the partially positively charged hydrogen atoms of a water molecule. Water molecules are therefore able to insert themselves between these ions; the energy needed to separate an Na^+ from a Cl^- is more than provided by the energy released when bonds form between water molecules and these ions. A sugar cube, in contrast, is not an ionic crystal. It dissolves in water because of the electrostatic attraction between the hydrogen atom in the sugar's hydroxyl group, which has a partial positive charge, and a water molecule's oxygen atom. The redistribution of electronic orbitals that results, a "hydrogen bond," is energetically favorable, so by forming hydrogen bonds, water molecules can insert themselves between neighbouring molecules of the sugar cube, and the cube dissociates. Hydrogen bonds do not form when salt dissolves (Lange 1994: 115-6).

The long and the short of it is that we can have two objects *a* and *b* that differ in terms of their

properties, but exemplify the same disposition. This begins to drive a wedge between functional identity and property identity. But to get from here to there it must be possible to have two objects *a* and *b* such that they differ in terms of their properties, but that nevertheless exemplify *many or most* of the same dispositions. Making that step requires we focus on our lack of *a posteriori* knowledge of what the actual properties are.

If the polygeny of properties allows that we can have two objects that are similar in some dispositional respect but differ in their properties, then it seems reasonable to assume that with the right combination of properties we could get greater and greater dispositional similarity. There is no conceptual barrier to this possibility; it seems, *a priori*, to be a perfectly good possibility, even if only the barest of logical possibilities. The only potential barrier is an *a posteriori* one: the actual properties might let us down. Assume, for instance, that properties only come in a handful of varieties. If that were the case, then the odds of being able to get differing combinations that were capable of producing a large degree of dispositional similarity would be very low indeed. That is not to say that it would be impossible, as the lack of variety could perhaps be compensated for by number (three *F*'s and fourteen *G* properties might make for very different exemplified dispositions than three and thirteen), but it would be less plausible. But however implausible it may be, it is not impossible, and it gets more and more likely as the variety of properties increases. Furthermore, no one is in anything close to a position in which they could claim to have even the roughest idea about what exactly the properties are. To insist that we lack the variety of properties that would make general dispositional similarity plausible is to claim to have knowledge about what properties there are that no one can sensibly have (for now at least). And even if someone did know more about the properties we find around here than I think is the case, what about properties throughout the universe, the likes of which we might never encounter? Even if we limit the scope of properties to just those that appear at some time and place in our universe (so called 'immanent' properties (see Armstrong 1978)), the epistemic possibilities are far too great for anyone to confidently reject the argument above. The scope of epistemic possibility for what properties there are is too large for anyone to claim that the actual properties do not allow for the logical possibility of dispositional duplicates with dissimilar properties.

So it appears that within Heil's ontological framework there exists at least the bare logical possibility of dispositionally identical (or near identical) beings that differ in their properties. (At the very least, if this is in fact not possible, no one in their right mind could presently claim that this is the case—and that ought to suffice.) But we have not yet got type-2 zombies. In order to have type-2 zombies the dispositionally identical beings must be qualitatively distinct.

Anyone who has followed the argument thus far should have no problem seeing that beings or objects with different properties can be qualitatively distinct. Just as the properties contribute to the overall *dispositional* make-up of an object, they also contribute to the overall *qualitative* make-up of an object. Properties have a dispositional and qualitative dual-nature; the exemplified qualities are as much a product of polygenic combination of the properties as the exemplified dispositions are. Change the properties, and you change the exemplified qualities. Moreover, there is no conceptual reason why different sets of properties would fail to produce different exemplified qualities; and hence no reason why they could not produce exemplified qualities such that there are no exemplified qualities of conscious experience—after all, do we not think this is the case for nearly every being on the planet other than us? Now it might happen, and is surely logically possible, that different properties will produce the same or similar exemplified qualities. This is nothing more than the argument I produced above as applied to qualities. But the bare logical possibility of qualitative similarity without property similarity in no way implies that two beings with different properties that are dispositionally similar will also be qualitatively similar. This could occur—it is logically possible—but it would be nothing more that a rare case amongst what are otherwise qualitatively dissimilar beings.

So there you have it: within Heil's flat ontology of dual-natured properties, there is logical space

enough for the possibility of beings that are functionally identical to us, but that lack conscious experience. Between them and us is a huge continuum of possible beings that resemble us functionally and differ to a greater or lesser extent qualitatively. There are the type-2 zombies that lack consciousness altogether, but there are those who are otherwise like us but cannot feel pain, those for whom green looks like what I see when I see red, and those for whom music produces sensations like the smell of burning toast. Once the dispositional is cleaved from the qualitative, the space of possibilities opens right up. Type-2 zombies are alive and well.

6 Concluding Remarks

I have argued that when it comes to philosophical zombies, Heil is well covered for one type, but in trouble with the other. But it may turn out that Heil is slightly worse off than I take him to be. In distinguishing the two types of zombies, I suggested that type-1 zombies might just be a highly specific version of type-2 zombies. In as much as that is correct, the possibility of zombies within Heil's ontology increases. Additionally, my interpretation of 'property-for-property' identity was very much Heil-friendly, but that phrase is really quite ambiguous. It is clear that what the neo-Humeans mean by 'property' is not what Heil does, and perhaps the interpretation the neo-Humeans have in mind has much more to do with functionality than anything else. In that case, the type-1 zombies start to look more and more like type-2 zombies, and Heil is in a worse position than I take him to be. That said, I think Heil's ontology is entirely on the right track, and if it allows for zombies, so much the better for zombies.

Regardless of how well Heil succeeds in fighting off zombies, the metaphysical approach he takes is to be admired. Even if zombies remain a live possibility, it is clear that treating the problem as a problem of applied ontology helps clarify the issue and avoids many dead-ends and blind alleys. Ontological thinking cuts to the heart of the issue, and it is on ontological grounds the debate ought to take place. Heil's ontology and his ontological approach to problem solving both deserve a great deal of attention, even if zombies are nearly as happy with Heilian brains as they are with Humean ones.

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Reply to Ross Cameron and Elizabeth Barnes

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Ross Cameron and Elizabeth Barnes manage to put clearly (and improve upon) a number of points I struggled to formulate in *From an Ontological Point of View* in the course of attacking what I called the Picture Theory. One virtue of their discussion is that they make clear why you might feel tension between the thought that our best science tells us that all there is are the atoms and the void, and our conviction that tables, trees, and planets exist. I have put this—unhelpfully—in various places by suggesting that science gives us 'the deep story' as to the nature of tables, trees, and planets.

Consider tables. Do tables exist? Cameron and Barnes tell us that the question can be interpreted in two ways. This is not because 'exist' is ambiguous, but because in asking about the existence of tables, you might be asking either

> (i)   whether the world contains, in addition to fleeting arrangements of particles, tables; or

> (ii)   whether it is true that there are tables.

To many, this would seem to be a distinction without a difference. As Cameron and Barnes note, however, it is possible, indeed desirable, to separate questions about truthmakers for claims about tables, and questions about the truth of thoughts or assertions concerning tables. When 'this is a table' is true, what makes it true might be a transient cloud of particles or a thickening of a region of space–time.

The point could be put less mysteriously by considering Quine's criterion of ontological commitment. According to Quine (1948), we are committed to the existence of whatever we 'quantify over' in our best theories of the world. If we 'quantify over' tables, we are thereby committed to the existence of tables; our ontology includes tables. Here we have a stunning example of the Picture Theory at work.

Suppose we understand Quine's criterion, not as a measure of ontological commitment, but as a way of singling out assertions the truth of which is implied by our theories. It is one thing to be committed to the truth of assertions about tables, quite another matter to imagine that these assertions must be made true by tables. If this sounds odd, consider that God could make it true that there is a table in this room by arranging the particles in the right way.

One implication of all this is that you could be in a position to know that there are tables—to know that 'there are tables' is true, to be a realist about tables—without having any very clear idea about what makes it true that there are tables. Indeed, you might be wholly mistaken as to the nature of the truthmakers for thoughts about tables. This makes it sound as though we rarely, if ever, know what we are talking about. And if that is so, how could we hope ever to single out tables, to distinguish tables from non-tables?

Such concerns betray a lingering commitment to the Picture Theory. Language provides us with a capacity to represent nonlinguistic reality. It would be a mistake, however, to imagine that our

access to reality is invariably mediated by language. Our nonlinguistic interactions pre-date and inform our linguistic interactions. We learn to talk about tables, but we also interact with tables in endless nonlinguistic ways: we pile books on tables, build them, paint them, dismantle them, sell them on E-Bay. If tables are dynamic clouds of particles, these nonlinguistic transactions with tables are at bottom interactions among clouds of particles. An ontology of the atoms and the void (or quarks and leptons, or super strings, or quantum fields and space–time) is wholly consistent with the truth of most of our ordinary beliefs about the world.

At the risk of entirely discrediting myself, let me suggest that something like this lies at the heart of Davidson's anomalous monism (Davidson 1970). Davidson's position, I believe, has been widely misinterpreted as a thesis about mental and physical properties and relations among these. In fact, as should be clear to anyone reading 'Mental Events', Davidson's claims concern mental and physical *predicates* and *descriptions*. His thought is that, whenever a mental predicate truly applies to an agent it does so in virtue of that agent's being in a state that could be given an exhaustive physical description. Given their respective conditions of application, however, we have no reason to think that there could be anything like the kind of systematic coordination of mental and physical predicates sought after by reductionists inspired by the Nagel model of reduction (Nagel 1961, chap. 11).

The mistake is to move from Davidson's talk of predicates directly to talk of properties. If you assume, as many commentators have and as anyone committed to the Picture theory might, that mental and physical predicates must designate distinct mental and physical properties, then you are saddled with all the problems commonly thought to attend anomalous monism, most especially, the problem of 'causal relevance'. Suppose an event answering to a mental description causes a bodily motion, and suppose this event answers to some complex physical description. If you substitute property talk for description talk you will want to say that this is a case of there being a single event possessing both a mental property and a physical property. But now it would seem that the event has whatever physical effects it has in virtue of its physical properties, not in virtue of its mental properties; mental properties lack causal relevance.

If we resist the easy move from predicates to properties, however, the problem of causal relevance does not arise. One event, the event that causes a particular bodily motion, can be described via a mental predicate, and, in principle at least, by means of a physical predicate: one event with one complement of properties. Whatever this event does, it does in virtue of its possession of these properties, not in virtue of the way it is described.[1]

Think of it this way. For Davidson, the mental–physical distinction is not ontologically deep. Although Davidson would recoil at talk of truthmakers, we need be bound by no such scruples. The doctrine of supervenience tells us that any event that can be given a mental description could be given some physical description as well: truthmakers for every mental description are always going to be truthmakers for some physical description. The physical is privileged, if it is, only in the sense that, whereas every event answering to a mental description, answers to some physical description, not every event answering to a physical description satisfies a mental description. The resulting monism is ontologically, but not analytically, reductive. Its anomalousness is linguistic, not ontological.

I see Davidson, then, along with Cameron and Barnes, as rejecting the Picture Theory and accepting the general sort of ontological picture I favor. I am less confident about Cameron and Barnes's discussion of emergence. In common with most philosophers writing on the topic, they apparently see emergence as a relation between parts and wholes. The question is whether some wholes might include properties that are dependent on, but nevertheless distinct from, whatever is present in the parts. If there are emergent properties, we would expect them to have effects in the world by their effects on various lower-level entities. This is 'top-down' causation.

The baseball that Albert Pujols hits into the center field bleachers is made up of particles

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1 This point, emphasized by Davidson (see his 1993), went unappreciated by his critics.

arranged in a particular way. It is plausible to think that the baseball is 'nothing over and above' the particles so arranged (and including their many complex relations and interactions). The same is true for the bat Pujols uses to strike the ball. The event of the bat's striking the ball is an event involving these complex arrangements and their interactions. We do not need to imagine that the bat and ball have, in addition to the properties of their constituent particles and their relations and interactions, properties of their own. Differently put, 'is white' and 'is spherical' can be truly predicated of the ball, not because the ball possesses two properties, being white and being spherical, but because the ball's constituents are as they are.

I think Cameron and Barnes would agree with all this, or at least agree that it marks out a plausible empirical hypothesis concerning the makeup of baseballs and baseball bats. Their focus is on cases in which a complex object's properties might turn out to be 'over and above' properties of the constituents duly arranged. These properties might then figure in 'top down' causal relations.

I have trouble with this idea. It is hard to see how a whole, which includes all its parts, their relations, and their interactions, could have an effect distinct from whatever effects its parts have. I will be told that this happens all the time at the fundamental level, in particle entanglements, and the like. I admit to having reservations about philosophers' (and remember philosophers aren't the only philosophers) accounts of these cases, but let that pass. Allow me to suggest, rather, that there is a robust, comparatively uncontroversial form of emergence that does not at all fit the part–whole model. This is the sort of emergence that occurs whenever fundamental particles interact so as to produce a new kind of fundamental particle. In such cases, we have new properties on the scene, properties of *simple* objects, that you would be ill-advised to set out to explain in the part–whole way.

In my experience, philosophers react to such cases with a shrug or an incredulous stare. But think about them. We are trained to regard causation as a process involving a lawful shifting about or redistribution of properties. Descartes spoke for many in asserting that whatever is present in an effect must be present already in the total efficient cause. When we consider the fundamental things, however, this model seems inapt. In particle interactions, something new, something not previously present, can emerge. Emergence of this kind, what I would call *true* emergence, is not random or unconstrained. There is something about colliding *a*-particles and *b*-particles in virtue of which a *c*-particle results. But when it happens, end every time it happens, a new property emerges.

It strikes me that this brand of emergence—the emergence of simples from simples—has vastly more philosophical significance than can be found in cases in which properties of wholes are taken to emerge from interactions among the parts. As Cameron and Barnes suggest, it is likely that much of the discussion of emergence in the part–whole sense could be recast once we start to ask seriously what the truthmakers for claims about putatively emergent properties might be. But they are far more sanguine than I concerning the prospects for an ontology that incorporates emergence of this kind.

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Reply to Heather Dyke

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My discussion of what I call the Picture Theory in *From an Ontological Point of View* is a fumbling attempt to articulate some of what strikes me as unfortunate about contemporary metaphysics and philosophy of mind. Heather Dyke is right to note that the Picture Theory is less a theory than a philosophical tendency. The tendency has its roots in twentieth century analytic philosophy, and perhaps ultimately in the idealism of Bradley and McTaggart. You would be hard pressed to find examples of devotees of the Picture Theory among earlier philosophers.

   Consider central figures of the Enlightenment: Descartes, Locke, Leibniz, Spinoza, Berkeley, Hume, Kant. Despite deep differences, all these philosophers embraced doctrines now widely disparaged. One of these is that objects possess properties, but properties are modes (tropes), not universals. Universality is not present in the world, but stems from thoughts about the world expressible linguistically. General terms or ideas (terms or ideas used to pick out any member of a class of similar things) do not correspond to general entities, universals.

   This thought is an expression of a broader idea that you cannot extract ontology from ways we think or talk about the world. As Dyke notes, it is a mistake to conflate the truth *conditions* for utterances or thoughts, with their truth*makers*. In the *Second Meditation*, Descartes remarks that

> I am amazed at how weak and prone to error my mind is. For although I am thinking about these matters within myself, silently and without speaking, nonetheless the actual words bring me up short, and I am almost tricked by ordinary ways of talking. (1640, 21)

   The quoted passage occurs in the midst of a discussion of a particular lump of wax. In describing the wax, we describe its properties. This could lead us to think that all there is to the wax is a bundle of properties. We recognize, however, via the understanding that the wax is something that *has* properties, a substance.

   This is only a fragment of the argument, however. On Descartes's considered view, objects we might ordinarily regard as substances, objects designated by sortal nouns, for instance, are not substances at all but modes. It is controversial whether Descartes was a corpuscularist or whether he held that there was but a single extended substance, space itself. But in either case, the lump of wax is a mode, not a substance: a particular arrangement of corpuscles, or a local wave-like thickening of space.

   The moral I want to draw from this is that Descartes (and his Enlightenment successors) rejected the idea that you could so much as ascertain the ontological category to which something belonged by analyzing its concept. It would not have occurred to any of these philosophers to embrace eliminativism or some other form of anti-realism about ordinary objects because truthmakers for claims about such things were not at all what our ideas of them might lead us to expect. Discovering that lumps of wax, or planets, or human beings are fleeting arrangements of corpuscles, or wrinkles of regions of space, does not reveal that lumps of wax, planets, and human beings do not exist. Rather it gives us the deep story about lumps of wax, planets, and human beings.

   Dyke illuminates what I have in mind in her discussion of the Picture Theory. One important

lesson is that conceptually distinct truths can have one and the same truthmaker and a single predicate can be made true by distinct properties. 'Is red' and 'is scarlet' can both be made true by a cricket ball's being scarlet. Although 'is red' and 'is scarlet' have different truth conditions, we need not suppose that the cricket ball has two properties: the property of being red and the property of being scarlet. The cricket ball's being a determinate shade of red is enough to make it true that the cricket ball is red and that the cricket ball is scarlet. Similarly, 'is red' can hold of the cricket ball (in virtue of the cricket ball's being scarlet) and an apple (in virtue of the apple's being crimson).

Dyke worries about my account of cases of this second sort. I hold (with Locke and Wittgenstein) that, in general, predicates apply to objects, not in virtue of those objects sharing a single property corresponding to the predicate, but in virtue of their possessing any of a, possibly open-ended, family of *similar* properties. Dyke is doubtful that appeals to similarity are enough here. Before considering her worries in more detail, let me clarify my remarks in the previous paragraph.

First, my point has nothing to do with the question whether properties are universals or modes (tropes). The idea is that most of the predicates we deploy do not designate either universals or families of precisely similar modes. Imperfect similarity is enough. Because of this, most of the predicates we deploy will be vague: there will be borderline cases in which it is difficult to know what to say. So you could agree with me on this point, even if you thought properties were universals, not modes. Indeed, proponents of 'sparse' conceptions of universals *would* agree.

Second, it could well be that, once you get to the bottom of things, once you get to the fundamental particles or fields, for instance, you arrive at something like a one–one predicate–property correspondence. Consider 'is the mass of an electron'. This predicate apparently designates either a single universal or any of a class of precisely similar modes.

Now back to Dyke's worry about my appeal to similarity and in particular my discussion of the application of the pain predicate to diverse creatures.

Let us suppose that, on a particular occasion, the pain predicate applies truly to you and to an octopus. We know that you and the octopus differ in important physical ways. The physical state you are in and in virtue of which it is true that you are in pain, and the physical state the octopus is in and in virtue of which it is true that the octopus is in pain are physically heterogeneous. (This could be false, but let us assume that it is not for the sake of argument.) So in what sense are the properties (or states) answering to 'is in pain' *similar*?

There are really two worries here. The first worry stems from my conception of properties as both qualitative and dispositional. On this view, properties identical qualitatively, must be identical dispositionally, and vice versa. But this leaves it open that properties could be imperfectly similar qualitatively, but less similar dispositionally, or similar dispositionally, but less similar qualitatively. Which is relevant—dispositionality or qualitativity—in the case of pain?

The issue is nicely illustrated in David Lewis's 'Mad Pain and Martian Pain'.[1] Expressed so as to reflect the issues at hand, mad pain is a state that resembles ordinary pain qualitatively, but not dispositionally; Martian pain is a state that differs qualitatively, but not dispositionally from ordinary human pain. Were you such that states qualitatively similar to others' states of pain did not dispose you in ways pains dispose others, your pain would be mad. Martians, in contrast, go into states that differ qualitatively from pain states of ordinary human agents, but these states dispose the Martian in ways similar to the ways in which pain states dispose you.

So again, is the relevant similarity that collects imperfectly similar states under the pain predicate qualitative or dispositional? You might think that, if I am right about properties being both qualitative and dispositional, qualitative similarity and dispositional similarity must go hand in hand: if properties considered qualitatively exhibited a certain similarity ordering, they would exhibit exactly the same ordering considered dispositionally. I think this is plausible, but it is not

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1 Lewis 1980. The moral I draw here differs from Lewis's.

something on which I want to rest my case. Pain states, whatever they might turn out to be, are likely to be extremely complicated. As Neil Williams points out in his commentary, owing to interactions among dispositions, very different sorts of complex system could be similar dispositionally. My inclination is to think that the answer to Dyke's worry requires a closer look at our pain concept. Let me begin by pointing out a tension present in our application of that concept.

Armstrong, Lewis, and others have argued that the pain concept is at heart causal. A pain state is a state that occupies a particular sort of causal role in a complex system.[2] One way to put this would be to say that what makes a state a pain state is its dispositional profile.

Opponents of functionalism have argued that pains include a significant qualitative element: what makes a state a *pain* state is its qualitative character. On my view, it is a mistake to imagine that the qualitative nature of pains could vary independently of their dispositional nature. But given the complexity of pain states, it is at least possible that the overall dispositional makeup of a creature could be such that it was not disposed to do what creatures ordinarily do when it was in a pain state. The state would resemble pains in ordinary creatures, perhaps, and might even be similar dispositionally. But the presence of other dispositions could block or inhibit the system as a whole so as mitigate its disposition to behave in ways characteristic of creatures in pain.

What ought we to say about such creatures? My suggestion is that our pain concept is the concept of a certain kind of qualitative state that, owing in part to its qualitative character, disposes creatures in pain to behave in characteristic ways. We can imagine rigging a system so that it possesses dispositions similar to those possessed by a creature in pain (that is a creature in a state of the right sort qualitatively), but the states of which differ qualitatively from ordinary pain states. And we can imagine concocting a system so that, when it goes into states qualitatively similar to ordinary pain states, its overall dispositional make up leads it to remain perfectly sanguine and behave as though nothing at all were amiss. (In fact, this seems to be the way certain anesthetics operate in human beings.)

Faced with such cases, we can describe them just as I have. The mistake would be to think that there was something further to say, something more that would settle whether a given state were or were not a pain state. We are pulled in different directions. Details of the cases make it plain why we are so pulled. One point to bear in mind is that in practice our concepts stretch and adapt to new discoveries. We allow that other sorts of creature experience pain and that a Martian could experience pain. We recognize that there are important differences between human beings and other creatures, let alone Martians. Pains in such creatures might differ as well. Indeed it would be surprising if there were not a continuum of cases from clear-cut pain states, to pain-like states, to states only crudely resembling those found in human beings.

I have taken a long detour en route to answering Dyke's initial worry. In what sense *could* your pain state resemble that of an octopus, assuming you and the octopus have a very different physical makeup? I have suggested that there could be dispositional as well as qualitative similarities. Assuming that these go hand in hand, perhaps your pain state and the octopus's pain state have similar causal or dispositional profiles. But *are* the profiles similar? When you are in pain you move your body in certain characteristic ways and undergo certain characteristic physiological changes. When the octopus is in pain, the octopus squirms about and undergoes physiological changes very different from those occurring in human beings. It is hard to see these as very similar at all.[3]

Here I think we arrive at an important point about the application of ordinary predicates to the world. I have suggested, following Locke, that predicates apply in virtue of similarities. I take the core notion of similarity to be perfectly objective. It is this kind of objective similarity that our

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2   This is Armstrong–Lewis style functionalism, what Block (1980b) calls 'functional specifier' functionalism. 'Mainstream' functionalism (Block's 'functional identity' version of functionalism) identifies functional states with higher-level properties possessed by an object in virtue of that object's possession of lower-level realizing properties: the Picture Theory in action.

3   I am told that in fact there *are* important underlying physiological similarities, but we can pretend that this is not so. We can stipulate that it is not so in the case of a Martian.

scientific concepts track. As we move away from science, however, as we move into the realm of ordinary discourse, other factors come into play. We might deploy concepts that track similarities that lack anything resembling a strict scientific basis. It is only partly an exaggeration to say that such similarities lie in the eye of the beholder; they are, at the very least, usefully broad and can depend on human practices and attitudes. This is how it is with the pain predicate.

Our identifying a creature's state as a state of pain is a matter of finding that state similar enough with states we are in when we are in pain. Does this make pain mind-dependent? Not at all. What state a creature is in is a perfectly objective, mind-independent feature of the world. Whether we elect to classify the state as a state of pain, is another matter. Perhaps all we require is that the way the creature manifests the state reminds us of the way in which *we* manifest pain.

Dyke's second worry concerns truthmakers for modal claims. Here I can be more direct.

> (M)   This key would open a lock of kind *K*.

Suppose (M) is true, but there are no locks of kind *K*. What might (M)'s truthmaker be? As Dyke rightly notes, I would not want to appeal here to realms of *possibilia*. I consider that there must be something about the actual world, the world as it is actually constituted here and now, in virtue of which such assertions are true.

In these matters I follow C. B. Martin and take the truthmakers for modal claims to be dispositions. Once you have the basic things, together with their dispositions, you have truthmakers for modal claims: what is possible or not, what would, or wouldn't happen in various counterfactual circumstances. What would be supervenes on what is. Dispositions of the fundamental things determine what is and is not possible. It is of the nature of quarks and electrons that, were they to be assembled in a particular way, the result would be a key of a particular size, shape, and hardness. Were the particles organized in another way, the result would be a lock the key would fit.

Consider a simpler case. You can make gunpowder by mixing saltpeter, sulfur, and charcoal. Gunpowder ignites when brought into contact with a flame. Now, what makes it true that the gunpowder in this beaker *would* ignite? Not that some gunpowder *has* ignited. It would be true that gunpowder would ignite even if no one had ever ignited any, indeed even if no one had ever put together the ingredients so as to make gunpowder.

Truthmakers for modal assertions are built into the dispositional nature of the quarks, electrons, quantum fields, superstrings, or whatever it is that makes up our world. If this seems excessive, ask yourself what the truthmakers might be otherwise. What ordinary middle-sized objects would do, depends on their dispositional makeup, and that dispositional makeup depends on the dispositional makeup of their constituent particles—or, if there is only one fundamental thing (space-–time, the quantum field, the One), on that thing's dispositional makeup. Honestly, I cannot see how it could be otherwise!

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Reply to Sharon Ford

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Perhaps the most controversial thesis defended in *From an Ontological Point of View* is what I call the identity theory of properties: properties of concrete objects are *powerful qualities*. The source of this view is Locke, although my own version of it is grounded in arguments advanced by C. B. Martin (see Martin 2008). The idea is not that properties are Janus-faced: partly qualitative, partly dispositional. A property's dispositionality is bound up with its qualitativity, and its qualitativity is bound up with its dispositionality. Neither is reducible to the other. (See the accompanying Précis for a summary.) Sharon Ford thinks that the position might be improved by dispensing with the qualities.

Ford speculates that my attraction to the disposition–quality identity thesis stems from a tacit commitment to an atomistic conception of the world. Although I am officially neutral on the point, my invocation of qualities as necessary for the individuation of powers would, she argues, be superfluous were the world a single object—space–time, for instance, or the quantum field.

If my arguments about the need for qualities in the individuation of powers (see the Précis and Heil 2007) are cogent, however, I reckon they should apply to properties in *any* world, corpuscular *or* Spinozistic. In this regard, the difference between Locke, the corpuscularist, and Spinoza, a proponent of the One, is purely quantitative.

Before taking up Ford's suggestions, let me comment on one aspect of her characterization of my position. Ford reformulates my arguments in a way that makes them sound verificationist. Although I talk of perception and of our 'conceptions' of objects, and I certainly think the identity theory helps make sense of our capacity to know objects' qualities, my attraction to properties as powerful qualities has its roots in exclusively ontological concerns. The Galilean idea that we could dispense with qualities in the physical world and confine them to the mind bifurcates mind and world in a way we ought to resist. The most recent incarnation of the Galilean temperament can be found among those who regard *qualia* as posing the 'hard problem' of consciousness. The hard problem is made especially hard by imagining that qualities exist nowhere but the mind. This all but guarantees mental–physical dualism.

So much for preliminaries. Now to Ford's most pointed objections to my conception of properties as powerful qualities.

Ford begins by suggesting that I am wrong in regarding dispositions as nonrelational.

> Since 'disposition partners' are necessary in the manifestation of a power, given the absence of an appropriate dispositional partner, it is over-determination to…require a disposition to be non-relational in explaining the absence of its manifestation. (13)

I could be missing Ford's point, but I can say that I never thought of the thesis that dispositions are not 'relational' as an explanation of anything, least of all the absence of manifestations. Part of my problem here might stem from a failure to grasp what Ford means by 'relational'. If something is relational is it a *relation*? Or is something relational when its identity depends on its standing in a particular relation? Or is it merely that something is relational if it is naturally described using

relational predicates?

The latter is undoubtedly true for dispositions generally. It does not follow, however, that dispositions must have a relational character—in the sense either of being relations themselves or depending for their identity on relations. Relations come into the picture with manifestations, and a disposition can remain unmanifested for its entire career. The glass's being fragile is a matter of it's possessing a disposition to shatter if dropped or struck by a hard object. A disposition can be present, however, even if it is never manifested, even if it *could* never be manifested. The disposition is fully present in the object. It is true of the object in virtue of possessing this disposition that it would do various things in concert with various reciprocal disposition partners. But we can remove all the partners, hence all the opportunities for manifestation, without affecting the disposition in the slightest. To think of a disposition as a relation is to confuse the disposition with its possible manifestations.

It is easy to be put off the scent so long as we persist in characterizing dispositions counterfactually. The glass is fragile if it would break were it dropped or struck. That seems right. But note that this counterfactual will be false for a glass coupled to a mechanism that would instantaneously melt the glass were it struck or dropped. What makes the glass fragile depends, not on what it would do under various circumstances—what it would do depends on endless contingencies—but on its here-and-now makeup. Counterfactual locutions provide a rough and ready, defeasible way of indicating that makeup.

Consider an electron. The electron has negative charge. In virtue of possessing negative charge, it would repel other electrons. But also in virtue of possessing negative charge, the electron would attract a positron. Now imagine a world containing only a single electron. Does the electron in this world have the same powers it has in the actual world? Insofar as the electron is a twin of an electron in our world, I think it does. We *describe* these powers by reference to their typical manifestations in our world. But this is just a way of indicating or singling out the powers.

I don't see any of this as mysterious. Although everything the electron would do in virtue of being negatively charged is built in to the electron's charge here and now, this does not take the form of a ledger or program spelling out all the endless kinds of possible manifestations with endless kinds of possible disposition partner. Electrons appear to be utterly simple. It is just that an electron's charge is such that it *would* manifest itself in endless perfectly definite ways with endless manifestation partners.

Relations require relata, manifestations of dispositions require reciprocal manifestation partners, but the dispositions themselves do not. Ford says, 'when we talk of properties as "ways that objects *are*", surely we mean "ways that objects *can relate* to other objects". Properties must surely, then, be relational' (16). Yes and no. We can describe how something is by saying what it would do, how it would 'relate to other objects', but how it is is how it is.

Ford's second reason for thinking of dispositions as relational concerns the interaction of dispositions in complex objects. 'Relational dispositions offer a rationale for the ability of dispositions, *of their own nature*, to bestow powers on their bearers. The overall dispositional makeup of an object is comprehensible if its dispositions relate to each other in certain ways' (16). Yes, the overall dispositionalities of a complex object result from interactions among dispositions possessed by its constituents. Think of an object's dispositional profile as a *manifestation* of dispositions of its constituents. But what has this to do with the thesis that dispositions *themselves* are 'relational'?

I think it possible that Ford is confusing *causal* dependence with *metaphysical* dependence. A disposition's being what it is could depend causally on various factors. The glass's being fragile does indeed result from the glass's constituents with their various dispositionalities standing in various relations. The upshot is a glass with a particular dispositional makeup. I would like to replace causal talk with talk of 'mutual manifestations of reciprocal disposition partners', so I would prefer to see the glass's dispositional profile as itself a manifestation of dispositions of

whatever makes it up. Here we have relations, but the relations involve manifestations of dispositions. The resulting dispositions themselves are not relations—any more than the effect of a cause must, because caused, be a relation. Their *existence*, but not their *identity*, depends on relations they bear to other dispositions.

The question whether dispositions are 'relational' is, I think, largely a distraction from Ford's chief criticism of my defense of the disposition/quality identity theory. I say that qualities are required for the individuation of powers, but, Ford argues, questions of individuation recede in a world consisting of a single object, a Spinozistic world. If I regard such a world as a live—even attractive—possibility, don't I have to abandon my defense of the qualitative nature of powers?

First, let me note that it would be odd if we required qualities for the individuation of powers in a world with more than one object, but not in a world with a single object. Suppose that, in a corpuscular world this power *is* this quality. Now imagine a world containing just a single corpuscle. In this world does the quality evaporate leaving behind a bare power? If dispositions must be qualities in *any* world, they must be qualities in *every* world. This is a straightforward consequence of the necessity of identity.

There is a simpler point here, however. Ford seems to think that I require qualities to individuate *objects*. This might be pressing in worlds containing many objects, but not in a Spinozistic world. But this is not my contention. I hold that qualities are needed to individuate, not objects, but *powers*. A power is the power to do this or that. The trouble (as I discuss in the Précis and at greater length in Heil 2007) is that, in specifying the this or that, we are led ineluctably to qualities. If powers are reciprocal, it is these qualities that encompass the needed reciprocal power, and a specification of *this* power leads back to qualities identifiable with the original power.

Suppose this ball's sphericity is a power. *What* power? The power to roll down inclined planes, the power to make a concave impression in the carpet, the power to look spherical. Now try to describe the inclined plane, the carpet, and your perceptual experience non-qualitatively. (If reference to experience here makes you nervous, consider just the first two cases.) Bearing mind reciprocity, we will want to ascribe powers to inclined planes, carpets, perceptual systems. Again, we are hard-pressed to do this without appeal to a quality: the original quality of sphericity. The pertinent power of the inclined plane is the power to accommodate rolling spherical objects, the power of the carpet is the power to take a concave shape when a spherical object is impressed upon it, and the power of your perceptual apparatus is the power to experience sphericity spherically.

The problem here is not merely that we find it inconvenient to describe the pertinent powers without reference to qualities, but that, minus the qualities, the powers themselves remain undifferentiated. (This point is relentlessly driven home by Peter Unger in his 2006.) This, I think, is what lies behind worries many philosophers have had over the possibility of a world of 'pure powers' (see, for instance, Blackburn 1984; Campbell 1976, 93–4; Swinburne 1980). If there is anything to it, notice that it will apply as well to mixed worlds, worlds containing some pure powers alongside some qualities. This is guaranteed by the reciprocity of powers.

I might add that analogous worries extend to purely relational worlds, worlds in which objects or qualities are taken to be constituted by relations. Relations are individuated by what they relate. If pure powers are not up to the job it looks as though we will need the qualities. So we need the qualities in any case.

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In *From an Ontological Point of View*, I attack something I labeled the Picture Theory. I do not see the Picture Theory as a fully articulated doctrine, but an attitude, an unselfconscious way of moving in thought from representations of reality to the reality represented. Think here of Quine, whom Nannini cites with approval. According to Quine (1948), 'to be is to be the value of a bound variable'. Our 'ontological commitments' can be read off our best theories. If we 'quantify over beliefs' in our best psychological theories, this commits us to the existence of beliefs. This means, in effect, that, corresponding to each nonlogical predicate in our best theories there must exist a kind or property.

Quine, of course, disdains properties. But many philosophers beguiled by the Picture Theory do not. Indeed, for most of the central issues in philosophy of mind today would be impossible to formulate without the tacit acceptance of a traditional substance–property ontology. Think of the exclusion problem, the problem of causal relevance, and questions about the 'multiple realizability' of mental properties. I do not spend much time in the book defending a substance–property ontology, and I will not try to do so here. I can say, however, that it is not easy to see how to develop an ontology that meshes with what we take our best theories to reveal about the world without embracing properties.[1]

But what are properties? I consider two possibilities: (1) properties are universals, ways objects are that are strictly identical across instances; (2) properties are tropes, or, as I prefer, modes. Modes are particularized ways objects are. Modes are not sharable, not identical across instances. The whiteness of Socrates and the whiteness of this sheet of paper are similar, but not strictly identical. Similarity can be perfect or imperfect. Cases of perfect similarity are those in which a proponent of universals would say that a single universal is 'wholly present' in distinct individuals. I find this hard to swallow. 'Wholly present' *seems* to imply 'here and nowhere else'. So how can something be wholly present here and wholly present elsewhere?

Perhaps this observation reflects only an intellectual deficit on my part. I certainly do not see it as a knock-down refutation of the idea that properties are universals. Rather, I would like to say that we do not need to suppose that properties are universals in order to make sense of our world. The move to universals from modes is a matter of substituting identity for similarity. What do we gain by such a substitution? Consider the sphericity of this ball. Suppose the ball rolls because it is spherical. Now consider a second ball. This ball, too, rolls because it is spherical. Presumably each ball's sphericity bestows a power: a power to roll. What exactly is supposed to be gained by adding that the ball's sphericities are strictly identical, that one and the same sphericity is wholly present in each ball? If the first ball rolls *because* it is spherical, and if the second ball is similarly spherical, ought not we to expect it to roll as well?

Because I cannot see what the move to universals adds, I see no reason to make the move. This is especially so because the nature of universals as wholly present in each distinct instance strikes me as excessively mysterious. I go with Locke (and Descartes, Spinoza, Leibniz, Berkeley, Hume,

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1 What of parsimony? Parsimony enters ontology only in the end game.

Kant, and many others) in regarding concrete entities as particulars.

Nannini suggests that this saddles me with an implausible conception of primitive similarity. Proponents of universals can ground similarity in identity. The similarity of the balls' respective shapes stems from those shapes being strictly identical. I argue in the book that proponents of universals are no less committed to primitive similarities insofar as they grant the possibility of simple properties that are imperfectly similar. If I am right, a supposed economy (primitive similarities give way to strict identities) is no economy at all.

Nannini thinks that I err in a way that resembles what I say about my opponents. Consider the redness of these two balls. I say that the rednesses are similar *tout court*. But surely we can say more. Science shows us the deep nature of the colors, and so now we can grasp *why* the balls' respective rednesses are similar.

This line of criticism misses an important point, one I try to make in the book, but that is easily lost sight of. In illustrating and motivating the fundamental ontology, I appeal, as I have here, to simple everyday examples of properties: redness, sphericity, and the like. But I have no interest in defending the thesis that redness and sphericity really *are* genuine properties. In this I agree with the two Davids, Armstrong and Lewis, in embracing a 'sparse' conception of properties. To a first approximation, the genuine properties are those we discover in investigating the fundamental things. I think it unlikely that sphericity and redness are among the properties of the fundamental things.

But if I reject the idea that redness and sphericity are genuine properties, am I an eliminativist about colors and shapes? To think so would be to miss the whole point of the book. It can be true that a ball is red and that it is spherical, even though no genuine properties answer to the predicates 'is red' and 'is spherical'. Instead of focusing on the predicates (as Quine's criterion of ontological commitment encourages us to do), we are to focus on truthmakers for applications of the predicates. 'This is red', when true, is made true perhaps by a complex arrangement of the fundamental things. Similar arrangements answer to the predicate 'is red'. We rely on science to tell us about the truthmakers, the deep nature of whatever it is that makes descriptions of the world true.

In attacking my reliance on primitive similarity, Nannini seems not to notice that explanations of the similarity of the color of two balls that appeal to the balls' possession of similar molecular structures reintroduces the notion of primitive similarity at a more fundamental level. Appealing to universals at this stage does nothing to mitigate worries about universals mentioned earlier.

What exactly is supposed to be wrong with primitive similarity? Philosophers score debating points by referring to 'brute' similarities, implying an element of arbitrariness, and *ad hoc* resting place for a theory about the world. Is this apt?

Consider the taller-than relation. Suppose *A* is taller than *B*. I see this relation as an 'internal' relation: if you have the relata (as they are), you have the relation. Internal relations involve no addition of being. Suppose that *A* and *B* are, respectively, .95 and .85 meters tall. You thereby have *A*'s being taller than *B*. If God wants to make it the case that *A* is taller than *B*, God need only make *A* some definite height and *B* some definite, lesser height. Compare this to *A*'s being two meters from *B*. In this case, God must make *A*, *B*, and then do something else: locate them a meter apart. Similarity strikes me as the paradigmatic internal relation: if you have the relata (as they are), you have the relation.

Note that, in discussing similarity, it is vital to distinguish similarity among *objects* and similarity among *properties*. Objects are similar in virtue of possessing similar properties, but properties, or at any rate simple properties, are similar (or not) *tout court*: if you have the properties, you have their being similar (or not); their similarity is no addition of being, nothing calling for some further explanation. This point seems to me to be theoretically neutral, something nominalists, proponents of universals, and proponents of modes would be happy to accept.

A final thought. Calling similarities 'brute', suggests that they are ungrounded. This might lead to worries about arbitrariness of the sort that arise when philosophers are forced to say that

'explanation must stop somewhere, why not here?' But similarities are not ungrounded. They are grounded in the natures of the properties themselves. Given those natures, similarity supervenes as no addition of being. This is so whether you like universals or not.

Much of the latter part of Nannini's discussion concerns an account of perception according to which our perceptual contact with the world is mediated by 'phenomenal' representations, properties of which are not to be confused with properties of the world. I am not sure why Nannini thinks this account raises problems for the ontology sketched in *From an Ontological Point of View*, in particular my preference for properties as modes rather than universals. Nannini asserts that the truthmakers for claims about colors, for instance, are universals, but it would be incredible to think that this is implied by any of the science to which he appeals.

It is worth recalling that those present at the birth of the scientific revolution, almost without exception, rejected universals and embraced modes. The idea that an ontology of properties as modes is scientifically dubious, that science requires universals, is hard to credit. Certainly, none of the examples mentioned by Nannini establishes this. Is it that similarities are constructed by the brain? But I would not want to deny that similar perceptual experiences might be caused by objects' possession of dissimilar (that is, less similar) properties. Indeed, I make this point explicitly in a brief chapter on color. The mistake would be to imagine that *all* similarities are constructed or in some way mind-dependent. Electrons are similar with respect to charge and mass, and this is as objective as anything could be.

Let me make a small point concerning an example Nannini deploys in his discussion. Consider a tomato and your image of a red devil. Nannini says that I am going to have trouble explaining the similarity between the tomato's redness and the redness of the imagined devil. But if there are similarities here, they are similarities among properties of an experience—of a tomato—and an imagistic episode. Any similarities or dissimilarities between a perceptual experience and imaging are perfectly objective. They depend in no way on mental construction. On my view, imagining a devil might well be similar to a perceptual experience one might have in seeing a devil. And that experience could well be similar—objectively similar—in certain ways to experiences or imagininigs of ripe tomatoes.

To return to a point made earlier, I think Nannini reads my discussion of color as committing me to the existence of colors as fundamental properties. I hope I have said enough here to make it clear that this is a mistake. 'This is red' can be true in virtue of complex arrangements of colorless particles. Presumably similar collections give rise in us to similar experiences, hence to our classifying them as red. But, as color science makes clear, dissimilar arrangements can give rise to similar experiences. The idea that this forces us to assume that the truthmakers for color claims must be 'phenomenal' strikes me as just one more unhappy manifestation of the Picture Theory.

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Reply to Neil Williams

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What are we to make of philosophers' zombies, imagined creatures resembling conscious agents in relevant physical respects, but lacking conscious experiences? David Chalmers argues from the conceivability of zombies to their metaphysical possibility, and from zombies' metaphysical possibility to a conception of mental properties as nomologically determined by, but distinct from, physical properties. In 'our world', zombies are impossible; zombies spring up in worlds with different laws of nature.[1]

Whatever you might think about all this, it is worth noting that the zombie picture depends on a clutch of substantive metaphysical assumptions. These assumptions are rarely spelled out explicitly, in part because they are knitted into the Humean fabric enshrouding so much contemporary metaphysics.

One assumption is that laws of nature could vary independently of objects and their properties. Worlds containing the very same objects and properties, could differ in their laws. Laws 'govern' objects. But how is this supposed to work? You might conceive of laws as constraints imposed by God on the behavior of His creations. God could change his mind and direct objects to behave differently. If you subtract God from the picture, you are left with the bare idea that objects are shunted about by laws themselves. But, whatever the laws are, it is hard to see how they are supposed to influence the behavior of objects they govern.

We are, it would seem, still under the spell of Hume. There are the objects and their properties, and there are the laws. If the laws seem hard to swallow, you could go all the way with Hume and have just the objects, their properties, and contingent regularities. Another option is to reject nomological externalism and build the laws into the properties. Properties are dispositions or powers possessed by objects. Objects behave as they do because of properties they possess. Regularities result from similarities among objects: similar objects possess similar powers, hence behave similarly in similar circumstances. On such a view, it is much less clear that worlds containing the very same distribution of objects and properties *could* differ nomologically. Identity conditions for properties *include* their differential contributions to powers of their possessors. Fixing the objects, their properties, and their relations, fixes the laws of nature.[2]

Philosophers have been increasingly attracted to some such conception of properties, but the old Humean forms linger in zombie thought-experiments. We imagine that, in addition to the laws governing physical objects—now conceived of as grounded in objects' properties—there are laws affixing mental properties to physical systems. These laws are contingent. A zombie world resembles ours with respect to the physical laws, but lacks these additional laws responsible for the production of conscious experiences.

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1 Robert Kirk (1974) introduced zombies in an argument against physicalism, although his principal target is behaviorist and functionalist forms of physicalism. Chalmers (1996) makes zombies the centerpiece of a hard-hitting attack on materialism.

2 We move in this way from a conception of laws as entities 'out there' to a conception of laws as modally charged statements, truthmakers for which are the properties.

Note that we are now forced to think of two *kinds* of law. There are laws governing interactions among physical objects, and there are laws responsible for the 'arising' of consciousness. Laws of the first kind are grounded in the nature of physical properties. Laws of the second kind are contingent add-ons. Important qualitative differences here are camouflaged by unvarnished talk of laws.[3] The suggestion is that the laws in question—those governing the occurrence of conscious experiences—differ only in degree from laws of other sorts. This is where the rabbit is slipped into the hat.

In fact, as I argue in the book, Chalmers's rendition of the zombie possibility brings with it additional complications. Chalmers holds that conscious qualities 'nomologically supervene' or 'arise from' *functional* states. In our world, identical brains yield identical conscious states only because identical brains must be functionally identical. Functionally equivalent systems, systems made up of entirely different stuff, would, in our world, give rise to equivalent states of consciousness. This requires laws connecting kinds of conscious experience with functional kinds.

Philosophers steeped in functionalist lore will see nothing very remarkable in this. Consider, however, the relation between functional properties and their physical realizers. According to Chalmers, functional properties spring from arrangements of the basic things: if you arrange the basic things appropriately, you thereby have the functional properties. Functional kinds 'logically supervene' on distributions of particles, but this is just to say that functional properties are 'nothing over and above' particle arrangements.[4] Supervenience of this sort is very different from the 'nomological supervenience' of conscious qualities on functional goings-on. In the latter case, the qualities are supposed to 'arise from' functional systems. Labeling the two relations—the 'nothing over-and-above' relation and the 'arising from' relation—'supervenience' misleadingly suggests they have an underlying similarity and differ perhaps only in 'strength'. But they are as different as night and day.

There is more. Chalmers accepts the multiple realizability of functional properties. Functional properties logically supervene on heterogeneous families of physical configurations. When you couple this with the idea that the supervenience relation in question is the nothing-over-and-above relation, you get the thesis that one and the same conscious quality can arise from diverse collections of particles in ways governed by contingent laws of nature. The laws in question would connect each kind of conscious quality with heterogeneous arrangements of particles. Such laws would, as J. J. C. Smart (1959) once put it, have a peculiar 'smell'.

With this background, I can address Neil Williams's interesting discussion of zombies. Williams distinguishes two types of zombie. Type-1 zombies are molecular duplicates of conscious agents but lack conscious qualities. If you accept my contention that qualities and powers go hand in hand, such zombies are flatly impossible. Once you fix the powers, you thereby fix the qualities. Type-2 zombies, in contrast, are those that match conscious agents functionally, but differ in their physical makeup. Imagine your functional twin made of silicon and metal. Although functionally indistinguishable from you, it is at least conceivable that your twin lacks conscious experiences: 'all is dark inside'. Williams points out—correctly—that nothing I say rules out the possibility of such zombies.[5]

Note first, that the apparent possibility of Type-2 zombies is standard fare in arguments against

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3 So far as I can tell, laws of the second kind are *sui generis*, resembling no laws uncovered in ordinary scientific investigation.

4 When *A*-facts logically supervene on *B*-facts, '*all there is* to the *B*-facts being as they are is that the *A*-facts are as they are' (1996, 36); 'once God…creates a world with certain *A*-facts, the *B*-facts come along for free as an automatic consequence' (1996, 38); 'the *B*-facts are a free lunch…the *B*-facts merely re-describe what is described by the *A*-facts' (1996, 41). Need I point out the shadow of the Picture Theory here: facts describe and re-describe other facts?

5 This is not *quite* right. I have doubts about the possibility of perfect functional duplicates differing qualitatively. Elements of physical systems are able to perform the roles they perform in part because they are as they are qualitatively. Given a commitment to the identity of qualities and powers, qualitative differences can be expected to yield functional differences.

functionalism. Indeed, Robert Kirk's original (1974) invocation of zombies is aimed chiefly, if not exclusively, at emerging functionalist accounts of mentality. Kirk's zombies are functionally equivalent to conscious counterparts. Ned Block's Chinese nation is supposed to be functionally equivalent to a conscious agent, yet lacking in conscious experiences: a zombie. Insofar as functional descriptions 'abstract' from all sorts of detail, I am happy to go along. Indeed, I see the mistake of mainstream functionalism as lying in the move from the application of non-specific functional predicates to the postulation of properties corresponding to these predicates.

To describe a battery-powered watch, a water clock, and Big Ben as timepieces, is to abstract from their physical makeup. Abstraction of this kind is often useful. A highway worker might need a red flag, not caring whether it is crimson, scarlet, or any other shade of red. Just as it would be a mistake to imagine that a scarlet flag has two properties—being scarlet and being red—on the grounds that 'red' and 'scarlet' differ in specificity, hence extension, so it is a mistake to imagine that your wristwatch has, *in addition to* a complex physical property, the property of being a timepiece. Functional predicates give us highly non-specific ways of describing complex systems by reference to what they do or would do.

We could suppose, then, that, just as Big Ben and a water clock answer to the predicate 'is a timepiece', you and your silicon and metal zombie twin answer to relatively non-specific functional descriptions. Williams's idea is that, just as there are endless ways to make a timepiece, there might be endless ways to make functional duplicates of conscious agents. The functional profile of a complex system is a product of the complex interplay of dispositional factors. Systems could share an overall dispositional—hence functional—character while differing in makeup. You can make the functional equivalent of an apple pie using Ritz crackers instead of apples. Williams spells all this out nicely. As he puts it, there are 'different paths to the same exemplified dispositions' (10).

Williams is exactly right. Two points deserve comment, however. First, Williams's defense of the zombie possibility differs dramatically from Chalmers's defense. Williams sees the possibility of zombies as resting on the possibility of systems differing in their dispositional (hence, by my lights, their qualitative) details, but, owing to interactions among their constituent dispositions, sharing a common overall dispositional, hence functional, profile. Chalmers, in contrast, sees conscious qualities as arising from this overall functional profile given contingent laws of nature.

Second, whether a close functional duplicate of a conscious agent could be concocted without qualitative duplication is a difficult empirical question. I have my doubts. These center on the central role of conscious qualities in perceptual experiences and imagery. We have been conditioned by functionalist arguments to neglect the significance of the qualitative. I believe this is a mistake. The qualitative and the dispositional go hand in hand. Ask any cook: an apple pie and its Ritz cracker counterpart are not qualitatively on a par.

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