Can Heil's ontological conception accommodate complex properties?

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Abstract: A central tenet of Heil's ontological conception is a no-levels account of reality, according to which there is just one class of basic properties and relations, while all purported higher-level entities are configurations of these base-level entities. I argue that if this picture is not to collapse into an eliminativist picture of the world – which, I contend, should be avoided –, Heil's ontological framework has to be supplemented by an independent theory of which configurations of basic entities should count as complex entities. However, such an amendment represents a substantial ontological enhancement, so that the ensuing ontological picture is not as parsimonious as Heil claims it to be.

1   Introduction

The structure of natural language sentences, like "there is a cup on the table" or "Lausanne is a city in Switzerland", usually suggests that there are objects in the world possessing certain properties or standing in certain relations to each other. From a philosophical perspective, however, these two seemingly innocent categories – the category of objects on the one hand and the category of properties and relations on the other hand – raise various puzzles. One crucial issue is whether properties should be conceived as *universals* or rather as particularized entities. More specific questions are concerned with the status of so-called *higher-level* properties, e.g., biological or mental properties, and the discussion of whether each property is to be considered as a disposition, endowing the individuals possessing it with certain causal powers, or whether there may be purely qualitative properties. With respect to objects, a fundamental issue is whether these are just bundles of properties or whether the ontology contains individual substances as *bearers* of properties.

In his book, "From an ontological point of view", John Heil argues that these and a number of other philosophical problems arise from the (tacit) acceptance of what he calls the *Picture Theory*, i.e., the claim that the structure of reality is revealed to us by the structure of our linguistic representation of the world (cf. Heil (2003a), pp. 5-6). Rejecting the Picture Theory, Heil offers a positive account of properties and objects and argues that his alternative conception can solve philosophical puzzles which result from assuming too tight a connection between language and ontology. Concerning the ontology of properties in particular, he defends the following three theses:

(1) *Identity theory*: properties are always dispositional and qualitative at the same time (cf. Heil (2003a), p. 111).

(2) *No-levels conception*: there are no higher-level properties; yet there are complex properties composed of basic physical properties (cf. Heil (2003a), pp. 8; 142).

(3) *Mode theory*: properties are not universals, but particulars, i.e., tropes or modes (cf. Heil (2003a), pp. 127-128).

Thesis (2) – the no-levels conception of reality – is a central tenet of Heil's ontological picture. According to this conception, the entities constituting the world are sparse. There is a class of basic properties and objects; what exactly these are cannot be determined by philosophical investigation alone, but only by recourse to empirical inquiry. Apart from these basic entities, there are no "higher-level" entities in the usual philosophical sense of the word, but we should still assume that there are entities which – although entirely composed of basic entities – belong to levels of higher complexity (cf. Heil (2003a), p. 173).

My aim in this paper is to show that Heil's account of properties can only be upheld in its present form if it is supplemented by either an independent theory of macroscopic objects or an independent account of which entities should count as complex properties. I argue that, although Heil's theory of macroscopic objects suggests that his ontological conception should rather be supplemented by a theory of complex properties than a theory of complex objects, the theses (1) – (3) concerning the ontology of properties are better compatible with an ontology supplemented by an independent theory of complex objects. I further argue that independently of which of the two options is chosen, the ensuing conception of reality is not as parsimonious as one might hope, given the initial assumptions of Heil's no-level ontology – unless the claim that there are properties belonging to levels of higher complexity is entirely given up, which yields an eliminativism bearing philosophical problems of its own.

I give a general outline of Heil's conception of properties and objects in sections 2 and 3. In section 4, I show that Heil's three theses concerning properties should be supplemented by an account of complex entities and discuss whether this should rather be an account of complex properties or an account of complex objects. In the last section (section 5), I argue that the consequence drawn in the foregoing section could only be avoided by an eliminativist ontology, but that the latter is not an adequate option in view of the numerous successful investigations in the special sciences.

2   Heil's conception of properties

According to thesis (1), which Heil calls the *identity theory*, the received view that properties are either dispositional or categorical, not both, has to be rejected. To illustrate this conception, Heil considers the property of being spherical. Proponents of the traditional view would presumably regard this as a quality and claim that if sphericity were regarded as a dispositional property, i.e., as a power to bring about certain effects, it could not be a qualitative property at the same time. Heil argues that it is plausible to take sphericity as a

disposition, for instance, as the power to roll when certain conditions are fulfilled, yet that this does not exclude that being spherical is a qualitative property as well. On the contrary, a ball's being spherical should be considered as a power *and* as a quality of the ball (cf. Heil (2003a), p. 112).

Thesis (1) is of great systematic importance, particularly since Heil employs it to resolve problems which play a central role in the current debate in the philosophy of mind, such as the problem of mental causation and problems related to assuming the existence of qualia, i.e., purely qualitative mental properties (cf. Heil (2003a), pp. 223-239; Heil (2003b), pp. 188-189). The aspect which is primarily relevant to my current argument, however, is the contention that each genuine property is dispositional.

Thesis (2) consists in the rejection of the popular assumption that the world is composed of distinct hierarchically ordered levels of reality, such that, for instance, psychological properties or states belong to a higher level than neurobiological properties or states, which in turn belong to a higher level than physical properties or states. Heil contends that this view is an unfortunate consequence of the Picture Theory which implies that for each higher-level *predicate*, there must be a corresponding higher-level *property*. If the Picture Theory is abandoned, there is no reason to postulate the existence of higher-level properties which raise serious philosophical problems – notably the problem of mental causation. (Cf. Heil (2003a), pp. 7-8.)

Heil's positive account in this respect is that the ontology contains only basic properties which are defined as the properties of basic objects, while it is an empirical question what these basic objects are. However, it is compatible with this conception that the ontology also contains complex properties constituted by combinations of basic properties. As such they are as real as the basic properties of which they consist. (Cf. Heil (2003a), p. 142.)

This view – that there are no genuine ontological levels, but nevertheless levels of higher complexity – apparently supports a *reductionist*, but *non-eliminativist* picture of reality. What are usually considered as higher-level properties, e.g., mental or biological properties, are merely complex properties which can be directly related to the basic properties of which they consist. This holds true at least if only instantiations, i.e., tokens of these properties are taken into account: any instantiation of a biological property, for instance, can be considered as a complex configuration of instances of microphysical properties, which is usually taken to mean that the biological is reducible to the physical. On the other hand, the so-called *higher-level properties* are still "perfectly real complex properties" (Heil (2003a), p. 143) which are ineliminable in the sense that it is these complex entities, not the basic entities constituting them, which are the subject of investigation in the special sciences, such as biology or psychology.[1]

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[1] For ease of linguistic expression in the argument to follow, I employ the notion of a higher-level property in order to describe such ineliminable, but reducible complex properties, and the notion of base-level property

According to thesis (3), the traditional conception of properties as universals should be refuted. Instead, properties should be considered as "*particularized* ways objects are" (Heil (2003a), p. 127; my emphasis). Thus, the ontology does not contain universals like whiteness or squareness, but tropes, i.e., concrete instantiations of properties, such as the whiteness of the cup standing on my desk or the squareness of the window facing me while I am writing this paper. Heil prefers the notion of mode to the notion of trope, since the latter is frequently associated with a bundle theory of objects, which he rejects (cf. section 3), while the notion of mode is purported to be more neutral concerning this point (cf. Heil (2003a), pp. 127-128).

A crucial criterion to distinguish universals from modes is related to the conditions of their identity and individuation. The criteria of individuation for universals are usually independent of the criteria of individuation for the objects instantiating them: it is possible for two numerically distinct objects to instantiate numerically identical universals. The individuation of modes, by contrast, is related to the individuation of the objects instantiating them: it is regarded as a necessary condition for the identity of modes that they are instantiated by numerically the same objects; in other words, two numerically distinct objects cannot instantiate numerically identical modes (cf. Heil (2003a), p. 141). Modes can hence not be considered independently of the objects to which they belong, so that a crucial part of a complete ontological picture is an adequate account of objects. I present Heil's view on objects in the subsequent section.

3   <u>A question of ontological priority: objects or properties?</u>

In outlining his conception of properties, Heil seems to presuppose a basic understanding of the notion of an object, for instance, when he characterizes properties as ways objects are or argues that the individuation of modes depends on the individuation of objects. However, giving an account of what objects are clearly is an ontological issue of its own.

Heil discards the view – often associated with trope theories – that objects are mere bundles of properties (hence his preference for the term 'mode' instead of 'trope') in favour of a substance theory of objects. In contrast to a bundle theory, according to which objects are just constituted by properties and hence derivative from properties in a certain sense, Heil's account takes objects to be the basic entities, while properties or modes are ways objects are (cf. Heil (2003a), p. 172). This ontological priority of objects over modes or properties holds true at least in the case of basic objects and modes. Now according to Heil, the nature of the objects forming the basic constituents of the world can only be determined by recourse to results of the empirical sciences. These results may be incompatible with the view that the basic objects are particles and rather suggest that there are fields

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to signify a property belonging to the lowest level of complexity – even if this nomenclature contravenes Heil's idea of a no-levels ontology.

or even just one single object, like space-time or a quantum field. This implies that in the case of those entities which we usually regard as ordinary middle-sized objects – tables, birds, or computers – the answer to the question of ontological priority may not be as straightforward as in the case of basic objects. For it would be an injudicious consequence of the Picture Theory to assume that each singular term occurring in our natural language had to designate an object in an ontologically robust sense. Rather, middle-sized objects may just be modes, "ways the ultimate bits of the world are organized" (Heil (2003a), p. 190).

Heil supports the contention that complex objects are dependent on modes, not vice versa, by the famous example of the relationship between a statue and the lump of bronze of which it is made. Evidently, these two entities differ in their modal properties, e.g., the lump of bronze would survive being smashed, while the statue would be destroyed when smashed. Now, according to the principle of the indiscernibility of identicals, x and y can only be the same object if for all properties (modes) A the following holds: A belongs to x iff A belongs to y. If this principle is taken to apply to modal properties as well, it entails that the statue and the lump of bronze are not the selfsame object. (Cf. Heil (2003a), pp. 181-183.) Heil argues that consequently the statue and the lump of bronze should be considered as different modes (cf. Heil (2003a), p. 190).

Clearly, if the entities which we usually regard as middle-sized objects are construed in this way, the relation of ontological priority is reversed as compared to the case of base-level entities, i.e., complex properties are taken to be ontologically primary to what could still be considered as complex objects. In the following section, I investigate the consequences of this view in the context of Heil's theory of properties.

4   Complex properties and middle-sized objects

Thesis (2) entails that over and above the base-level modes whose nature can be investigated only by empirical means, there is a class of ineliminable complex modes. Now it appears plausible to assume that not any arbitrary configuration of base-level properties should count as such an ineliminable complex mode. For a strong motivation to include complex properties into the ontology is to be able to give an account of those features which are investigated by the special sciences. In biology, for instance, an organism's trying to get water may causally be explained by the dehydration of its cells. Making sense of such explanations clearly does not require that the phenomena appealed to – in this case, the organism's behaviour and the physiology of its cells – are *irreducible* to base-level entities. However, it is plausible to assume that the features occurring in such statements are not chosen in a completely arbitrary way. For instance, it would be hard to justify why a widely scattered entity, such as the conjunction of the charge of an electron in New York, the temperature of a drop of water in London, and the weight of a carbon atom in Tokyo

should be regarded as a single mode which can reasonably be investigated by some special science. It should be noted that within Heil's conceptual framework, it is not possible to qualify a configuration of basic properties as a complex property iff it occurs in a meaningful explanation of the special sciences, for this would be a direct application of the Picture Theory. The general problem is hence to define an independent ontological criterion which a configuration of base-level properties has to fulfil in order to count as a complex property.

A plausible way of conceiving the relationship between complex and base-level entities is to regard a configuration of base-level properties as a complex property iff all its basic components are properties of basic objects which are part of a single macroscopic object. In fact, this is the standard view underlying numerous accounts of the relationship between macro-properties and micro-physical features, e.g., functionalist approaches or theories based on the relation of supervenience. Such a view is also appealed to by Heil when he characterizes complex properties as properties belonging to complex objects (cf. Heil (2003a), p. 142).

In accordance with this consideration, the problem of defining complex properties could be solved by an adequate theory of complex objects furnishing an independent criterion of which configurations of basic objects should count as a genuine complex (or macroscopic) object. For then a configuration of base-level modes could be defined as a complex mode iff all its basic components are modes belonging to base-level objects forming a configuration which, according to the criterion, counts as a single macroscopic object. If, however, in accordance with the argument presented in section 3, macroscopic objects should be taken as ontologically secondary to complex properties, such a criterion would render the account circular: modes would be considered as ontologically primary to objects, while objects would in turn be considered as ontologically primary to properties. Thus, against the background of Heil's theory of objects, trying to solve this difficulty by giving a criterion of complex objects is not an acceptable approach.

A different possibility, which is compatible with Heil's theory of objects, is to provide a criterion defining, without recourse to complex objects, which configurations of basic properties should count as ineliminable complex properties. Such a theory would clearly avoid circularity. In view of theses (1) and (3), however, the former option of defining complex properties by means of complex objects seems to be in better accordance with Heil's theory of properties.

According to thesis (3), properties are modes, not universals. As has been pointed out in section 2, this thesis implies that the criteria of identity for modes depend on the objects possessing them, such that a necessary condition of the numerical identity of a mode A with a mode B is that they belong to the selfsame object. Now thesis (2) entails that, over and above the base-level modes whose nature can be investigated only by empirical means, there is a class of ineliminable complex modes. Since, plausibly, thesis (3) applies to base-

level modes as well as to these complex modes, the criteria of identity for complex modes should also depend on the objects associated with them.

Arguably, criteria of identity for base-level objects follow from an encompassing theory of what basic objects and properties are. If we hence presuppose with Heil that such an encompassing theory can – at least in principle – be given, a constraint concerning the identity of complex objects can be spelt out as follows: if a complex object x is numerically identical with a complex object y, each of the basic parts of which x is composed is numerically identical with (exactly) one basic part of y, and each of the basic parts of which y is composed is numerically identical with (exactly) one basic part of x, i.e., a necessary condition of the numerical identity of complex objects is the numerical identity of each of their parts.[2] It follows that a necessary condition of the numerical identity of the complex mode A with the complex mode B is that they belong to complex objects whose basic parts can be mapped onto each other in the way described.

This consideration, which is a natural consequence of Heil's ontological assumptions, apparently suggests an ontological priority of objects over complex modes, for it entails that the criterion of identity for modes at least partly hinges upon the criteria of identity for objects. Yet, the ontological priority of complex modes over *complex* objects is only a plausible consequence, but not a strict implication of the proposed necessary condition for the identity of complex modes. For this condition is ultimately only grounded on a criterion of identity for *basic* objects, which according to Heil's ontological picture are indeed ontologically primary to modes.

However, thesis (1), that each genuine property is dispositional and qualitative at the same time, also suggests that complex objects should be regarded as ontologically prior to complex modes, since it implies that each genuine property is dispositional. Heil considers dispositions to be *intrinsic* (cf. Heil (2003a), p. 82), which (approximately) means that whether or not an object x instantiates a dispositional property only depends on the features of x itself, not on the environment in which x is located.

Throughout his book, Heil freely uses the notion of intrinsicness (cf., e.g., Heil (2003a), p. 76) without giving an exact definition of the difference between intrinsic and extrinsic properties. There are various approaches to formulating a criterion for this distinction (cf., e.g., Langton and Lewis (1998); Francescotti (1999); Vallentyne (1997)), the common point of which is that the distinction between intrinsic and extrinsic properties conceptually requires a criterion defining which entities are objects. For if such a criterion were not available, the notion of regarding certain features as dependent or independent of an *object's* or *individual's* environment would be meaningless.

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[2] In an earlier draft of this paper, I presented this as a *criterion*, i.e., as a necessary and sufficient condition, of the identity of complex modes. However, John Heil pointed out to me that the numerical identity of the parts of which they consist cannot be a *sufficient* condition for the numerical identity of complex objects, for numerically identical basic objects may constitute different complex objects when arranged in different ways.

Since thesis (1) is particularly purported to solve problems related to the assumption of higher-level properties, especially problems related to the ontological and causal status of mental properties (cf. Heil (2003b)), it must apply to complex properties or modes as well. Therefore, it entails that all complex modes are dispositional and consequently also intrinsic. However, making a distinction between intrinsic and extrinsic properties with respect to complex properties seems to presuppose a theory of which configurations of base-level objects count as macroscopic objects. For if any arbitrary configuration of base-level objects could be regarded as a complex object, the notion of intrinsicness would become completely relative: any complex configuration of base-level properties would be intrinsic to some equally complex configuration of base-level objects, such that, as a borderline case, even the distribution of all base-level properties over the whole world would be an intrinsic property of the complex configuration of base-level objects of which the world consists.[3]

There is no general objection to regarding the notion of intrinsicness as a concept which is relative to the configuration or class of objects under consideration.[4] In the particular case where macroscopic objects are to be constructed out of properties, however, such a notion yields counter-intuitive results. For according to common understanding, intrinsic properties determine the boundaries of the objects to which they belong. Thus, for instance, if the mode of having a mass of 10g, the mode of having a lengthy shape, and the mode of being 15cm long all have the same spatio-temporal location, they would usually be taken to define the boundaries of a single macroscopic object, e.g., of the pencil lying on the desk in front of me. Generally speaking, if macroscopic objects are to be defined by recourse to properties, it is the intrinsic properties which determine how the amorphous mass of particles of which the world consists should be split up into stable unities. But if intrinsicness is a completely relative notion, such that any complex property is intrinsic to some configuration of base-level objects, taking it to be a defining criterion of complex objects would result in ontological inflation: any possible partition of the world could in principle count as a complex object, which is an unwarrantable consequence.

One possibility to circumvent this problem could be to consider the difference between intrinsic and extrinsic properties as ontologically primitive and hence independent of a theory of objects. In principle, this is possible; therefore, neither thesis (1) nor thesis (3) strictly entail the ontological priority of complex objects over complex modes. However, apart from the fact that taking intrinsicness to be a primitive concept would presuppose a very uncommon understanding of the notion, either of the two options discussed – adding an independent theory of complex objects or adding an independent theory of complex (or

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[3] It should noted that if base-level entities are considered, it is contentious for physical reasons whether there is a well-defined class of intrinsic properties (cf. Esfeld (2004); Lam (2006)). Since in the present context, I am primarily concerned with the nature of macroscopic or complex phenomena, however, I do not pursue this point any further.

[4] In a different context, Terry Horgan explicitly employs such a concept of intrinsicness when he introduces the notion of being intrinsic to a particular spatio-temporal region (cf. Horgan (1982), p. 37).

intrinsic) properties – means adding substantial ontological claims to the purportedly par-simonious conception proposed by Heil.

5   A case against eliminativism

I have argued that if we assume that the world consists of different levels of complexity containing ineliminable complex properties (or rather modes), our ontological conception has to be supplemented by a theory either defining which configurations of basic modes should count as complex modes or which configuration of objects should count as complex objects. Yet, evidently, this consequence can be avoided by rejecting the initial assumption, so that the question is why we should not contend that all higher-level entities are in fact eliminable.

Heil's position concerning this issue seems to vary to a certain extent. On the one hand, he clearly denies that so-called higher-level properties, such as the property of being in pain, are eliminable: "I am not advocating … a form of eliminativism about pain" (Heil (1999), p. 201; cf. also Heil (2003c), p. 14). On the other hand, the fact that he explicitly contends that "real properties are 'sparse'" (Heil (2003a), p. 142) and does not offer a posi-tive criterion of complex entities seems to push his account in an eliminativist direction.

To decide this issue, consider the fact that various empirical sciences, e.g., biology or the social sciences, are primarily concerned with macroscopic phenomena. If these sci-ences are to be regarded as legitimate fields of research – which can hardly be denied – we must assume that the knowledge and the explanations they achieve at least partly depend on structures and regularities figuring at the macroscopic level. I have already pointed out that this does not amount to the strong assumption that the entities investigated by the spe-cial sciences are irreducible to lower-level entities. A minimal assumption which has to be made, however, is that there are certain (more or less) stable configurations of base-level entities which are regularly followed by other (more or less) stable configurations of base-level entities. I presume that what Heil considers to be complex properties are such stable configurations of base-level features.

According to Heil's account, the regularities discovered by the special sciences are not founded on strict relations between higher-level properties, but on *similarities* of ob-jects with respect to their base-level properties. Therefore, the laws established by the spe-cial sciences usually hold *ceteris paribus* only, i.e., hold true as long as the circumstances are sufficiently standardized, but may fail to hold in some cases where the circumstances are not similar enough to the standard case. (Cf. Heil (1999), pp. 203-204.) Heil proposes this account to reconcile his no-levels conception of ontology with the obviously success-ful practice of the special sciences. However, it should be noted that this strategy cannot be adequate without presupposing a general criterion of when configuration of base-level properties are sufficiently similar to ground *ceteris paribus* regularities. This is of particu-

lar importance in the case of multiply realizable properties: Heil's conception is explicitly purported to apply to features which occur as single properties in the regularities formulated by the special sciences, but may be constituted by very divergent configurations of base-level features. The paradigm cases here are mental properties, such as the property of being in pain. If these complex features are to occur in more or less stable regularities, there must be a criterion defining which configurations of basic properties are stable or unified enough to serve this purpose.

According to Heil, this unifying criterion is the relation of similarity, which he takes to be a basic, primitively given, notion (cf. Heil (2003a), p. 151). If the Picture Theory is to be avoided, the criterion of similarity for properties may not be epistemologically given, such that different configurations of base-level properties count as similar iff they figure in some law of the special sciences. Yet then Heil's account of complex properties involves a non-reducible ontological criterion of similarity serving as a structuring element determining which configurations of basic properties are the features to figure in the laws of the special sciences. But furnishing the ontology with such an independent ontological criterion of similarity is only one particular possibility to spell out an independent criterion defining what complex entities are.

Consequently, whenever Heil's ontological conception is constructed in a non-eliminativist way – as it should be in order to give an adequate account of the entities investigated by the special sciences –, it always has to be supplemented by an *ontological* criterion either defining which configurations of base-level objects should be regarded as complex objects or defining which configurations of base-level properties should be regarded as complex properties. I have argued that the former option squares better with Heil's general account of properties, yet not with his theory of complex objects. It should be noted, however, that whichever option is chosen, it represents a substantial ontological supplement to the overall framework, so that after all, the ontology is not quite as sparse as one might have initially supposed.

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