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Thomas Schindler

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Thomas Schindler 📵

University of Bristol

ABSTRACT
I critically examine some deflationary theories of properties, according to which properties are 'shadows of predicates' and quantification over them serves a mere quasi-logical function. I start by considering Hofweber's internalist theory, and pose a problem for his account of inexpressible properties. I then introduce a theory of properties that closely resembles Horwich's minimalist theory of truth. This theory overcomes the problem of inexpressible properties, but its formulation presupposes the existence of various kinds of abstract objects. I discuss some ways to reduce these existence assumptions, but ultimately suggest that deflationists can hardly avoid quantification over abstract objects of one sort or another. I conclude that property deflationism is perhaps not as deflationary as some philosophers want it to be, but that it's still apt to call the position 'deflationary'.

1. Introduction

There's a well-known tradition in philosophy that considers properties as 'shadows of predicates'. This tradition contrasts starkly with more substantial views of properties, such as trope theory or the theory that properties are (immanent) universals. In this paper, I shall be concerned with some recent theories of the first kind, which are modelled on deflationary theories of truth. Accordingly, I'll call them 'deflationary theories of properties'.

By a deflationary theory of properties, I understand any theory of properties based on some version of the following two core theses.

The first core thesis is that the notion of property is governed by instances of some comprehension schema, such as this:

> An object a has the property of being F if and only if a is F (COMP)

(We'll have a look at another comprehension schema in due course.) Unless some non-classical logic is adopted, deflationists cannot accept such comprehension schemata unrestrictedly, due to Russell-like paradoxes. Resolving the paradoxes is a notoriously difficult problem. For simplicity, I'll assume that comprehension schemata are restricted to predicates of the base language—that is, the language without property

terms. While this is perhaps excessively restrictive, it won't affect the main points of this paper.

The first thesis has been endorsed by various schools. It's the second thesis that is distinctive of deflationism.

The second core thesis is that the *raison d'être* of our property talk is that it serves a quasi-logical function, akin to our truth talk. A version of this thesis was, to the best of my knowledge, first proposed by Charles Parsons [1983], who observed that property talk answers a need to generalise predicate places in our language, just as truth talk answers a need to generalise sentence places in our language. More recently, versions of this thesis have been defended by Hofweber [2006, 2016] and Båve [2015].

Our property talk serves its generalising function in virtue of being governed by some comprehension axioms. The particular choice of axioms may vary from one theory to another. I'll call collections of such axioms 'formal theories of properties', and use 'deflationary theory of properties' for the combination of a formal theory with a particular deflationary conception of properties—that is, a set of (meta-language) claims that comprises at least some version of the second core thesis above and the Quinean background assumptions listed below.

Some deflationists consider their theories as linguistic theories about the ordinary language usage of 'property'. Others care little about ordinary language usage, claiming that when we're in the business of 'limning down the true and ultimate structure of reality' we need to appeal to the 'austere canonical notation for science' [Quine 1960: 221, 225]. Adherents of this view consider their (formal) theories as proposals about how to use 'property' in our philosophical or scientific theorising. (The deflationist may, of course, go beyond Quine by allowing, say, modal operators in their notation for science. Since Quine only accepted talk about extensionally individuated entities, he doesn't qualify as a property deflationist, in my sense anyway.) I'm interested just in the second interpretation, and consequently ignore questions about our ordinary language usage of 'property'.

Deflationary theories of properties are usually formulated against the backdrop of the following Quinean thesis: Predicates don't name—in particular, they don't name properties—and, additionally, using and understanding predicates doesn't involve some kind of apprehension of such things as properties, concepts, or classes.[1]

Against this backdrop, deflationists view property terms as 'nominalisations' of predicates, whose sole purpose is to increase the expressive power of our language: in first-order languages we cannot quantify into predicate positions, but the introduction of property terms enables us, via some suitable comprehension axioms, to generalise (indirectly) on predicate places in our language. Presumably, the effect of quantifying into predicate positions could also be achieved by introducing suitable higher-order quantifiers. But the introduction of property terms allows us to achieve this effect in a grammatically conservative way—that is, without abandoning the convenient framework of first-order logic.

Deflationism is first and foremost a thesis about the function of property *talk*; it can be combined with different views about what, if anything, property terms denote. For instance, Schiffer [2003] considers properties as pleonastic entities. However, there's a

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[1] The view is elaborated by Devitt [1980]. See Van Cleve [1994] for an argument as to why properties aren't needed to account for predication, and Parsons [1999] for why there's no truth-maker argument against nominalism.

recent trend to combine deflationism with nominalism about properties [Båve 2015; Hofweber 2016].

In this paper I won't argue for or against deflationism, as opposed to a more substantial account of properties. Instead, I'll critically examine a number of deflationary theories with an eye as to which of them are tenable or coherent *by the deflationist's own light*. I'll be especially interested in what ideological and ontological commitments they incur. I start by considering Hofweber's internalist account of properties, which is attractive in so far as it rests on minimal ideological and ontological assumptions. I argue, however, that internalism faces a serious challenge. In section 3, I introduce a theory of properties that closely resembles Horwich's minimalist theory of truth. This theory is coherent (if minimalism is), and overcomes the limitations of internalism, but its formulation requires the existence of various kinds of abstract objects. Subsequently, I discuss whether deflationists can reduce their commitments by talking of possible predicates (section 4), by adopting a second-order language (section 5), or by adopting an error-theoretic view, as Båve [2015] suggests (section 6). I conclude that deflationism isn't as deflationary as some philosophers might want or expect it to be, but that it's still apt to call the position deflationary (section 7). I hope that both friends and opponents of deflationism will benefit from this investigation.

2. Hofweber's Internalist Theory of Properties

Deflationism about properties, and internalism in particular, is best understood by comparing it to deflationism about truth [Field 1994; Horwich 1998b]. According to the latter, the sole reason why we have the predicate 'true' in our language is that it enables us to express statements that otherwise would be very difficult or impossible to express. For example, suppose that you want to express agreement with a remark of Einstein's but can't quite remember what he said. Then the truth predicate comes in handy, enabling you to say 'What Einstein said is true.' According to deflationists, this statement is equivalent to (although not synonymous with) something like 'If Einstein said that A_1 then A_1, and if Einstein said that A_2 then A_2, and so on', which doesn't contain the concept of truth at all. In a similar vein, the internalist claims that a generalisation such as 'There's a property x such that Plato has x and Aristotle has x' is equivalent (in virtue of (COMP)) to the infinite disjunction '$\bigvee_i (F_i(\text{Plato}) \wedge F_i(\text{Aristotle}))$', where $F_1, F_2, \ldots$ is an enumeration of all unary predicates (that is, formulas with one free variable) of the base language. Recall that, by Quine's thesis, none of these predications involves reference to or apprehension of properties. Thus [Hofweber 2006: 158],

> talk about properties is not talk about some language-independent domain of objects, and maybe even not talk about some domain of objects at all. Rather properties are mere *shadows of predicates*, as the metaphor goes, and quantification over them is a device that increases our expressive power in a certain purely logical or metaphysically thin way: quantification over properties is nothing but a generalization over the instances. According to this view such quantified statements will be truth-conditionally equivalent to infinite disjunctions or conjunctions of the instances.

Although property-theoretic generalisations are equivalent to infinite conjunctions or disjunctions that don't contain any property terms, the generalisation itself does contain some. According to *loose* internalism, property terms denote objects, although these are mind- and language-dependent. By contrast, *strict* internalism denies that

property terms denote, even if they occur in true statements [ibid.: 159]. In later work, Hofweber has argued for strict internalism [2016: sec. 8.4]. The details need not interest us here, as everything that I'll say applies to both versions.

Internalism is subject to a powerful objection—namely, that it gets the truth-conditions of quantified statements wrong because there are properties that cannot be expressed by a predicate of our actual language. Of course, Hofweber is well aware of this objection. I cannot do full justice to his rich discussion, and so I'll concentrate on one particular but important aspect of his theory that I find especially troublesome.

An aspect on which I *won't* focus is Hofweber's use of parameterised predicates—that is, predicates containing additional free variables. This allows him to discharge the objection that there are uncountably many properties but only countably many expressions in our language. However, the use of parameterised predicates plays little role in the objection considered below, as Hofweber acknowledges [ibid.: sec. 9.4.1].

There's an inductive argument for thinking there are inexpressible properties: There are properties, such as that of being a quark or of being a transfinite cardinal number, that we are now—but that our ancestors (presumably) weren't—able to express. Similarly, it's reasonable to expect that future generations will be able to express properties that we can't.

However, that our ancestors didn't possess the predicate 'is a quark' doesn't imply they weren't able to express the property of being a quark: it might be possible, using only the vocabulary of our ancestors, to form some predicate that expresses the property in question. (Whether our ancestors ever used that predicate is irrelevant.) Hofweber offers the following story. Let's assume that [ibid.: 240, my emphasis]

> 'being a quark' is a theoretical predicate of physics. It's at least in part implicitly defined by the physical theory that uses it. Thus we can express it because we have the theory. […] If [this] is correct then the problem of expressing the property of being a quark [in a language that doesn't yet contain the predicate 'is a quark'] reduces to expressing the theory that implicitly defines 'being a quark', plus *making the implicit definition explicit*. Simply put, the property of being a quark is the property of being such that the theory truly describes you. Thus the problem is pushed back to the properties used in the implicit definition of 'being a quark', that is in the formulation of the theory that implicitly defines it.

What does it mean to make 'the implicit definition explicit'? One can find two notions of implicit definition in the literature.

First, there's a logical notion which goes roughly like this. Let T be a theory in some language L and 'F' be a predicate of L. 'F' is implicitly definable in T iff, for all models M_1, M_2 of T, the following holds: if M_1, M_2 agree on the interpretation of every predicate other than 'F', then M_1, M_2 also agree on the interpretation of 'F'. Now, Beth's theorem tells us that if 'F' is implicitly definable in T, then 'F' is explicitly definable in T. Thus, if 'F' is implicitly definable in this sense, Hofweber's account works well.

The second notion is often associated with Hilbert. Roughly, the idea is that we can introduce (in mathematics, at least) a predicate by laying down some axioms governing the predicate. For example, some deflationists think that the Tarski-biconditionals implicitly define the notion of truth. According to this view, truth is implicitly defined in the Hilbertian sense, although it's not implicitly definable in the logical one, due to Tarski's Theorem. Therefore, there's no explicit definition of truth in the logical sense.

Now consider the following scenario. Let 'F' be some primitive predicate of our language, which we assume to be implicitly defined (in Hilbert's sense) by some

theory $Th(F)$. Let C be some community that uses a language, L, exactly like ours, except that L doesn't contain the predicate 'F'. How can members of C express the property of being an F in L? How can they make the implicit definition 'explicit'?

Hofweber's remark that the property can be defined as 'the property of being such that the theory truly describes you' suggests the following: the property of being F can be expressed in L by something like the Ramsey sentence of the theory that implicitly defines 'F'. Thus, take the axioms of $Th(F)$ and replace every occurrence of 'F' by a second-order variable 'V'. Now take the conjunction of the axioms, resulting in some long (but finite) second-order formula $Th(V)$. Then one may claim that the following predicate expresses the property of being an F in L:

$$\exists V(Th(V) \land V(x)) \tag{1}$$

There are two problems with this suggestion. First, it's not clear how to interpret (1) in the present context. It's futile to interpret the second-order quantifier substitutionally, because we're trying to find a predicate expressing the property of being F in L. On the substitutional interpretation, (1) will express that property only if we already assume that there's such a predicate. It might be suggested that we can interpret the second-order quantifier plurally (see Boolos [1984]). However, this doesn't work if the formulation of $Th(F)$ involves the use of modal operators, because pluralities are extensionally individuated (see section 5). (A similar remark applies to sets and classes.)

However, let's set aside this problem and consider the second, more substantial, problem. Assume that 'F' is implicitly defined by an *infinite* set of axioms. Mathematics provides many examples of theories that aren't finitely axiomatisable, such as Peano arithmetic or Zermelo-Fraenkel set theory. In such a scenario, it's not even possible to *form* the conjunction of the axioms of $Th(F)$. (Note that the internalist cannot appeal to an infinite conjunction, because she claims that every property is expressed by a predicate of our actual finitary language.)

To be sure, most infinitely axiomatised theories can be finitely axiomatised by using *additional predicates*—that is, predicates extraneous to the vocabulary of the theory. Due to a result of Kleene's [1952], it's known that every recursively axiomatisable theory without identity, and every recursively axiomatisable theory with identity that has only infinite models, can be finitely axiomatised by using additional predicates. Roughly, given some infinitely axiomatised theory $Th(F)$ satisfying the constraints just mentioned, one introduces a finitely axiomatised fragment of an (arithmetised) syntax theory and a finitely axiomatised truth theory for the language of $Th(F)$, and replaces the infinitely many axioms of $Th(F)$ by the axiom 'All axioms of $Th(F)$ are true.' The theory T*, so obtained, is finitely axiomatised and a conservative extension of the original theory $Th(F)$.

However, there are three problems with invoking Kleene's result in the present context. I present them in order of increasing strength.

(i) The formulation of T* requires that L contain a singular term referring to the predicate 'F', because T* needs to include the axiom that all axioms of $Th(F)$ are true. Assume that the members of the community C populate some possible world different from ours. Then reference to 'F' in L amounts to reference

to a merely possible predicate (from the perspective of the world of *C*.) Now, I don't wish to imply that it's impossible to refer to merely possible predicates, but the appeal to merely possible predicates doesn't sit well with internalism. After all, internalists claim that every property can be expressed by a predicate of the actual language. But now it turns out that some of these predicates involve reference to predicates that aren't available in the actual language. Although this isn't inconsistent, it's not internalist in spirit either.

(ii) The formulation of T* relies on the availability of predicates extraneous to the vocabulary of *Th(F)*. Can we be sure these predicates are available in *L*? Note that Kleene's method requires a truth predicate for the language in which *Th (F)* is formulated. Suppose that the language of *Th(F)* is $L \bigcup \{F\}$. Then the required truth predicate cannot be defined in $L \bigcup \{F\}$ (and consequently not in *L*) because, by Tarski's Theorem, one cannot define a (classical) truth predicate for a language in the very same language.

(iii) There are recursively axiomatisable theories that aren't finitely axiomatisable *even if* additional predicates are used [Craig and Vaught 1958: theorem 4.3]. Indeed, one can show that a theory *T* is finitely axiomatisable by using additional predicates iff there's a second-order formula *A* of the form $\exists V_1 \ldots \exists V_n B$ (where *B* is first-order) such that *T* and *A* have the same models [ibid: 292]. It follows that if a predicate is implicitly defined by a theory that isn't finitely axiomatizable by using additional predicates, then— even if (i) and (ii) are solved—we simply cannot make the implicit definition 'explicit' by a formula of the form (1).

I conclude that Hofweber's strategy of dealing with properties expressed by implicitly defined predicates fails when the predicate is implicitly defined by a theory that isn't finitely axiomatisable. This doesn't entail that the internalist's thesis—that all properties are expressible by predicates of our actual language—is false. It's difficult to refute such a modal claim, because the internalist can simply respond that, although the proposed solution doesn't work, some other strategy will—we just haven't discovered it yet. However, given our strong intuition that there are in fact inexpressible properties, the burden of proof lies surely on the internalist's side. Consequently, for the remainder of the paper I'll assume that there are inexpressible properties.

3. Extending Horwich's Minimalist Theory of Truth to Properties

I've argued that the internalist response to the problem of inexpressible properties fails. Since deflationism about properties is modelled on deflationism about truth, perhaps we can make progress by reconsidering the latter. As is well-known, truth deflationism comes in (at least) two versions—disquotationalism and minimalism.

The axioms of the disquotationalist's formal theory of truth consist of all instances of the T-schema: '*p*' is true if and only if *p*. A generalisation such as 'Every sentence is true or false' is easily seen to be equivalent to the following infinite conjunction: $\Lambda_i(A_i \vee \neg A_i)$, where A_1, A_2, A_3, ... is an enumeration of all sentences of the base language. Now, if we were merely interested in generalising over sentences of the actual language, disquotationalism would be enough. Similarly, if we were interested merely in generalising over predicates of the actual language, internalism would be enough.

Some philosophers find disquotationalism too restrictive. This has prompted Horwich to base his minimalist theory on propositions, rather than sentences, as truth bearers. Now, internalism is essentially the property-theoretic counterpart of disquotationalism. Perhaps one can overcome the limitations of internalism by taking some inspiration from minimalism. It will be instructive to have a closer look at the axioms of Horwich's formal theory, MT.

Minimalism about truth. MT is often presented as if its axioms consisted of all instances of the schema 'The proposition that p is true iff p', where 'p' is a placeholder for a sentence of our (actual) language. However, such a theory wouldn't be very different from the disquotationalist one: it wouldn't provide an axiom for those propositions that aren't (yet) expressible. Indeed, the axioms of MT aren't comprised of sentences at all; they consist in propositions such as this:

$$\langle\langle\text{snow is white}\rangle \text{ is true iff snow is white}\rangle \tag{2}$$

Here, the angle brackets are a notational device that, when surrounding an expression e, yield a singular term denoting the propositional constituent expressed by e. Thus '$\langle\text{snow is white}\rangle$' is a singular term denoting the proposition that snow is white, and '$\langle\text{green}\rangle$' is a singular term denoting the concept *green* [Horwich 1998b: 17–20].

In the present context, one needs of course to remember that, for the minimalist, 'the notion of proposition [and concept does] not depend on the notion of truth' [ibid.: 16], but instead is explained in terms of basic usage, 'where usage is characterized non-semantically, in terms of circumstances of application, contribution to the assertibility conditions and inferential role of containing sentences, etc' [ibid.: 93]. Moreover, Horwich admits quantification over inexpressible propositions, claiming that every proposition is expressible by a sentence in some possible language [ibid.: 19].

Nevertheless, since some propositions aren't expressible by any actual sentence, we cannot actually express all axioms of MT. However, Horwich claims that it's possible to define a function E whose image (that is, the collection of its outputs) comprises all axioms of MT. For example, E maps $\langle\text{snow is white}\rangle$ to (2). Defining E requires care: Horwich's own attempt is confused, as Button [2014] demonstrated. Fortunately, this problem admits a straightforward solution (see Schindler and Schlöder [ms.]).

Horwich characterises MT as follows: an object x is an axiom of MT iff there's a y such that $x = E(y)$, where E is the 'propositional structure' or 'function' $\langle\langle p\rangle \text{ is true} \leftrightarrow p\rangle$ [1998b: 17–20]. This isn't well defined because 'y' is an individual variable, whereas 'p' is a placeholder for a sentence.

To define MT properly, we need to think of propositions as structured. It's convenient to think of propositions as singular propositions—that is, composed of objects and concepts. Horwich accepts the existence of singular propositions [ibid.: 91], although one needs to remember that minimalists characterise propositions and concepts in a non-semantic manner.

E can be defined in terms of some propositional functions. These functions can in turn be defined by definite descriptions. For example, consider the function NOT that maps a proposition to its negation. For propositions that can be expressed by sentences, we can indicate its output using angle brackets: $\text{NOT}(\langle p\rangle) = \langle\neg p\rangle$. Here, '$p$' is a placeholder for an (actual) sentence. Note that the equation is meaningless unless 'p' is replaced by a sentence: The angle brackets denote the propositional constituent expressed by the enclosed expression, and the placeholder 'p' doesn't express any

propositional constituent. Nevertheless, we can define NOT properly like so:

$$\text{NOT}(y) =_{Df} \text{ the proposition that is the negation of } y,$$

where (crucially) 'y' is an individual variable ranging over (inexpressible) propositions.

Similarly, given some predicate, we can define a function that maps an object x to the proposition that x falls under the concept expressed by the predicate. For example,

$$\text{GREEN}(x) =_{Df} \text{ the proposition that } x \text{ is green.}$$

$$\text{TRUE}(x) =_{Df} \text{ the proposition that } x \text{ is true.}$$

To proceed, we need further functions corresponding to the connectives of propositional logic, specifically the binary functions BC and COND, corresponding to the biconditional and material conditional, respectively.

Again, for propositions that can be expressed by sentences, we can use angle brackets to indicate the output of these functions (again, 'p' and 'q' are placeholders for actual sentences):

$$\text{BC}(\langle p \rangle, \langle q \rangle) = \langle p \leftrightarrow q \rangle$$

$$\text{COND}(\langle p \rangle, \langle q \rangle) = \langle p \rightarrow q \rangle$$

But the proper definition of these functions is by definite description, and involves variables ranging over (inexpressible) propositions.

We now have the ingredients with which to characterise the axioms of MT:

v is an axiom of MT iff there's a proposition x such that $v = E(x)$,
where $E(x) = \text{BC}(\text{TRUE}(x), x)$

This is well-defined, and yields a comprehensive theory, because, even for those propositions x that cannot be expressed by a sentence, we can refer to the corresponding axiom, $E(x)$. Where x is expressible by some sentence—for example, $x = \langle \text{snow is white} \rangle$—we can compute $E(x)$ as follows:

$$
\begin{aligned}
E(x) = E(\langle \text{snow is white} \rangle) &= \text{BC}(\text{TRUE}(\langle \text{snow is white} \rangle), \langle \text{snow is white} \rangle) \\
&= \text{BC}(\langle \langle \text{snow is white} \rangle \text{ is true} \rangle, \langle \text{snow is white} \rangle) \\
&= \langle \langle \text{snow is white} \rangle \text{ is true} \leftrightarrow \text{snow is white} \rangle
\end{aligned}
$$

Before we can show that truth-theoretic generalisations are equivalent to infinite conjunctions or disjunctions, we need to define another function:

$$\text{PRED}(x, y) =_{Df} \text{ the proposition that results from applying (the concept) } y \text{ to } x.$$

For example, where $y = \langle \text{green} \rangle$, $\text{PRED}(x, y) = \langle x \text{ is green} \rangle$.[2]

Finally, consider a generalisation such as 'For all propositions v, if v is F, then v is true', where 'F' is a placeholder for a predicate of our language. Working through the above definitions, one sees that the proposition expressed by this generalisation is

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[2] There are two ways to make sense of PRED. Either it could be viewed as a 'concatenation' function, so that, say, $\langle x \text{ is green} \rangle$ is just the 'concatenation' of x and $\langle \text{green} \rangle$. Or one could think of concepts themselves as functions —say, $\langle \text{green} \rangle = \text{GREEN}$—so that PRED simply applies y to x.

equivalent to the following infinite conjunction:

$$\Lambda_{x \in Proposition} \ COND(PRED(x, \langle F \rangle), x) \tag{3}$$

For instance, where $x = \langle 2 + 2 = 4 \rangle$, the value of

$$COND(PRED(x, \langle F \rangle), x)$$

is the proposition '$\langle \langle 2 + 2 = 4 \rangle$ is F $\rightarrow 2 + 2 = 4 \rangle$', which is one of the conjuncts in (3). Thus, the proposition expressed by 'For all propositions v, if v is F, then v is true' is equivalent to an infinite conjunction of propositions, none of which contains the concept of truth.[3]

Remark. In order to appreciate the theoretical status of MT, one needs to appreciate Horwich's distinction between *the minimalist conception* and *the minimalist theory* (which corresponds to my earlier distinction between 'theory' and 'formal theory'). The latter coincides with MT and specifies the fundamental 'logical' principles of truth that account for its utility, whereas the former consists of the 'surrounding remarks on behalf of its adequacy'—for example, that there's no more to 'true' than its generalising function [Horwich 1998b: 6–7]. While lawlike generalisations such as 'A conjunction is true iff both conjuncts are true' are to be explained on the basis of MT, philosophical questions such as 'Is truth susceptible to conceptual analysis?' or 'Is truth a substantial property?' are answered by the minimalist conception.

Minimalism about properties. I won't defend minimalism about truth here, but *if* one finds it attractive then one can easily formulate a corresponding theory of properties.

First, one could identify properties with concepts, as [Horwich 1998a: 4] actually proposes. Accordingly, we paraphrase 'x has y' as 'x falls under y' and define thus:

$$FALLS(x, y) =_{Df} \text{ the proposition that } x \text{ falls under (the concept) } y.$$

Now we can provide a formal theory of properties, MTP, as follows:

v is an axiom of MTP iff there's an object x and a concept y such that $v = E^{**}(x, y)$, where $E^{**}(x, y) = BC(FALLS(x, y), PRED(x, y))$.

This is well-defined, and yields a comprehensive theory, because, even for those concepts y that cannot (yet) be expressed by a predicate, we can refer to the corresponding axiom, $E^{**}(x, y)$. Where y is expressible—say, $y = \langle wise \rangle$—we can compute $E^{**}(x, y)$ explicitly:

$$E^{**}(x, y) = \langle x \text{ falls under the concept } \langle wise \rangle \leftrightarrow x \text{ is wise} \rangle.$$

As before, generalisations turn out to be equivalent to infinite conjunctions or disjunctions. For example, the proposition expressed by 'For all concepts v, if Plato falls

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[3] The reader might wonder whether it is possible to introduce a function ALL such that, when applied to the matrix in (3), yields a finite proposition equivalent to (3). If it is, couldn't one—on the propositional level, at least—quantify into 'sentence position' without using TRUE or $\langle true \rangle$, thereby rendering the latter redundant? The answer is 'no', or so I've argued elsewhere [Schindler and Schlöder ms].

under v then Aristotle falls under v' is equivalent to this:

$$\bigwedge_{x \in Concept} \text{COND}(\text{PRED}(\text{Plato}, x), \text{PRED}(\text{Aristotle}, x))$$

Where $x = \langle$wise$\rangle$, the value of

$$\text{COND}(\text{PRED}(\text{Plato}, x), \text{PRED}(\text{Aristotle}, x))$$

is the proposition

$$\langle\text{Plato is wise} \rightarrow \text{Aristotle is wise}\rangle \tag{4}$$

which doesn't contain reference to concepts. (Note that (4), being a singular proposition, is *composed* of objects and concepts, but this doesn't imply that it's *about* concepts, just as the sentence 'Plato is wise' is composed of the expressions 'Plato' and 'is wise' without being about them. The distinction between use and mention applies to sentences as well as propositions.)

Again, MTP is merely a formal theory specifying the fundamental 'logical' principles of properties. Minimalism is the result of combining MTP with a deflationary conception, as outlined in section 1. As in the case of truth, answers to genuine philosophical questions should be expected to follow (mainly) from the deflationist conception. The reason why we spent so much time in developing MTP was to show that it's *so much as possible* to provide formal principles that cohere with the tenets of the deflationary conception—for example, that property-theoretic generalisations are equivalent to certain infinite conjunctions and disjunctions, even if our quantifiers range over *inexpressible* properties.

4. Possible Predicates

The minimalist's solution to the problem of inexpressible properties requires the existence of various kinds of abstract objects. Is it possible to reduce these assumptions? Recall that Horwich assumes every proposition to be expressed by a sentence in some possible language. Similarly, property deflationists often assume that every property is expressible by a predicate in some possible language (for example, Schiffer [2003: 71]). Since there is, thus, a one-to-many relationship between properties and possible predicates, one might wonder whether deflationists can simply replace their property talk by talk of possible predicates. I'll suggest that this is possible if talk of possible predicates is construed *de re*, but untenable if it's construed *de dicto*.

It's notoriously difficult to say what a possible predicate is, and I won't attempt to provide a precise criterion of identity. However, I submit the following suggestion on the deflationist's behalf: a possible predicate is a predicate that isn't actually *used*, rather than an object that isn't actual.

We can flesh out this suggestion by considering Lewis's distinction between *languages* and *language*. On his account, languages are abstract objects, 'semantic systems discussed in complete abstraction from human affairs' [Lewis 1985: 383]. On the other hand, language is a 'rational, convention-governed human social activity' [ibid.]. A given language is *used* by a given population 'by virtue of the conventions of language prevailing in that population', so that 'under suitably different conventions, a different language would be used' [ibid.].

Given this distinction, one could define a possible predicate as a predicate of some language such that, possibly, that language is used by our population. Since possible predicates in this sense are abstract objects and therefore exist in the actual world (because abstract objects exist in all possible worlds, if at all), quantification over possible predicates doesn't involve quantification over *merely* possible objects.

To be sure, Lewis considers languages as functions from expressions to meanings, where meanings are explained in terms of possible worlds. Instead, deflationists will probably explain meanings in terms of usage (or something along those lines). Of course, deflationists need to fill in the relevant details, but let's assume for the moment that they can meet this challenge.

If possible predicates exist, one can mention and objectually quantify over them, but they cannot occur in predicate position in sentences of the actual language (if they did, they would be actual, rather than possible, predicates). In particular, they cannot occur so in an infinite conjunction of sentences of the actual language. Therefore, the appeal to possible predicates is of little help to internalists.

If deflationists accept possible predicates, they might attempt to replace their property talk by talk of possible predicates, as follows. Roughly, they could paraphrase '*x* has (the property) *y*' as '*x* satisfies (the possible predicate) *y*'; and they could paraphrase 'There's a property *x* such that *A*' as 'There's a possible predicate *x* such that *A**', where *A** is the (recursively defined) paraphrase of *A*. (Naturally, paraphrases commute with connectives, so that 'For all properties *x*, *A*' is paraphrased as 'For all possible predicates *x*, *A**.') Here, the notion of satisfaction needs to be understood in a suitable deflationary manner.[4]

Crucially, this strategy assumes the *actual existence* of possible predicates. Deflationists cannot avoid this assumption by paraphrasing 'There's a property *x* such that *A*' as 'Possibly, there's a predicate *x* such that *A**.' To see why, consider the sentence 'For all properties *x*, if it's required in a great general that they have *x*, then Napoleon has *x*.' According to the last proposal, this is paraphrased as 'Necessarily, for all predicates *x*, if it's required in a great general that they satisfy *x*, then Napoleon satisfies *x*.' But, surely, this gets the truth-conditions wrong: it's *not necessary* that Napoleon satisfies all predicates that a great general is required to satisfy.

The problem with the last proposal is that the operator 'possibly' involves possible worlds where Napoleon has properties (satisfies predicates) *other* than in the actual world. One might therefore suggest using a different operator in the paraphrase—say, 'possibly#', where a sentence of the form 'Possibly#, *A*' is true iff *A* is true in some possible world *w* in which

(i) our population uses an extension of the actual language, but
(ii) for every predicate *x*, an object satisfies *x* in *w* iff it satisfies *x* in *α* (the actual world).

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[4] As one reviewer observed, providing a suitable deflationary theory of satisfaction is non-trivial: due to the problems of inexpressibility, it cannot be given schematically. I believe that this problem can be solved by characterising the axioms in analogy to MTP, though by using functions that operate on *expressions* (including possible predicates) rather than propositional constituents. However, I won't pursue this any further here, since my main goal is merely to show that, if one wants to replace property talk by possible predicates talk, the latter can't be construed *de dicto*.

In other words, this operator only involves worlds in which every object has exactly the same properties as in the actual one, but more properties are expressible in that world.

However, I submit that there aren't any such worlds. If our population uses L in α but $L^\star$ in w, there must be differences in behaviour that account for this fact: our population will conform to different conventions, have different expressions available, will be able to express different contents, will be able to entertain different beliefs, etc.

Thus, it seems that, if property talk is to be replaced by talk of possible predicates, the actual existence of possible predicates has to be assumed. Whether this marks a genuine advance over minimalism is therefore debatable.

5. Predicate Quantification

According to deflationism, we engage in property talk to generalise predicate places in our language. But if that's all there is to our property talk, couldn't we introduce predicate quantifiers instead and thereby avoid commitment to properties?

Initially, one might think that this can be done without incurring any substantial theoretical costs. For instance, it's well known that monadic second-order quantification can be interpreted plurally [Boolos 1984]. According to the received view, pluralities aren't objects, and therefore second-order quantification comes without additional ontological commitments, if so interpreted.

However, plural quantification cannot play the same role as quantification over properties does. We frequently generalise on the position of a predicate *even if the predicate occurs in an intensional context*. For example, from '$\forall x\ Fx \wedge \neg$ Necessarily $\forall x\ Fx$', we may infer '$\exists y(\text{Property}(y) \wedge \forall x\ x$ has $y \wedge \neg$ Necessarily $\forall x\ x$ has y).' It's precisely for this reason that properties cannot be individuated extensionally. Pluralities, however, satisfy a principle of extensionality: they have the same members in every world in which they exist. Writing $u \prec xx$ for 'u is among the xxs', the following holds: $u \prec xx \rightarrow$ Necessarily $u \prec xx$. If u is among the xxs, this is necessarily so; removing u from the xxs just results in a different plurality [Linnebo 2017]. But objects have some of their properties contingently, and so the following *doesn't* hold: u has $x \rightarrow$ Necessarily u has x. Thus, if the language is augmented with modal operators, second-order quantification cannot be interpreted plurally.

Nor can deflationists adopt a substitutional interpretation, according to which a formula of the form $\exists VA(V)$ is true iff there's a predicate 'F' such that $A(F/V)$. Substitutional quantification suffers from the same problem as internalism does: there are properties that cannot be expressed by some predicate of the actual language.

An intriguing alternative is to conceive of second-order quantification as a *sui generis* form of quantification [Williamson 2013; Jones 2018; Trueman 2021]. According to this view, second-order quantification cannot be accurately paraphrased in first-order terms. Its semantics can only be adequately explained in a higher-order metalanguage itself. Naturally, this view raises several questions. Is this form of quantification intelligible? Does it induce a non-effective consequence relation? If so, should we be worried about this? Are second-order commitments ontological or ideological, or do they outgrow this distinction? Are they less substantial than the deflationist's first-order commitments? How can we talk about the entire hierarchy of higher-order languages to which this view seems to give rise, if quantification across types isn't permitted? Engaging with these questions is beyond the scope of this paper. My impression is that

replacing property talk with second-order quantification *is* a viable option, but deflationists should carefully weigh the costs and benefits of doing so.

6. Deflationism and the Existence of Abstract Objects

Let's set to one side the higher-order approach, and return to our first-order framework. I've argued that internalism cannot account for inexpressible properties, that solving this problem requires quantification over certain kinds of abstract objects, and that engaging in talk about possible predicates doesn't help us to avoid such commitment. Assuming that's correct, what attitude should deflationists take toward their quantifier commitments? There are (at least) three options.

First, deflationists could regard properties as 'lightweight' entities (a claim that usually goes with a deflationary conception of existence). For example, properties could be taken to be pleonastic entities (in Schiffer's [2003] sense) or thin objects (in Linnebo's [2012] sense).

Second, deflationists could reject Quine's criterion of ontological commitment. For instance, Azzouni [2004] takes mathematical statements to be literally true, but denies that the existential quantifier bears any ontological weight. Instead, one needs to add a genuine existence predicate that's given in terms of some metaphysical criterion for what exists—say, as being independent of language and thought. On the deflationist account, properties would presumably fail to satisfy such a criterion, because they're merely 'shadows of predicates' and therefore depend on language and thought.

Alternatively, one might submit that the interesting question is not whether properties exist but instead whether properties exist at the *fundamental* level. Indeed, the metaphor that properties are shadows of predicates could sensibly be cashed out as a thesis of ontological or metaphysical priority, according to which facts about property existence and possession are *grounded* in facts primitive predication. For instance, Horwich [1998a: 25] suggests that the fact that *a* has the property of being *F* is 'constituted by' the fact that *a* is *F*. This would bring deflationism into the vicinity of some recent versions of Ostrich nominalism—namely, Grounding nominalism—that are based on such grounding claims [Imaguire 2018; Dixon 2018; Schulte 2019].[5]

Third, deflationists might adopt some fictionalist view of property talk. Since property talk merely serves a quasi-logical role, it would appear that it can serve that role, no matter whether properties exist or not. Hence, there's little advantage in assuming that properties really exist. This is essentially Båve's [2015] view, who proposes an error-theoretic view, according to which our property talk is useful but false.

Each of the three accounts has costs and benefits. Although it would require a separate paper to engage in a detailed comparison, I shall briefly indicate why I find the error-theoretic view less attractive.

Let's start with a less substantial worry. Although error theorists consider property-theoretic sentences as false, they nevertheless have to admit that some of these are correct. A well-known proposal for the case of mathematics was submitted by Balaguer [2009], who suggests that a statement of mathematics is correct iff it would have been true if there had actually existed mathematical objects. Båve rejects this proposal because it relies on the controversial assumption that there

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[5] Thanks to a reviewer for bringing this literature to my attention.

could be abstract objects that don't actually exist or that there are non-vacuously true counterpossibles. To avoid this assumption, Båve provides the following correctness conditions [2015: 49]:

> A sentence S containing 'property' is correct just in case (i) S can be inferred from true, nominalistic sentences using valid inference rules plus [(COMP)] and (ii) every nominalistic sentence which can be inferred by valid inferences plus [(COMP)] is true.

Unfortunately, this proposal seems to re-instantiate the problem that Balaguer's criterion was supposed to fix. Although Båve's criterion works for a number of cases, it doesn't qualify, as being correct, certain sentences that do strike us as correct. For example, 'There are inexpressible properties' seems correct but isn't derivable from (COMP) by using existential generalisation, *precisely* because there are no instances of (COMP) for inexpressible properties. Thus, we still have to await appropriate correctness conditions.

My second worry is more substantial. According to deflationists, saying that *a* has the property of being *F* essentially amounts to saying that *a* falls under the concept ⟨*F*⟩ or that *a* satisfies the predicate '*F*'. And statements of the latter form shouldn't be treated in an error-theoretic manner. Consider truth ascriptions. We cannot maintain that all truth ascriptions are false, although some of them are correct. This would simply undermine the very distinction between statements that are true and statements that are correct but false. But the statements '"Plato is wise" is true' and 'Plato satisfies "is wise"' seem to be sitting in the same boat. Indeed, in Tarski's theory of truth, the former is defined in terms of the latter. This doesn't imply that one cannot develop a fictionalist account of properties, but it needs a rather different form.[6]

7. Conclusion

I've argued that, within the framework of first-order languages, the problem of inexpressible properties forces the deflationists to quantify over abstract objects (not to mention that the formulation of the deflationist's axioms becomes much more complex), leaving essentially three options: declaring such objects to be 'lightweight' entities; rejecting Quine's criterion of ontological commitment; or taking a fictionalist attitude towards truth and satisfaction talk. Suppose that the deflationist sets aside the (slightly more radical) second and third strategies, and adopts the first one. Is it still apt to call such theories deflationary?

Obviously, such theories aren't as deflationary as some deflationists (like Hofweber or Båve) might want them to be, or as some opponents of deflationism might expect them to be: they aren't nominalistic. I don't think that deflationism is wedded to nominalism, though, and I think that it's still apt to call such theories 'deflationary'.

According to deflationists, properties are merely shadows of predicates or, to borrow a phrase from van Inwagen [2004], the kind of thing 'that can be said of something'. As such, many of the traditional metaphysical questions that substantial accounts of properties typically address will either receive a trivial answer or make no sense at all.

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[6] See Armour-Garb and Woodbridge [2015] for a pretence theory of truth that's supposed to avoid the last objection.

Are there logical, disjunctive, uninstantiated, etc. properties? Yes, there are, because properties answer a need to generalise predicate places, and our language abounds with logical, disjunctive, etc. predicates. What makes it that *a* and *b* share the property of being *F*? Well, that both of them are *F*. Can properties be perceived? Are they wholly present wherever their instances are located? Are objects bundles of properties? If properties are lightweight entities, or identified with concepts or possible predicates, these questions will be answered in the negative.[7] And so on.

Thus, deflationary theories deflate many traditional questions about properties. Of course, they also generate difficult problems of their own. For instance, the formulation of MTP presupposes the existence of *structured* propositions, which some philosophers find problematic due to the Russell-Myhill paradox. Moreover, the theories discussed in sections 3 and 4 rely, directly or indirectly, on the controversial notion of a possible predicate. Note, though, that many of the problems confronting deflationary property theories aren't *created* by the latter, but rather are *inherited* from the deflationary theories of truth on which they are modelled. I'm inclined to conclude that *if* truth deflationism is a tenable position, then so is deflationism about properties.[8]

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ORCID

Thomas Schindler http://orcid.org/0000-0002-2978-5409

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[7] Strictly speaking, the answers to the last three questions follow from the deflationary conception of properties only in conjunction with a suitable conception of lightweight entities, concepts, or possible predicates. Note, though, that it's the deflationary conception itself (specifically, the claim that property talk merely serves a generalising function) that allows deflationists to identify properties with concepts (possible predicates) in the first place.

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