UNITY AND APPLICATION

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Abstract. Propositions represent the entities from which they are formed. This fact has puzzled philosophers and some have put forward radical proposals in order to explain it. This paper develops a primitivist account of the representational properties of propositions that centers on the operation of *application*. As we will see, this theory wins out over its competitors on grounds of strength, systematicity and unifying power.

Propositions are (or can be) *about* individuals and *predicate* properties of them. The proposition that two is prime is about two, for instance, and predicates being prime of it. Many philosophers think we need a *reductive* theory of propositions in order to account for the representational features of propositions.[1] This paper challenges this claim. I'll develop a primitivist account of the representational features of propositions and argue that it is no less elegant, simple, or perspicuous than any of the reductive accounts currently on offer.

The theory I develop takes as its starting place some notions from algebraic theories of propositions.[2] The main posit of the theory is a primitive operation, an operation I will call *application*, that maps properties and individuals to propositions.[3] I will argue that the sense in which propositions are formed from individuals, properties and relations, should be explained in terms of this primitive operation; moreover, a theory with this primitive can be developed in which the representational properties of propositions are explained in an analogous way to the representational features of a whole host of other abstract objects

[1]See Hanks (2015), King (2009, 2013, 2014) and Speaks (2014a). For some recent exceptions see Merricks (2015) and Pickel (2019).

[2]See Bealer (1979, 1982), Zalta (1983, 1988), and Menzel (1993). As we will see the theory I develop differs in several important ways from these theories. In particular I will not suppose any strong decomposition principles for propositions, in a sense to be explained. I will also be advocating for a theory that makes use of types, whereas those in the algebraic tradition are partly motivated by a desire to avoid typed theories.

[3]The algebraic theory, as developed by Bealer, makes use of a similar operation that he called *predication*.

that philosophical theories quantify over. In outline, representational phenomena will be ultimately explained in terms of the inputs and outputs of the application operation, and in terms of our relationship to these inputs and outputs.

Like philosophers working in the algebraic tradition of theorizing about propositions, it seems to me that the right level of generality at which a theory of propositions should be developed is within a theory of propositions, properties and relations more broadly. There are a couple of reasons for this. One is that many of the key structural features of propositions are also structural features of properties and relations: just as we can conjoin, negate and believe propositions, we can conjoin, negate and ascribe properties and relations. It would be surprising if our accounts of these notions in our theory of propositions made no contact with our account in the theory of properties. A more important reason: many of the key structural features of propositions concern how propositions are related to properties and relations. As I will argue, propositions are, by their very nature, *applications* of relations to relata. Thus propositions are what you get by combining a relation of a given type with some relata of the appropriate types, where the mode of combination in question is a primitive kind of combination, distinct from fusion or set formation.

Section 1 introduces the main primitive of the theory (application). Section 2 outlines postulates on application. Section 3 further situates the theory in the literature by showing how many recent reductive theories can be construed as providing reductive accounts of application. In section 4, I argue that the disagreement between the sort of primitivist outlined in section 2 and the reductive theories introduced in section 3, is a disagreement about what the appropriate primitives of a theory of propositions should be. I'll then provide some considerations in favor of my chosen primitives.

1. The Minimal Theory of Application

This section and the next develop a primitivist account of propositions with explanatory ambition. At the core of the theory is the notion of *application*. Application is an operation that takes a property of an individual and an individual and delivers a proposition. Below

I'll provide some ways in which we can get a grip on this notion without providing anything like a definition of it. Instead, I'll provide a collection of postulates on application. These postulates play the dual role of connecting application to more familiar notions and providing axioms in terms of which the representational features of propositions can be explained.

1.1. **Application.** A stack of plates stands to the individual plates in the stack in the same way that a pile of bricks stands to the individual bricks in the pile. Arguably, the stack of plates is not merely the plates that are stacked. The stack of plates is one thing whereas the plates are many things. The analogous point holds for the pile of bricks. What is this relation that the stack of plates bears to the plates and the pile of bricks bears to the bricks? The standard answer is that the stack of plates is the *fusion* of the plates and the pile of bricks is the *fusion* of the bricks. On this view, there is operation—fusion—such that applying it to the bricks gives you the pile, and applying it to the plates gives you the stack.[4]

A similar situation arises in the theory of propositions. The proposition that two is prime stands to two and being prime as the proposition that three is odd stands to three and being odd. That two is prime is not merely the plurality consisting of two and being prime: the proposition is one thing whereas two and being prime are two things. The analogous point holds for the proposition that three is odd. What is this relation that the proposition that two is prime bears to two and being prime and the proposition that three is odd bears to three and being odd? While there is no standard answer, it is natural to develop an answer by analogy with the above case. In particular, it is natural to postulate some operation such that applying it to two and the property of being prime is the proposition that two is prime and applying it to three and the property of being odd is the proposition that three is odd. On this way of thinking, the proposition that two is prime is identical to $App(f, x)$ where

[4]And so the *relation* at issue is the unique relation r such that for any x and xx, for x to bear r to xx is for x to be identical to the fusion of xx.

App is an operation—which I'll call *application*—f is the property of being prime and x is the number two.[5]

Generalizing from the above example, the operation of application should be understood so that every instance of the following schema comes out true.

> For any individual x and property f, if f is the property of being F, then $App(f, x)$ is the proposition that x is F.

An instance of this schema is a sentence that results from replacing the capital 'F' by a predicate (making appropriate adjustments for grammaticality). The schema is not a definition or analysis of *App*. But it provides us with nontrivial information about its "extension." For example, we can infer from it that if f is the property of being blue, then the proposition that x is blue is identical to $App(f, x)$ for any individual x (assuming standard disquotational reasoning).

We can further tighten our grip on application by analogizing it to *function application.* A function $f : A \to B$ can be applied to an element a of A to get an element $f(a)$ of B. For instance the successor function $s : \mathbb{N} \to \mathbb{N}$ can be applied to any number $n \in \mathbb{N}$ to get its successor $s(n) = n+1 \in \mathbb{N}$. Hence the successor function is a function of type *natural number to natural number* that when applied to a natural number delivers its successor.[6] Similarly, given a property of a certain type, say a property of individuals, and an individual, we can apply that property to the individual to get a proposition. So the property of being blue can be thought of as being a property of type *individual to proposition* that is such that, when applied to an individual x delivers the proposition that x is blue.[7]

[5]As will become more clear in the next section, the theory is inspired by models of typed lambda calculus that make use of a typed function, often called application, that allow us to combine entities from certain types to get entities of other types.

[6]It is important to mindful of typing considerations here. There is no operation whose domain includes *all* functions since there is no set of all functions. Let A and B be sets and $A \to B$ the type of functions whose domain is A and whose co- domain is B. Then there is an operation of functiona application of type $((A \to B) \times A) \to B$ that takes each $f \in A \to B$ and $a \in A$ and maps it to $f(a) \in B$. Talk of application should be understood as talk of a family of operations indexed to some type hierarchy. Similar typing considerations apply in the case of properties. In the next section I will more explicitly introduce typing considerations.

[7]The root of the idea that properties can be applied to individuals to get propositions comes from Frege (1891), Frege (1892a).

The analogy is only partial. Property application is highly constrained in a way that function application is not. There is a function $f : \mathbb{N} \to \mathbb{N}$ that maps every number to 113. More generally, for any functional relation $R \subseteq \mathbb{N} \times \mathbb{N}$ there is a function whose graph is that relation. The analogous behavior plausibly fails for properties. Plausibly, there is no property whose application to any individual is the proposition that snow is white. Suppose we had in our language some predicate F such that ⌜the property of being F⌝ denoted this property. Then ⌜$\forall x App(f,x) =$ that x is F⌝ would be true given the schema by which application was introduced. But then ⌜$\forall x$ that snow is white $=$ that x is F⌝ would be true since $App(f,x)$ was stipulated to be the proposition that snow is white. But the sentence ⌜that I am F⌝ does not express the same proposition as 'that snow is white' for any F since the former is about me whereas the latter is not. It is not the case that for any functional relation r between individuals and propositions, there is a property f such that x bears r to $App(f,x)$.[8]

I think this gives us some grip on the notion of application. Some will demand an account of *what it is* for a proposition to be an application of a property to an individual. Application is not plausibly fusion. Let $f+x$ denote the fusion of f and x. The proposal that $App(f,x) = f + x$ entails that the proposition that I am walking is the fusion of me and the property of walking. But this proposal has some counterintuitive consequences. For example, since parthood is transitive, it entails that all of my parts are parts of the proposition that I am walking. The issues become worse when we consider the applications of relations to relata. Consider an n-ary relation R and its application $App(R, x_1, \ldots, x_n)$ to n relata. The obvious generalization of the fusion theory is to define $App(R, x_1, \ldots, x_n)$ as $R + x_1 + \cdots + x_n$. But

[8]This is of course a controversial point but seems to me well supported by the above example. Some authors take properties to be functions from possible worlds to extensions. Propositions are functions from worlds to truth values and monadic properties functions from worlds to sets of individuals. Suppose that there is a constant domain D of individuals. Then to any property $f : W \to \mathcal{P}(D)$ there is a corresponding propositional function $\bar{f} : D \to (W \to 2)$ defined so that $\bar{f}(d)(w) = 1$ iff $d \in f(w)$. Conversely given a propositional function $g : D \to (W \to 2)$ there is a corresponding property $\bar{g} : W \to \mathcal{P}(D)$ defined so that $\bar{g}(w) = \{d \in D \mid g(d)(w) = 1\}$ (using a horizontal bar for the correspondence in both directions is, I think, a harmless ambiguity). It is not hard to verify that $\bar{\bar{f}} = f$ and $\bar{\bar{g}} = g$. So the identification of properties with intensions $f : W \to \mathcal{P}(W)$ is equivalent to the identification of properties with propositional functions $g : D \to (W \to 2)$. So if the applicative behavior of properties is constrained in the way that I have argued, there are intensions that do not correspond to any properties.

this theory conflates the proposition that x_1 loves x_2 (the application of loving to x_1 and x_2 in that order) and the proposition that x_2 loves x_1(the application of loving to x_2 and x_1 in that order).

There is a response to these objections that solves both at once. Instead of defining $App(R, x_1, \ldots, x_n)$ to be the fusion $R + x_1 + \cdots + x_n$ of a relation and relata, we could define it to be the fusion $R + \langle x_1, \ldots, x_n \rangle$ of a relation and a sequence of relata. When R is unary the result is that the proposition that I am walking is the fusion of the property of walking and the one-termed sequence whose sole term is me. Since this sequence is plausibly a simple (or if one likes set theoretic reductions, its only parts are other sets), this avoids the transitivity argument and the "forgetting order" problem. But I do not see any particular reason to believe it unless one is already committed to using the fusion operation in one's theory of the combinatorial features of propositions. This will become even more apparent when developing the theory of application; in many cases the fusion theory would only add unecessary complication to the theory.[9]

As I see things, there is no more basic operation in terms of which application can be defined. It is not function application: since it is a manner of combining things, its behavior is highly constrained in a way that function application is not. And it is not fusion: there doesn't seem to be any notion of parthood standing to application as our ordinary notion of part stands to fusion. I suggest we take application as a primitive manner of combining elements and see where it gets us.

This starting place for my theory is reminiscent of Mark Johnston (2006) account of the unity of the proposition. He states:

> . . . we can identify the proposition that a is F as the predication of F-ness of a. We may think of that as a complex item built up from F-ness and a, by way of the relation of being predicated of. (684)

[9]For instance, as we will see, the theory I prefer is ultimately a typed theory. This doesn't immediately preclude a theory that makes of fusion, but it does multiply the theoretical possibilities in developing such a theory. For further problems with mereological accounts see Keller (2013) and Merricks (2015, ch. 4).

There are a couple of things to note here though. First, application is an *operation* rather than a relation. This will turn out to be important to the overall theory. The claim is *not* that that there is some relation, application, that holds between the x and the property of being F whenever the proposition that x is F exists. The claim is that the proposition is the result of applying *App* to x and F. Failure to distinguish between operations and relations I think has resulted in some confusion when addressing the problem of the unity of the proposition. The confusion is present in Johnston's description of his own view since 'the predication of' syntactically combines with a singular term denoting a property to form a term. It thus denotes on operation. This conflicts with the second part of his quotation in which he characterizes it as a relation.

A second important thing to note: while our starting places may be similar, this doesn't mean that our ending places are. As of yet I have merely explained my primitives, I have not yet stated what the theory governing them is. And it is the theory governing this primitive which is distinctive. The theory demonstrates the strength and perspicuity of the primitive. I will return to this point in section 3.1.

1.2. **Application and Algebraic Theories of Propositions.** Philosophers in the algebraic tradition of theorizing about propositions have often made use of operations similar to application. As Bealer (1998, 10) says, it is a truism that "The proposition that Fx is the predication of the property F of x." This "predication" operation is essentially my "application" operation, though we'll see that it plays rather different roles in our respective theories. In this section, I want to emphasize several ways in which the approach I develop differs from that in the algebraic tradition. Before doing this, it is important to point out one thing: the main point of this paper will be to explain various representational notions in terms of application. This is not something that algebraic theorists often do in their theories. So there is a certain sense in which the main parts of our respective theories are not in competition with one another. For instance one could attempt to develop a theory very much like the one I develop *within*, e.g., Bealer's approach if one preferred. But I think the framework I sketch here provides a better foundation for the theory that I go on to develop.

Algebraic theories of propositions often locate propositions as the 0-ary case of n-ary relations more broadly. The basic idea behind these theories, the reason why they are called *algebraic*, is that propositions, properties and relations fit into a certain kind of *algebraic structure*.[10] The algebraic structure consists of the disjoint union of a family of *domains*, $D, R_0, R_1, \ldots$ where D is the family of individuals, R_0 the family of propositions, R_1 the family of properties and R_n the family of n-ary relations for $n \geq 2$.[11] In addition, this disjoint union is equipped with a collection of (partial) operations. There is an operation $\neg$ (negation), for instance, that maps each proposition $p \in R_0$ to its *negation* $\neg p \in R_0$. Other Boolean operations are taken as primitive operations on propositions. There is also included an application operation, *App*, that takes an element $f \in R_1$ and elements x in any domain, and produces an element $App(f, x)$ in R_0.[12]

On this approach, application is treated on a par with notions of conjunction, negation and other logical operations. Moreover application is treated as a *global* notion: we can apply a given property f not just to individuals, but also to properties and relations more generally. My preferred approach diverges from this approach in two ways. First, on the approach I prefer, application is treated as an operation, whereas the Boolean operations are treated as (higher-order) properties and relations. Thus the sole primitive *operation* of the theory is application. Second, the theory I prefer is typed, whereas authors working in the algebraic tradition tend to prefer untyped theories (like that sketched above). Here is a rough sketch of how this would go. The collection of types includes a basic type e and for any finite sequence of types $\sigma_1, \ldots, \sigma_n$, a derived type $\langle \sigma_1, \ldots, \sigma_n \rangle$. We then assign entities types as follows. Individuals are entities of type e. Anything that combines with things of

[10]These structures are not the familiar sorts of algebras one might study in a course in universal algebra. But they are closely related to several notions one might come across in more advanced study, such as partial algebras, clones and algebraic theories (in the categorical sense).
[11]It is natural then to identify R_0 and R_1 with 0-ary and 1-ary relations respectively. I'm not sure if much hangs on this though.
[12]As mentioned above this operation is called *pred* in Bealer's theory.

type $\sigma_1, \ldots, \sigma_n$, in that order, is of type $\langle \sigma_1, \ldots, \sigma_n \rangle$. Thus for instance propositions are of type $\langle\rangle$, properties of individuals are of type $\langle e \rangle$, properties of propositions are of type $\langle\langle\rangle\rangle$, and so on.

What do we mean by entities that *combine* with other entities in a given order? In my view this is where the notion of application comes in, and must be treated as a primitive *operation* (as opposed to a relation of some type). In particular we suppose that for any type $\langle \sigma_1, \ldots, \sigma_n \rangle$, there is an operation $App_{\langle \sigma_1, \ldots, \sigma_n \rangle}$ such that $App_{\langle \sigma_1, \ldots, \sigma_n \rangle}(R, x_1, \ldots, x_n)$ is a proposition where R is a relation of type $\langle \tau_1, \ldots, \tau_n \rangle$ and x_i is an entity of type τ_i. Thus the application operation that we introduced in the first section of this paper is the application operation of type $\langle e \rangle$: it "combines" properties and individuals to get propositions.

In this framework, conjunction and negation can be treated as themselves certain kinds of properties and relations between propositions. Let $\wedge$ be the conjunction relation. Let p be the proposition that snow is white and q the proposition that grass is green. Then $App_{\langle\langle\rangle,\langle\rangle\rangle}(\wedge, p, q)$ is the proposition that grass is green and snow is white. Quantifiers can similarly be treated as higher-order properties. Where f is the property of being prime, and $\exists$ is the higher-order property of "being instantiated", a property of type $\langle\langle e \rangle\rangle$, we can think of $App_{\langle\langle e \rangle\rangle}(\exists, f)$ as the proposition that something is prime.

The framework is quite obviously inspired by models of typed lambda calculus. The move made in this paper is to treat application as "representationally significant", in the sense of taking it to correspond to a real live operation out in the world; a theory of this operation, I will argue, can help us make progress with certain problems concerning the representational status of propositions (as well as other abstract objects). The view described provides something like an answer to the question: What is a proposition? The answer is: a propositions is an application of a relation to some relata. More precisely, a proposition is, for some types $\tau_1, \ldots, \tau_n$ and some relata $A_1, \ldots, A_n$ of types $\tau_1, \ldots, \tau_n$ respectively, an application of a relation R of type $\langle \tau_1, \ldots, \tau_n \rangle$ to $A_1, \ldots, A_n$:

$$App(R, A_1, \ldots, A_n).$$[13]

Fully comparing a typed view of this kind with the untyped view of Bealer is beyond the scope of this paper. The typed theory will mostly rest in the background in what follows since I will be primarily concerned with the operation $App_{\langle e \rangle}$ that takes properties of individuals and individuals to propositions. The reason for restricting my focus is that it is here that propositions make "contact" with the concrete world, as it were. There may be interesting things to say about higher-type entities, but for the purposes of this paper I will mostly ignore them.[14]

One might wonder whether this account is really a *primitivist* account of propositions: after all, haven't we just defined propositions as the output of application? We have, but in explaining what application was, I made ineliminable use of the word 'proposition'. Thus the theory does not provide anything like a reductive analysis of propositions. At least in one sense of 'primitivist', I take the theory to be a primitivist view. Nothing of great importance seems to rest on this fact though.

One might also object to describing this view as one that takes *the* operation of application as primitive: really the theory has posited a typed collection of application operations and so has posited many new primitive operations. One might even object on these grounds that the view should be rejected on the grounds of being "ideologically complex."

I have two things to say in response. First, a typed collection of operations could easily be traded in for one single partially defined operation. The types then merely let us keep track of where the operation is defined. Second, just as ontological complexity is more a measure of how varied in kind items in one's ontology are, as opposed to mere number of things, so

[13] If this claim is to be included as part of the official theory, it would be desirable to treat it as short hand for a infinitary disjunction instead of a claim that explicitly quantifies over types. In general the actual *principles* of the theory I put forward will not make use of quantification over types. The type theory merely acts as a background framework in which the theory is developed.

[14] There are no doubt quite a few questions raised by this typed approach. I can't hope to settle the debate between typed and untyped theories here.

too ideological complexity should be taken as a measure of how heterogeneous one's ideology is, as opposed to merely the numbers of items included in one's ideology. Since I'm inclined to regard all of the typed application operations as being of the same in kind, I'm inclined to think that the theory is not very ideologically complex at all.

Contra some algebraic theories, I will not assume any strong decomposition principles for propositions like the following:

STRUCTURE:: If $App(f,x) = App(g,y)$ then $f = g$ and $x = y$.

It seems to me that allowing for a bit more freedom in the behavior of the operation *App* can lead to some genuine explanatory advances; in the final section of this paper I will sketch one such case in particular. There is also a worry about inconsistency; given moderate resources, STRUCTURE seems to be inconsistent. For instance, fix a proposition q and suppose that f is the property of being a proposition p such that for some property of propositions h, $p = App_{\langle\rangle}(h,q)$ and p does not instantiate h. Consider the proposition $App(f,q)$. If $App(f,q)$ does not instantiate f, then for every property h such that $App(f,q) = App(h,q)$, q instantiates h. Thus, since $App(f,q) = App(f,q)$, q instantiates f. So if q doesn't intantiate f, it does instantiate f. Classically, this entails that q instantiates f. So for some h, $App(f,q) = App(h,q)$ and q does not instantiate h. But if *Structure were* true, any such h would have to be f, which we've already shown q does not have; so *Structure* is false.[15]

One might worry that given the falsity of *Structure* there is no sense in which *App* can be regarded as a way of *combining* things. But I don't see why this should be so. Ordinary fusion is idempotent: the fusion of x and x is x. Thus even ordinary fusion wouldn't satisfy something as strict as STRUCTURE. Since the theory I'll develop explicitly denies that *App* is fusion, we are free to posit even more radical failures of structure: for instance, we might allow for certain "freely absorbable" or "non-structure creating" properties: properties for which $App(f,-)$ is the identity map on objects, for instance. If there are explanatory gains for allowing such properties, we should. One possible example of such freely absorbable properties and relations is the relation corresponding to the operation of application. For

[15]This is of course, one version of the Russell-Myhill argument. See Russell (1903), Appendix B.

instance, we might suppose that there is a relation a of type $\langle\langle e\rangle, e\rangle$, the application *relation*, such that applying it to a property f and individual x is the same as applying f to x:

$$App_{\langle\langle e\rangle,e\rangle}(a, f, x) = App_{\langle e\rangle}(f, x)$$

These non-structure creating relations have some grounds for being called *logical*. Under that criterion, the application relation is itself a logical relation. We might then view the theory I will put forward as one that attempts to account for the representational features using only broadly logical resources. I will return to this point below. I now want to begin to develop a theory of the representational features of propositions within this framework.

2. Application and Representation

In what follows I will write $App(f, x)$ for $App_{\langle e\rangle}(f, x)$; when higher sorts of application become relevant I will make the type in question explicit. The goal of this section is to outline some of the ways in which the representational features of propositions can be derived from their applicative nature. I will do so by outline some postulates on application.

2.1. **Aboutness and Predication.**

Some of the key representational features of propositions is that propositions are about individuals and predicate properties of them. We can capture this fact with the following principles:

Rigidity:: Necessarily for any f and x and any proposition p if $p = App(f, x)$ then necessarily if f and x exist $p = App(f, x)$.

Aboutness:: For a proposition p to be about x is for there to be some f such that $p = App(f, x)$.

Predication:: For a proposition p to predicate f of an individual is for there to be some x such that $p = App(f, x)$.

The principle *Rigidity* tells us that '$App(f, x)$' is to be read as a *rigid designator*. *Aboutness* and *Predication* are proposed as *analyses* of a propositions' representational features in terms of application. Together these principles entail some plausible facts concerning the representational features of propositions. For instance, the proposition that two is prime is necessarily about two. The theory provides the following explanation. The proposition that two is prime is the application of being prime to two (by the schema by which application was introduced). So by *Rigidity* it is necessarily the application of being prime to two. And so by existential generalization, necessarily there is some property f such that it is the application of f to the number two. And finally by *Aboutness* it follows that necessarily it is about two. Similarly, since it is the application of being prime to two, it is, for some individual x, the application of being prime to x; hence by *Predication* it predicates the property of being prime (necessarily so by *Rigidity*).

It might be worth briefly mentioning how propositions expressed using definite descriptions fit into this theory. On my view the proposition that the present kind of France is bald does not predicate baldness. One might worry that this means the view has lost contact with any pretheoretic notion of 'predication' since, surely on a pretheoretic sense, this proposition *does* predicate baldness.

In response I want to say two things. First, I'm not sure I have a grip on what it would mean for a proposition to predicate a property but not predicate that property of anything. To predicate, on my view, is to predicate *of*. If that's right the pretheoretic data may be a bit murkier than the objection makes out. And second, I'm not really all that concerned with capturing *all* of the pretheoretic data: I reject the idea that one's theory either aligns with the pretheoretic data or else it is revisionary. An abductive approach looks for the joint carving notions in the vicinity of the pretheoretic data without being held hostage to it. In the present case, I think there are good theoretical reasons for adopting my approach to predication rather than one that takes the proposition that king of France is bald to predicate baldness. The basic reasons are just those that motivated Russell (1904) to treat propositions like the proposition that the present King of France is bald as being qualitative.[16] The proposition is not used to pick something out, and predicate something of it. Rather the

[16] Well not purely qualitative since there is reference to France. But in general the idea of treating definite descriptions quantificationally is well motivated, but of course open to question.

proposition is ultimately quantificational. One could follow Russell in taking it to express a more complicated proposition built up from universal and existential quantifiers. Or one could take 'the' to express a primitive higher-order relation, ι, and identify the proposition that the present king of France is bald as being identical to $App_{\langle\langle e\rangle,\langle e\rangle\rangle}(\iota, f, g)$ for some properties f and g. On these sorts of views it is probably more accurate to say that the proposition that the present king of France is bald predicates* the relation expressed by 'the' of the properties expressed by 'present king of France' and 'is bald', where "predicates*" is some higher-order analogue of first order predication. Expressing this idea on English is admittedly a bit difficult.

The principles proposed here bear some resemblance to the *zipping* theory briefly considered by Merricks (2015, 154):

> [W]henever there is a state of affairs of an object's being related by *Zipping* to a property, then that state of affairs essentially represents that object has having that property. Nothing explains why *Zipping* works this way. That is just how *Zipping* works.

But the theories are actually importantly different: they have a completely different *form*. Like predication in Johnston's theory, *Zipping* is supposed to be a *relation*. The theory, schematically, says the following:

> The proposition that x is F is about x and predicates F iff x bears Zipping to the property of being F

Notice though that the proposition that x is F is about x and predicates F whenever both x and the property of being F exist. Thus for all we have said about *Zipping*, it could simply be the relation of co-existence. The *Zipping* theory doesn't offer us *any* account of what it is for a proposition to be about something or for it to predicate a property of something. The theory of application on the other hand, in particular the principles *Aboutness* and *Predication*, offers explicit *analyses* or *metaphysical definitions* of these relations. It does offer an account of what it is for a proposition to be about something. The analyses appeal to a new primitive. But that is not to bestow any mysterious powers on the primitive. The theory does not say that being an application of f to x *causes* one to be about x. The theory is that being an application of some property to x is just what it is to be about x. In this way the theory of application seems to me superior to the *Zipping* theory, even if superficially they look similar.[17]

One sort of objection the theory faces concerns propositions seemingly about non-existent entities. For instance, someone might want to hold the view that the proposition that Sherlock Holmes is a detective is about Sherlock Holmes, even though Sherlock Holmes does not exist. It's worth pointing out though that this judgment is compatible with the theory states thus far, though it does not entail it. By the schema by which application was introduced, we have

$$\text{That Sherlock Holmes is a detective} = \textit{App}(\text{Being a detective, Sherlock})$$

It is tempting to then argue that if *App*(Being a detective, Sherlock) exists, Sherlock exists as well. But it is open to one to deny this. For example those who deny Sherlock's existence while affirming that Sherlock is a detective presumably will also affirm that the partner of Sherlock is Watson. But the locution 'the partner of' denotes on operation. We are thus going to need some sort of a theory of operations that permits them to be defined on "nonexistent arguments." Thus the theory does not *entail* existentialism, the thesis that, schematically, N exists whenever the proposition that N is F exists, though it is perhaps more natural in that setting.[18]

2.2. **Predication, truth and instantiation.** Predication bears an intimate relation to instantiation. A proposition that predicates f of x is necessarily true iff x *instantiates* f. What accounts for this fact? One reason that this question has proved difficult to answer is

[17]For a defense of the *Zipping* theory see Wang (2016). The arguments she gives in favor of the view seem to me to further support the theory developed here as well. Merricks (2016) further elaborates that the *Zipping* theory, as he conceives of it, is a "neo-Russellian" view. The theory I am developing isn't "neo-Russellian" however as I don't take propositions to be uniquely decomposable into objects and properties. The fact that they are not uniquely decomposable in this way provides some distinctive explanatory benefits outlined in section 5.

[18]For more on existentialism see **?**. For a defense see Williamson (2002).

that authors have tended to look for explanations of a proposition's truth in terms of which objects instantiate which properties. But once we have the operation of application in hand it becomes natural to reverse the order of explanation:

INSTANTIATION:: For x to instantiate f is for $App(f, x)$ to be true.

The principle *Instantiation* is proposed as an *analysis* of instantiation in terms of truth. This reverses the traditional order of explanation. To many it will look like a hopelessly confused attempt to analyze the *noumenon* in terms of the *phenomenon*, or less grandiosely, to say how things are in terms of how they are represented to be. But the issues here are delicate. The proposed analysis is consistent with how things are being prior to how they are represented to be. Contrast the following two statements:

(1) The proposition that two is prime is true because two is prime.

(2) The proposition that two is prime is true because two has the property of being prime.

Ordinarily we might not distinguish these statements. But when doing metaphysics it is important that we recognize the coherence of the position that accepts (1) while rejecting (2). On the sort of view I am imagining, not only is the truth of propositions explained by how things are, but so too is the instantiation of properties. That is, in addition to accepting (1) and rejecting (2), this kind of theorist accepts (3):

(3) Two has the property of being prime because two is prime.

This puts propositions and properties on equal footing by treating both as explanatory posterior to how things are. Propositions are true or false whereas properties are true or false *of* things.[19] And both truth and truth *of* are explained by some prior notion of how things are.

I prefer a different view. Instead of taking both properties and propositions to be explanatorily posterior to a prior notion of how things are, I think we should take both properties and relations to be constitutive of how things are: propositions correspond to distinctions in

[19]This view, or something like it, has been defended by Van Inwagen (2004) and Dixon (2018) among others.

reality, not to distinctions in how reality is represented. Similarly, properties correspond to distinctions among individuals in reality, not to how individuals in reality are represented.[20] Less metaphorically, what it is for the proposition that two is prime to be true is for two to be prime, and what it is for two to have the property of being prime is for it to be prime.[21] Several authors have recently argued that identifications like 'for it to be the case that… is for it to be the case that …' obey analogous principles to ordinary identity predicates. In particular they obey the obvious analogues of transitivity and symmetry.[22] If that it is right then it immediately follows that for two to instantiate being prime is for the proposition that two is prime to be true. And this sort of argument generalizes. Schematically:

P1 For the proposition that x is F to be true is for x to be F.

P2 For x to instantiate being F is for x to be F.

C Hence, for x to instantiate being F is for the proposition that x is F to be true.

This provides confirmation to the principle of *Instantiation* since every instance of C can be inferred from it together with the schema by which the notion of application was introduced.

2.3. **Application and cognition.** One thing a theory of propositions is supposed to provide is an account of why, for instance, thinking that two is prime entails thinking *about* two, and why thinking that two is prime entails *ascribing* the property of being prime to two. The following two principles strike me as quite natural:

ATTITUDE:: For x to think about y is for x to entertain $App(f, y)$ for some f.

[20]Some authors prefer views that posit both propositions and another sort of entity they call "states of affairs". States of affairs are supposed to correspond to distinction in reality whereas propositions correspond to distinctions in how states of affairs are represented. I have a hard time seeing how such a view differs substantively from Fregeanism, which I reject. In any case the idea that there are *two* different kinds of entities, propositions and states affairs, is hardly a datum. Perhaps if one were already committed to a sort of truth maker view it might seem natural to propose this sort of two tiered picture. But even this seems overall complicated, a distinction between fundamental and non-fundamental propositions could do a lot of the work done by a theory that posits both propositions and states of affairs. Instead of looking for the state of affairs that makes the proposition true, we look for a specification of the truth conditions of the proposition that makes use of only fundamental propositions, for instance.

[21]See Rayo (2013) for a further defense of these sorts of identifications.

[22]See Dorr (2016) and Rayo (2013).

Ascription:: For x to ascribe f to something is for x to believe $App(f, x)$ for some x.[23]

To think about something is to entertain a proposition about that thing and to ascribe a property is to believe a proposition that predicates that property. These principles unify various norms on belief and ascription. Truth is a norm of belief just as instantantiation is a norm of ascription. One should believe p only if p is true and one should ascribe f only if f is instantiated. Given the proposed theory the latter norm follows from the former. For any x, one should believe $App(f, x)$ only if $App(f, x)$ is true. So by *Instantiation* one should believe $App(f, x)$ only if x instantiates f. And then by the principle *Ascription*, it follows that one should ascribe f only if f is instantiated.[24]

It's worth pausing here for a moment to say something about my treatment of propositional attitudes. Hanks (2015) has recently objected to primitivist views of propositions on the grounds that primitivist about propositions inevitably leads to primitivist about propositional attitudes:

> [I]f propositions are simple and unstructured, we cannot take this act of endorsement [judgment] to consist in a mental operation performed on the constituents of a proposition. Furthermore...we cannot say that to endorse a proposition is to accept it as true...If accept p as true is to judge that p is true then we've analyzed one judgment, judging that p, in terms of another, judging that p is true. This leads to regress...it looks as though [the primitivist] is going to have to view judgment as a primitive attitude one can bear to a proposition. (Hanks , 2015, 45)

I find this argument unconvincing. On the one hand, the idea that simplicity of relata has something to do with the simplicity of a relation seems to me misguided. For instance,

[23]Some authors hold that there is a neutral sense of 'ascribe' according to which one can ascribe blueness to an object without thereby believing the object to be blue. This sense of ascription can plausibly be captured by substituting 'entertain' for 'believe' in the principle.

[24]The falsity of *Structure* means that we cannot always take sincere denial of a given sentence as definitive evidence that the individual does not believe the proposition expressed by that sentence. Like views on which propositions are sets of possible worlds, we need to sharply distinguish between accepting a sentence and believing the propositions expressed by that sentence.

suppose that one sees an electron. Then one bears the seeing relation to a simple item that lacks any internal structure. Does this mean that *seeing* must be simple, and unalyzable? Of course not. Seeing something simple is compatible with a wide variety of analyses of seeing in general. Thus the idea that we *could* argue for primitivism about the attitudes from primivitism about their relata is a bit suspect on its face.

Now Hanks does propose a couple of analyses and points out that they fail; one on general grounds and the other because of its putative requirement of the structured theory of propositions. But he fails to show that many of our *leading* accounts of propositional attitudes conflict with primitivism: functionalism, interpretationism, causal theories, optimal conditions accounts etc.[25]

As far as I can see, *all* of these accounts are consistent with primitivism. Indeed since many of these accounts have been developed under the assumption the propositions are sets of possible worlds, some of them are actually more naturally combined with views on which propositions are sets of possible worlds, since they generally do not make clear in virtue of what attitudes could differ in fine grained content. Since the view that propositions are sets of possible worlds does not differ structurally from the view on which propositions are primitive and form a complete, atomic Boolean algebra, it is hard to see how there are going to be any in principle problems with primitivism when it comes to the propositional attitudes.[26]

2.4. **Laws and action.** The theory offered thus far shows how to define various representational properties and relations from truth and application. One way to broaden the explanatory ambitions of the theory is to show that aboutness and predication as they arise

[25]For instance, the functionalism found in Field (1978) and the interpretationism found in Lewis (1974) can both be developed in a primitivist setting by simply taking possible worlds to be propositions of a certain kind and then leaving everything else in place (similar points hold for any theory of belief developed in a possible worlds setting). The sort of optimal conditions account of Dretske (1988) or Millikan (1984) don't obviously require any specific account of propositions: for one to believe that that p is for one to have some internal state that covaries in the right way with p (where the relevant kind of variation in p is its truth value).

[26]I should note that I am not advocating here for the view that propositions are coarse grained in this way. Indeed some part of the theory I have been developing presuppose a slightly more fine grained view.

in other domains can be accounted for in the theory of propositions. Suppose, for instance, that we regard the thesis that φ, the fact that φ, the law that φ and the act that φ as the proposition that φ under different guises. If that's correct we can immediately account for any aboutness or predication these entities exhibit in terms of the theory of application. I will look at two examples.

Suppose that the law that φ is simply the proposition that φ. This follows from the plausible theory that propositions are the referents of 'that'-clauses. Some people have maintained that laws of nature are *purely general*. Laws of nature do not mention any particular individuals. We can formulate this thesis more precisely in the present framework as follows: for any law l, there is no individual x and property f such that $l = App(f, x)$ (or perhaps some generalization of this idea). This provides a language independent account of the generality that laws exhibit.

Another example comes from the theory of action. Suppose that you and I both pick up a pen. There is a sense in which we have done the same thing and a sense in which we have not done the same thing. What are these senses? Well suppose that actions are propositions—things we make true. I made the following proposition true: that I pick up the pen. And you made the following proposition true: that you pick up the pen. The sense in which we've both done the same thing is that we've both made propositions true that predicate the property of picking up the pen. Then sense in which we've done different things is that that the proposition you've made true is about you whereas the proposition that I've made true is about me. More generally, say that p is the same action as q iff p is an action and $p = q$. Say that p is the same *type* of action as q iff p and q are both actions, and for any property f, p predicates f iff q predicates f. Then in the above example we performed different actions, but nevertheless performed actions of the same *type*.

2.5. **The aboutness of properties.** A more radical extension of the theory attempts to explain the distinction between *qualitative* properties and *haecceitistic* properties in terms of propositional aboutness. Consider the property of being identical to John. We can recognize *some* sense in which this property is *about* John. At the very least it is more closely related to John than the property of being identical to the person wearing the blue shirt, even provided that John is wearing the blue shirt. Even if one were disinclined to accept that being identical to John is about John, the property nevertheless seems to stand to John in the same way that the proposition that John is identical John stands to John. Now consider the proposition that x is identical to John, for an arbitrary individual x. If we are not too fine-grained about the individuation of propositions, we can take this proposition to be an application of the following complex property to John: the property of being a y such that x is identical to y. If that is correct, then we can say that property of being identical to John is about John because its application to an arbitrary individual is about John. More generally, I propose the following theory of property aboutness:

Property Aboutness:: For a property f to be about x is for $App(f, y)$ to be about x, for all y.

With a notion of property aboutness in hand, we can say that a property is *qualitative* if it is not about any particular thing and haecceitistic otherwise. So for instance, being blue is qualitative because, plausibly, there is no x such that for any individual y, the proposition that y is blue is about x. Being identical to John is not qualitative because the proposition that y is identical to John is about John, for any individual y.

Call the theory just outlined the *minimal theory of application*. The minimal theory of application provides analyses of many of the representational properties of propositions and agents in terms of application and so demonstrates some of the potential explanatory power a primitivist view that makes us of application can have. The theory is of course incomplete in many ways. A full theory would generalize application to n-ary relations and show that it can be consistently combined with one's desired theory of propositional fineness of grain. I won't do that here. Instead, in the next section, I will situate the minimal theory within the literature to get a better sense of how it compares with more recent attempts to account for the representational dimension of propositions. In the final section I will evaluate this theory against these other theories and argue that it is to be preferred on broadly abductive grounds.

3. Application and the Metaphysics of Propositions

In the previous section I outlined a theory of application. The theory does not take the form of an analysis—it does not tell us what it is for a proposition to be an application of a property to an individual—it does provide axioms that account for the representational properties of propositions. In this section I want to first relate the theory developed to the problem of the unity of the proposition and then situate it within the literature.

3.1. **The problem of the unity of the proposition.** As is often acknowledged, there is no single clear problem that is "the problem of the unity of the proposition," but rather a family of related problems. I want to first suggest that at least *one* of the problems that has gone under this heading can be formulated in terms of application. The basic idea is that once we acknowledge that propositions are applications of properties to individuals, we certainly want some account of this operation that explains the distinctive traits of its outputs. In particular we want an account of application that explains the representational features of propositions.

We might conceive of this problem by analogy with the *general composition problem*.[27] Pace composition as identity theorist, I am not merely my parts. I am one thing whereas my parts are many. But I am the result of applying some operation to my parts: I am the *fusion of* my parts. The operation of fusion takes some things—my parts—and delivers one thing, me. The general composition problem is essentially that of providing an illuminating account of fusion. Hence the problem of the unity of the proposition, as I am conceiving of it, stands to application as the general composition problem stands to fusion.

We can be a bit more precise about the analogy. Peter van Inwagen calls the general composition question the question "What is it for some xx to compose y?" The general composition problem is then simply the problem of coming up with an answer to the general

[27]See Van Inwagen (1990, ch. 4).

composition question. Call the *general application question* the question "What is it for p to be the application of f to x?" The general application problem is then the problem of coming up with an answer to the general application question. The theory I proposed is that application is *primitive* and so no answer to this question can be given that invokes more basic notions. But just like we can answer the question "What is it to be a set?" by providing some postulates on being a set, so too we can answer the general application question, I would argue, by providing postulates on application.

Recall that the *special composition question*, as opposed to the general one, is the question, "What are the necessary and sufficient conditions for some things to compose something?"[28] To answer this question, one must find some relation r such that such that xx compose something iff r holds of xx (or rather find some informative description of r). Just as we can draw an analogy between the general composition question and the general application question, we can draw an analogy between the special composition question and the special application question. Say that a property f *applies* to an individual x iff $App(f, x)$ exists. Then we can ask for the necessary and sufficient conditions for a property f to apply to an object x. More precisely, the *special application question* is the question "What are the necessary and sufficient conditions for a property f to apply to an individual x?" The *special application problem* is that of finding some relation r such that f applies to x iff r holds of f and x (or rather finding some informative description of r).

Oftentimes when the problem of the unity is posed, it is posed as if it were the problem of finding an answer to the special application question.[29] For instance Peter Hanks says in describing the problem:

[28] See Van Inwagen (1990, ch. 2).

[29] Most authors do not use the terminology of application but rather talk about the constituents of a proposition. I prefer the terminology of application since it is consistent with, but does not immediately suggest, that if p is the application of f to x then p has f and x has *parts*. The sense in which applications are *formed* from what they are about and predicate could just be spelled out in the following way: $App(f, x)$ is formed from x and f in the sense that necessarily if $p = App(f, x)$ then necessarily $p = App(f, x)$; and so $App(f, x)$ being some way entails that f and x are some way. For instance, if $App(f, x)$ is true, then x has the property of being an x such that $App(f, x)$ is true.

> Since the proposition [that Clinton is eloquent] is one thing, and the constituents [Clinton and eloquence] are two things, there must be something about the proposition that joins [Clinton] and [eloquence] together into a single thing. The constituents must bear a *relation* [my emphasis] to one another that unifies them into a proposition. (Hanks , 2015, 43)

He then goes on to introduce the problem of unity as that of finding this relation that "unifies" f and x into a proposition. Similarly, Jeff King says

> Presumably the constituents of a proposition are related somehow in that proposition, with the relation imposing structure on them. I'll put this by saying the relation *holds the constituents together*. Answering [the unity question] requires saying which relations hold the constituents of propositions together. (King , 2009, 259)

Although neither King nor Hanks makes explicit use of application in formulating these questions, the questions formulated seem closer to the special application question as opposed to the general application question. The metaphor of "holding together" suggests that we are looking for a relation that holds of the the constituents of a proposition iff they form that proposition. And this is just the special application problem.

Despite these appearances, I will argue that the *theories* that Hanks and King both give, and many others for that matter, do *not* provide answers to the special application question. Rather, they provide answers to the general application question (suggesting that despite appearances, this is the question they mean to be asking in the first place). And this is as it should be, since, I will also argue, the special application question is the *wrong* question to ask.[30]

3.2. **Why the special application question is the wrong question.** To see that the special application question is the wrong question to ask, it is helpful to reflect for a minute

[30]King's theory, while primarily an answer to the general application question, inadvertently provides an answer to the special application question, at least on one interpretation of it. I will argue that this fact actually counts against his theory (again, on at least one interpretation of it).

on what Peter van Inwagen says concerning the relation between the special and general composition questions:

> What singular terms might be appropriate substituends for 'y' in the 'the xs compose y', given that *Contact* [xx compose something iff xx are in contact] is the correct answer to the Special Composition Question? There is no way of answering this question, for neither *Contact* nor any other answer to the Special Composition Question tells us anything about the identity, or even the qualitative properties, of any composite object. Moreover, no answer to the Special Question Composition will tell us what composition *is*. (Van Inwagen , 1990, 38)

Van Inwagen is not putting forward any kind of controversial theory of the relation between the two questions in this passage but is making a straightforward logical point. To say that xx compose something iff they are in contact is consistent with any hypothesis concerning the kind of thing they compose. For instance, it is consistent to say that these two blocks compose something iff they are in contact, and what they compose is the entirety of the earth; it is consistent to say that two blocks compose something iff they are in contact and what they compose is the number π; it is consistent to say that two blocks compose something iff they are in contact and what they compose is the block on the left. The answer one gives to the special composition question on its own tells you *absolutely nothing* about the entity they compose. All it tells you is *when* (in a modally robust sense of 'when') some things compose.[31]

[31] This claim needs to be qualified to deal with counterexamples that involve "cheating". For instance, suppose one put forward the following answer to the special composition question: two things compose something iff they are in contact and for any things, if they compose something, then they compose something that is a material object that is located roughly where they are located. In other words, if one builds into the description of the relation certain generalizations about the qualitative properties of what composite objects are like and how they relate to their parts, then of course one's answer to the special composition question will entail facts about the qualitative roles about the thing that, say, two blocks compose is like. I take it as self-evident that these kind of cheat answers are not worth taking seriously. One might put the point this way: if we demand that any answer to the special composition (or special application) questions must invoke non-gerrymandered relations, then no answer to the special application question will constrain one's account of composite objects (or propositions).

This point applies equally to the special application question. Suppose for definiteness that one thought that the application of being prime to two existed iff there is a state of affairs having the property of being prime as its universal component and the number two as its singular component. In brief: the application of being prime to two exists iff two and being prime are in contact in a state of affairs. This theory is logically consistent with any hypothesis whatsoever concerning what kind of thing the application is. For instance, it is consistent to say that the application of being prime to two exists iff two and being prime are in contact in some state of affairs and the application is identical to me; it is consistent to say that the application exists iff they are in contact in a state of affairs and the application is identical to the property of being prime. The answer one gives to the special application question on its own tells you absolutely nothing about what the application is. All it provides is the modal profile of the application.

This point can be easily overlooked but it is significant. Recall that one thing we want out of a response to the problem of unity is an account of the distinctive representational behavior of propositions. But since any answer to the special application question is logically consistent with any hypothesis whatsoever concerning the qualitative properties of propositions, any answer to the special application question is logically consistent with any hypothesis concerning the representational properties of propositions. Those who have been attempting to account for the representational properties of propositions merely by providing an account of what unifies the constituents of a proposition have been attempting the impossible. Thus, insofar as we want an account of certain qualitative properties of propositions, we *should not* be attempting to answer the special application question.

Now one might respond that really what we want is an answer to *both* the special application question and the general application question. A general theory of propositions will tell us what it is for p to be the application of f to x and also tell us when the application of f to x exists. This more general theory will hope to account for the representational properties in terms of its analysis of application rather than the modal profile it assigns to applications.

But I think even this more nuanced approach embodies a mistake. I'll make this argument again by drawing another analogy to the case of composition.

Suppose that one started out accepting *universalism* about composition, according to which for any xs necessarily the xs compose something. What would one say to the special composition question? I'm inclined to think one should *dismiss* the question as having no answer at all. There is no relation that makes it the case that some things compose because all some things need to do to compose is exist. This is in fact the way Peter van Inwagen *introduces* universalism:

> It is impossible for one to bring it about, [according to the universalist], that something is such that the xs compose it, because, necessarily. . . , something is such that the xs compose it. . . One can't bring it about that the xs compose something because they already do; they do so "automatically." (Van Inwagen , 1990, 72)

But we are in a similar situation with respect to propositions. Most authors grant that it is metaphysically necessary that whenever the property of being blue exists and the cup exists the proposition that the cup is blue exists. In my preferred terminology, necessarily whenever f is a property and x is an individual, $App(f, x)$ exists. There is nothing that one can do to bring it about that the application of a property to an object exists; it exists "automatically." Hence just as the universalist has no need to answer the special composition question, *no* theorist has any need to answer the special application question, since *all* theorists are universalists about application.

The search for some relation that "unifies" being prime and two into the proposition that two is prime is thus confused twice over. Since they form a proposition automatically, there is no such relation to be found. Moreover, since what we really want to know is why the proposition has certain qualitative features, the search for such a relation turns out to be completely irrelevant to what we really care about.

3.3. **Reductive answers to the general application question.** This leaves us with something of a puzzle. Both King and Hanks and many others have formulated problems that on their face appear to be the special application question. They then go on to provide what they say are answers to this question and *also* claim of these answers that they account for the representational features of propositions. What is going on? When one looks more closely at proposed answers to the special application question, one quickly sees that they are not, after all, answers to this question, but are rather answers to the general application question. It is common in the literature for someone to highlight some relation r and *call* it the unifying relation. But it is never the case that according to their theories the application of f to x exists iff f bears r to x; rather, the proposed theory says that there is *some other* operation O such that the application of f to x is identical to $O(r, f, x)$. That is, the theories invariably are just *analyses* of application in terms of a further relation and a further operation. I'll give three examples of this.

Consider first Jeff Speaks' recent theory of propositions.[32] According to Speaks, the proposition that two is prime is the property of being such that two instantiates being prime. The application of f to x can exist without x instantiating f. Instantiation does not unify the constituents of a proposition. Rather the theory is that there is some three-place operation, *the property of being such that x bears r to y*, whose application to two, instantiation, and being prime, delivers the proposition that two is prime. And this is just an answer to the general application question:

SPEAKS:: $App(f, x) =$ the property of being such that x instantiates f.[33]

The views of Peter Hanks and Scott Soames' view can be similarly formulated.[34] According to Soames (roughly) the proposition that two is prime is the act of ascribing primehood to two. Since the proposition that two is prime can exist even if no one actually ascribes being prime to two, ascription is not the relation that unifies the constituents of a proposition.

[32] Speaks (2014a).

[33] Or if one prefers, $p = App(f, x)$ iff $p =$ the property of being such that x instantiates f.

[34] There are important differences between these views. The differences between them will not matter for present purposes. Soames (2014).

Rather there is some operation, *the act of ascribing f to x*, whose application to being prime and two, delivers the proposition that two is prime. And this is just an answer to the general application question:

SOAMES:: $App(f, x) =$ the act of ascribing f to x.

Finally consider the position put forward by King (2014). According to King, the proposition that two is prime is the fact that two bears a certain relation r to being prime. This relation r is quite complex and is defined by quantifying over linguistic items and their meanings; the details needn't concern us here. So on King's view, the proposition that two is prime is the result of applying some three place operation to r, being prime, and two. It is the operation denoted by 'the fact that x bears y to z'. So King provides an answer to the general application question:

KING:: $App(f, x) =$ the fact that x bears r to f.[35]

Appearances to the contrary, many recent theories of propositions are thus better construed as answers to the general application question as opposed to the special application question. And once these theories are presented this way, it becomes clear that they are in competition with my own primitivist account. For instance, each of Speaks, Soames and King takes as primitive one or more notions that the minimal theory of application provides analyses of. Speaks makes use of instantiation; Soames makes use ascriptions and actions; and King makes use of facts. In this respect, the minimal theory of application recommends itself on the basis of its unifying power. The phenomena of aboutness and predication as they arise in the theory of properties, beliefs, actions and facts, on this view, are unified by

[35]Since the x bears r to f iff it is a fact that x bears r to f, King's view also entails an answer to the special composition question. This is actually a bit of a cost since it appear incompatible with the universalist answer to the special application question.

the notion of application.[36] This strikes me as a point in its favor. In the next section I will further develop this argument for my theory.

4. A Defense of Primitivism

According to the theory I have proposed, the manner in which individuals and properties are formed into propositions is primitive. Application is not defined or explained in more basic terms. Moreover, propositions themselves are taken as primitive. No hypothesis concerning the kind of thing that propositions are is put forward by the theory.

Many authors have considered and dismissed primitivist views of propositions. Hanks (2015, 43) asserts that the primitivist "does not advance our understanding" and that we should first "look for other ways of explaining how we represent the world in making judgments." In a similar spirit Soames (2015, 16) claims that we lack any understanding of "what such primitively representational entities are" and "why *our* cognizing them in the required way results in *our* representing things as bearing properties." King (2009, 260) confesses that he "just can't see how propositions or anything else could represent the world as being a certain way *by their very natures and independently of minds and languages*." Primitivist views are widely held to be inferior to reductive ones.

How should we decide which theory of propositions to accept? Clearly any theory incompatible with our evidence is ruled out. But primitivism is not plausibly incompatible with our evidence. The evidence we have concerning propositions is that they play various roles: they are the objects of belief, the bearers of truth values and modal properties and the relata of entailment and explanation. More importantly, they are about things and predicate properties of things. Not only is primitivism compatible with all these facts, but as shown

[36]I do not mean to suggest that each of their views lack the resources for unification. In particular we could combine Speaks' view with every principle of the minimal theory of application apart from the principle *Instantiation* (or at least one couldn't offer this as a reductive account of instantiation). But in place of *Instantiation* Speaks could offer a reduction of truth to the properties of being a propositions and the relation of instantiation: for a property to be true is for it to be a proposition that is instantiated. He might be able to provide a full reduction of truth to instantiation if the view was combined with the following analysis of being a proposition: for a property to be a proposition is for the following to be the case: for something to instantiate it just is for everything to instantiate it. That principle may have some hard edge cases (e.g. being blue only if blue), but I don't see that as decisive.

in section I, a primitivist view cast in terms of application provides simple and unifying explanations of the fact that propositions play some of these roles.

Perhaps we should disbelieve primitivism regardless of our evidence: that primitivism is false is a *default reasonable belief*.[37] Speaks (forthcoming, 4) endorses something like this thought:

> If one or more reductive theories succeeds in identifying entities suitable to play the theoretical roles of propositions, then we should reject the primitivism view.

While Speaks offers no independent argument for this principle, it is, as he notes, widely held. It might be supported on the grounds that views according to which the world is a relatively homogeneous place are preferable to those according to which the world is a relatively heterogeneous place. A reductive theory of propositions will attempt to reduce propositions to an entity of some sort we all already believe in. Take Speaks' view according to which propositions are monadic properties. I believe that there are monadic properties. But I don't believe propositions are monadic properties. So according to my view, there are (at least) two disjoint categories of things, propositions and monadic properties. Supposing it is correct that there are enough distinctions among monadic properties to capture the distinctions we want to make using propositions, my theory appears overly complicated. Since my ontology already contains entities that can do the needed work, there is no reason to posit some extra ontological category of things to do that work.

There are two problems with this argument. First, while the minimal theory of application is a primitivist theory of propositions, it is a reductive theory of other things: aboutness, predication, instantiation, facts, and acts. My opponents on the other hand do not provide a reductive account of these things but rather take them as primitive. Speaks takes instantiation as primitive; Soames takes ascriptions and actions as primitive; and King takes facts as primitive. The demand for a more homogeneous views does not obviously decide between our theories.

[37] This phrase is due to Field (2000).

The second problem with this argument is that it fetishizes homogeneous theories to the detriment of other theoretical virtues. If a theory obtains homogeneity by *ad hoc* means that involve arbitrary choices, there is no obvious reason to prefer it over an elegant and unified theory that happens to have a more heterogeneous ontology. Theories of propositions should be evaluated on the basis of a broad range of virtues such as strength, elegance, simplicity and unifying power. As far as I can see, there is no *a priori* reason to expect reductive theories to score better than non-reductive theories according to these criteria.

There is, in fact, a general reason to think that the sorts of reductive theories philosophers tend to offer will score *worse* by these criteria. Many proposed reductive theories will show that one kind of thing can play the role of another kind of thing. But they ensure that they play these roles only by treating what look like joint carving properties of the entity being reduced to gerrymandered properties of the entities doing the reducing. Conversely, what look like joint carving properties of the entities doing the reducing play absolutely no role in the theory of the entities being reduced. Reductive theories tend to not preserve the naturalness of the properties of the entities being reduced.

Here is a simple example of this phenomenon. Suppose one proposed a reduction of propositions to *sequences* and a reduction of application to the operation of pairing. On this view the proposition that two is prime is the pair whose first coordinate is two and whose second coordinate is being prime. By treating propositions as pairs, we gain some theoretical understanding simply because the theory of ordered sequences is established and well understood. Moreover, there are enough distinctions in the theory of ordered sequences to capture all of the distinctions we want to draw with a theory of propositions. But these distinctions are captured in a way that make the theory of propositions objectionably *arbitrary*. The most natural operation on sequences—concatenation—plays almost no role in the theory of propositions since the concatenation of two propositions will not in general be a proposition. Moreover, while properties like being about and predicating *can* be analyzed in this framework, this can only be achieved by what looks like *arbitrary choices*. For instance we could say that a proposition that I walk is a pair whose first coordinate is the property and whose second coordinate is me and then analyze aboutness by saying the proposition is about its second coordinate. But we could also say that it is a pair whose first coordinate is me and whose second coordinate is the property and say that it is about its first coordinate. Nothing in our linguistic practice seems to decide between these two theories. Finally, there does not appear to be any natural family of operations on ordered sequences that corresponds to the operations of negation, conjunction, disjunction and so on, again suggesting that they will only be definable by means of arbitrary choices.

Whether this charge applies to recent reductive theories is debatable.[38] For our purposes, the important point is that theoretical virtues do not automatically favor reductive theories of propositions, and so nonreductive theories shouldn't be dismissed outright.

There is also a more positive case to be made in favor of my view over some recent competitors. As mentioned above, it would be somewhat misleading to designate my view primitivist and the views we have been considering above a reductive: each theory takes some things as primitive and analyzes other things in terms of those primitives. This suggests that in order to compare our respective views, we should figure out what the appropriate primitives are in a theory of propositions. Here is one reason to favor my chosen primitives. Recent reductive theories of propositions appeal to entities that exhibit features that are very much *like* the representational features that propositions exhibit. The fact that two is prime is plausibly about two; the property of being two *concerns* two is a way that seems quite analogous to how the proposition that two is prime concerns two. Moreover, the act of predicating something of two would appear to concern two in much the same way that the property of being two does. For instance, were there no number two, we would have no way of specifying the relevant fact, act or property. We specify these entities in terms of their relations to other entities. On the theory I favor, all of this is to be ultimately be

[38]Williamson (2016) argues that one way to measure the overall elegance and simplicity of a theory is to look at how well it handles evidence it was not explicitly designed to account for. Speaks (forthcoming) argues that the theories of King and Soames has some difficulty handling what he calls *easy transitions* between propositional attitudes. One way to think of this point is that theorizing in philosophy of perception, epistemology and philosophy of language involves generalizations that connect various propositional attitudes and these generalizations are harder to account for given the sort of reductive theories King and Soames prefer.

explained in terms of application and truth. Application and truth are the common factors that unify the representational dimension of these various entities. This allows the view to achieve a generality that is lacking from competing views. The theories of Soames, King, Hanks or Speaks all treat the representational dimension of facts, properties and acts as somehow fundamentally different from propositions.

Some will of course object to the idea of taking truth as primitive. Hanks and Soames would certainly object to this since for them, the problem of unity just is that of providing an account of how propositions have truth conditions. It's not clear to me what it is that needs to be explained. One might suggest that what needs to be explained is why, for instance, the proposition that grass is green is true iff grass is green. But this demand for explanation seems to me misguided. The proposition that grass is green is such that for it to be true is for grass to be green. This provides us with all the explanation we need.[39] Consider an analogy. There is not any particular problem of explaining the instantiation *conditions* of a property. We know why grass has the property of being green iff grass is green since we know that the property of being green is such that for grass to have it is for grass to be green. So it is unclear why exactly truth conditions are supposed to be particularly troubling provided that instantiation conditions are not.[40]

Soames (2016, 2565) further clarifies the explanatory challenge:

> [T]he triviality of routine instances of the propositional T-schema… approaches the triviality of routine instances of the instantiation schema for properties …. But the underlying question. *What sort of things must properties be in order to have instantiation conditions?* is itself trivial in a way in which the question *What sort of things must propositions be in order to have truth conditions?* is not. Properties are ways things are or could be…. For a *way something could be* to be instantantiated is for something to be that way….

[39]For a further defense of this see Pickel (2019).
[40]This point is further argued for by Osertag (2013) and Pautz (2016).

> There is no similarly obvious answer to the question *What must propositions be?* in order for them to have truth conditions. . .

This seems to me to be mistaken. Soames' explanation of why properties have instantiation conditions seems to me to be on equal footing with the following explanation of why propositions have truth conditions. Propositions are things that are or could be the case. For a proposition to be true is just for it to be the case. Both are equally obvious. And both seem correct. On the account of instantiation I mentioned above, this should come as no surprise. Properties are ways; to instantiate them is to be that way. And to be that way is just for it to be the case that you are that way (i.e., for it to be true that you are that way).

There is a further reason why truth and application strike me as appropriate primitives of a theory of propositions: both notions are broadly logical in character. As mentioned above, the application *relation* is plausibly not structure creating: applying application to a property and an individual is the same as applying the property to the individual. I'm inclined to accept a similar view when it comes to truth: applying truth to a proposition just delivers that same propositions back. That is

$$App_{\langle\langle\rangle\rangle}(t, p) = p$$

where t is the property of being true. On this sort of view the proposition that is true that P *is* the proposition that P.[41] We might even claim this as a *definition* of propositional truth: propositional truth is the unique property t such that applying it to a proposition gives you that proposition back. If that's right, then the sort of primivitism defended here

[41] This view has a long history, going at least as far back as Frege (1892b). Pickel (2019) has recently argued that this view all on its own is enough to diffuse the problem of the unity of the proposition, at least as explained by Soames. I think this is right to some extant. But I should note here that it is playing a slightly different role in my response. The point I am making is about what the appropriate primitives are. In my view, the appropriate primitives are logical ones: non-structure creating primitives in the sense outlined above. If the proposition that P is the proposition that it is true that P, then truth is one of these logical primitives.

is able to uniquely pin down truth, aboutness, predication and instantiation all in terms of the primitive of application.[42]

5. Conclusion

Many authors have reached for ontology in order to explain some of the distinctive traits of propositions. This paper argued that instead of ontological reduction we can construct a plausible theory of the representational aboutness by making use of some novel ideology. In particular, using the operation of application we are able to provide plausible, general accounts of various representational features of propositions and their kin.

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[42]So for example instead of analyzing predication by saying that for x to instantiate f is for $App(f,x)$ to be true, we could say that for x to instantiate f is for $App(f,x)$ to have the unique property t such that $App_{\langle\langle\rangle\rangle}(t, App(f,x)) = App(f,x)$.

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