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BIOGRAPHY

Nicholas K. Jones' research interests lie at the intersection of metaphysics with the philosophy of logic and language, especially anything connected with objecthood. He is currently working on the metaphysics of higher-order quantification and applications of higher-order resources within metaphysics. He arrived at the University of Birmingham as a Birmingham Research Fellow in 2013, and has been Senior Lecturer there since 2017. Before joining Birmingham, he was a Fitzjames Research Fellow at Merton College, University of Oxford, and Jacobsen Research Fellow at KCL and the Institute of Philosophy, following a PhD at Birkbeck, University of London. He has been a Visiting Scholar at MIT, a Visiting Fellow on the ConceptLab project at the University of Oslo, and received the Sanders Prize for Metaphysics in 2012. He is from North Derbyshire.

EDITORIAL NOTE

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PROPOSITIONS AND COGNITIVE RELATIONS[1]

NICHOLAS K. JONES

There are two broad approaches to theorising about ontological categories. *Quineans* use first-order quantifiers to generalise over entities of each category, whereas *type theorists* use quantification on variables of different semantic types to generalise over different categories. Does anything of import turn on the difference between these approaches? If so, are there good reasons to go type-theoretic? I argue for positive answers to both questions concerning the category of propositions. I also discuss two prominent arguments for a Quinean conception of propositions, concerning their role in natural language semantics and apparent quantification over propositions within natural language. It will emerge that even if these arguments are sound, there need be no deep question about Quinean propositions' true nature, contrary to much recent work on the metaphysics of propositions.

I.

Introduction. There are two broad approaches to theorising about ontological categories. *Quineans* use absolutely unrestricted first-order quantifiers to generalise over entities of each category.[2] They therefore require a special-purpose theoretical predicate for each category, to delineate its members within the first-order domain. For example, to say that there is an object such that ϕ, Quineans write:

$$\exists x(x \text{ is an object} \wedge \phi)$$

Whereas to say that there is a property such that ϕ, Quineans write:

$$\exists y(y \text{ is a property} \wedge \phi)$$

1 This is a draft of a paper to be presented at the Aristotelian Society on 18 February 2019 and subsequently published in *Proceedings of the Aristotelian Society*. I have benefited from feedback from audiences in Birmingham, Cambridge, Haifa, MIT, Oslo, St Andrews, Southampton, and especially from Peter Fritz, Sam Lebens, Øystein Linnebo, Agustin Rayo, Bob Stalnaker, Lee Walters, and Dan Marshall; I'm very grateful to everyone involved. My work on this paper was funded by an AHRC Leadership Fellowship and a ConceptLab Collaborative Fellowship, and it was written while I was a Visiting Scholar at the MIT Departments of Linguistics and Philosophy; thanks to all these organisations for their support.

2 As will become clear, Quinean views encompass much that Quine himself would have rejected. The label is apt because Quinean views operate within the constraints of Quine's hypothesis that all theoretically respectable quantification is first-order.

Quineans contrast with *type theorists*, who use absolutely unrestricted quantification on variables of different semantic types to generalise over different categories.[3] For example, to say that there is an object such that ϕ, type theorists write:

$$\exists x\phi$$

Whereas to say that there is a property such that ϕ, type theorists write:

$$\exists Y\phi$$

where 'Y' is a variable of the semantic type of monadic predicates. Instead of special-purpose predicates to delineate the categories within a single quantifier's domain, type theorists use different semantic resources to theorise about different categories.

Does anything of import turn on the difference between these approaches? If so, are there good reasons to go type-theoretic? I will argue for positive answers to both questions concerning the category of propositions.[4] Whereas the type-theoretic conception of properties sketched above employs quantification into predicate position, the type-theoretic conception of propositions advocate below employs quantification into sentence position: quantifiers that bind variables of the semantic type of whole declarative sentences.

I outline one core theoretical role for propositions in §II, and argue that Quineans cannot readily accommodate this role in §§III–IV. I then argue in §V that type theorists can avoid this problem. To close the paper in §VI, I discuss two prominent arguments for a Quinean conception of propositions. It will emerge that even if these arguments are sound, there need be no deep question about Quinean propositions' true nature, contrary to much recent work on the metaphysics of propositions.

Some background assumptions and terminology before I begin. The formal profiles of various expressions will be central to my discussion. Type theory provides a systematic way of describing those profiles. I assume a standard simple relational type theory whose key features are as follows.[5]

3 On absolutely unrestricted quantification in type-theoretic settings, see (Williamson, 2003) and (Florio and Jones, 2018). On absolutely unrestricted quantification more generally, see (Rayo and Uzquiano, 2006).

4 For further differences between Quinean and type-theoretic ontological theorising, see (Jones, 2016) on predicate reference, (Jones, 2017) on properties, (Jones, 2018, §§3–4) on the unity of facts and propositions, and (Florio and Jones, 2018) on absolute generality. The views of (Hale, 2013, ch. 1) and (Williamson, 2013) are closely related to type-theoretic approaches.

5 See (Muskens, 1989), or (Williamson, 2013) and (Dorr, 2016) for more philosophically oriented discussions.

There are two basic types, or syntactic categories, *e* (singular term) and *t* (sentence). Whenever $\tau_1, \ldots, \tau_n$ are types (for $n \geq 1$), so is $\langle\tau_1, \ldots, \tau_n\rangle$. Each expression belongs to exactly one type. Sentences (type *t*) are formed by combining an expression *P* of a type $\langle\tau_1, \ldots, \tau_n\rangle$ with expressions $t_1, \ldots, t_n$ where each t_1 is of type τ_1 to form a string $Pt_1, \ldots, t_n$. Alongside the usual logical operators, variables and constants of all types are permitted. All variables can be bound by quantifiers.

Although this framework supplies an infinite hierarchy of syntactic categories, only the following play a significant role below: *e*, *t*, $\langle e, e\rangle$, and $\langle e, t\rangle$. Types *e* and *t* have already been introduced. Given the rule for sentence-formation, expressions of type $\langle e, e\rangle$ are ordinary dyadic relational predicates, and expressions of type $\langle e, t\rangle$ differ only in requiring a sentence rather than a singular term in their second argument position.

Quantification on variables of types other than is *higher-order quantification*. I assume throughout that higher-order languages are legitimate and intelligible languages of theorising that do not require reductive explanation in other terms; taken at face value, they are in perfectly good standing. This is a rejection of W. V. O. Quine's (1986, pp. 66–68) view that higher-order quantification must be explained as first-order quantification over a special kind of object, typically sets. The higher-order quantifiers I employ are non-substitutional, genuinely quantificational, and irreducibly higher-order.[6] Because it is difficult and cumbersome at best to express higher-order quantification in English, I will be rather cavalier about mixing regimented higher-order vocabulary with English in order to facilitate a smoother exposition. In particular, I reserve '*p*' and '*q*' for variables of type *t*, but combine them freely with English locutions that grammatically require noun phrases.[7] Hopefully no (or little) confusion will result.

Thus far, type-theoretic structure is syntactic structure. However, I assume a language of theorising which has been regimented so that syntax and semantics align. In this language, expressions of the same type make the same kind of semantic contribution, whereas expressions of different types make different kinds of semantic contribution. Type-theoretic structure thereby encodes semantic structure. For example, each expression of type denotes an object whereas each expression of type $\langle e, e\rangle$ is true of certain pairs of objects.

6 For further discussion of this conception of higher-order quantification, see, e.g., (Prior, 1971, ch.3) (Boolos, 1975), (Boolos, 1985), (Rayo and Yablo, 2001), and (Williamson, 2003).

7 '*x*' and '*y*' are always variables of type *e*.

Given a type-theoretic language interpreted as described, I use it to explicate talk of a metaphysical hierarchy of entities thus: one says that there is an entity of a given type by using an existential quantifier binding a variable of type τ. Note that I use quantification on variables of type τ to explicate talk about entities of type τ, not conversely. Objects are entities of type *e*. Properties and relations are entities of types of the form $\langle \tau_1, \ldots, \tau_n \rangle$; their relata are sequences of entities of types $\tau_1, \ldots, \tau_n$. In this terminology, the central question driving this paper is: are propositions objects, as Quineans contend? I will argue that they are entities of type *t*.

II.

Cognitive relations. One core theoretical role for propositions is to be worldly relata of cross-type cognitive relations. In this section I explain what this means.

Cognitive relations are relations of thought between thinkers and reality. They provide our cognitive contact with the external world. Examples include the relations reported in the following:

(A)	(B)
One perceives Tibbles	One believes that Tibbles is hungry
One thinks about Tibbles	One knows that Tibbles is hungry
One considers Tibbles	One hopes that Tibbles isn't hungry
One examines Tibbles	One wishes that Tibbles weren't hungry
One fears Tibbles	One fears that Tibbles is hungry
One desires Tibbles	One desires that Tibbles not be hungry

Although the cases are all quite different, each involves a cognitive relation between oneself and a Tibbles-involving aspect of external reality.

Cross-type cognitive relations are the kind of cognitive relation reported in the (B)s. They are often called propositional attitudes, since they relate thinkers to entities with "propositional structure". By contrast, the cognitive relations in the (A)s relate thinkers to individuals devoid of such structure.

Although the (B)s, and propositional attitudes more generally, are plausibly examples of what I mean by cross-type cognitive relations, I want to remain neutral on the proper classification of particular mental states and the semantics of attitude ascriptions. I also want to avoid essential appeal to the less-than-perspicuous notion of propositional structure. So I now provide a second characterisation of cross-type cognitive relations.

Central to the project of describing, explaining, understanding, and predicting reality's behaviour is the construction of theories. A wide range of vocabulary of different semantic types is available for this purpose, including singular and plural terms, first-level predicates, higher-level predicates, quantifiers, sentences, and sentential operators. Many of these are potentially inessential; one can imagine theoretical projects with no use for them, or ways for reality to be on which it lacks the kind of structure they express. To take one prominent example, perhaps reality contains no individuals and so singular terms (and perhaps also first-order quantifiers) are not required to describe it (e.g. Hawthorne and Cortens 1995; Dasgupta 2009; Turner 2011). Sentences are not like this. It appears impossible to make sense of a theoretical project making no use whatsoever of expressions playing the semantic role of sentences. That role is to present reality as being various ways. So a theoretical project that did not employ sentences would not present it as being any way, which is no theoretical project at all.

One's best theory of any given aspect of reality will employ sentences. This theory must eventually be extended to encompass our cognitive relations to its various components. Because the original theory employs sentences, this extended theory will require expressions for our cognitive relations to the aspects of reality described by the original theory's sentences. In order to play this role, an expression must have the following formal profile: it has two argument positions, the first for expressions for thinkers, i.e. singular terms, and the second for sentences. It is thus a cross-type relational expression of type $\langle e, t\rangle$. Cross-type cognitive relations are cognitive relations of this type $\langle e, t\rangle$.[8]

The (B)s all plausibly concern relations of this kind. When one believes, knows, hopes, wishes, or fears that Tibbles is hungry, the content of one's attitude is expressible by a sentence. Since these propositional attitudes are cognitive relations, they're plausibly cross-type cognitive relations. I henceforth focus on belief as paradigmatic. Yet my primary interest is not belief or any other propositional attitude per se, but the nature of our cognitive contact with those aspects of reality expressed by sentences. The mental states known as propositional attitudes enter the story only insofar as they involve cross-type cognitive relations, which they plausibly do.

Cognitive relations are not all cross-type. The (A)s involve *intra-type* cognitive relations: cognitive relations between objects and objects, hence

8 Recall: one says that there are entities of type τ by using existential quantification on variables of type τ. More generally, one talks about entities of type τ using expressions of type τ.

of type $\langle e, e \rangle$. The relationship between cross-type and intra-type cognitive relations will be central to what follows.

Cognitive relations are relations of thought between thinkers and reality. We know what goes at one end of these relations: thinkers. But what about the other? What are the worldly relata of cross-type cognitive relations? Propositions.

One core theoretical role for propositions is to be worldly relata of cross-type cognitive relations: thinkers enjoy cross-type cognitive contact with reality by being cognitively related to propositions. A version of this role is sometimes put by saying that propositions are the *objects*, or *contents*, of propositional attitudes; they are *what* one believes, hopes, desires, knows etc. For present purposes, however, it doesn't much matter exactly how the role I just outlined maps onto existing debate about the attitudes and their contents. What matters is that we've identified a role, and labelled its occupiers propositions. Our next task is to say a bit more about the occupants of this proposition-role.

III.

The veil of propositions. Propositions are the worldly relata of cross-type cognitive relations. Taking belief as paradigmatic, the view is this: to have a given belief is to stand in the appropriate cognitive relation to the appropriate proposition. Which relation? Which proposition? In this section I sketch Quinean answers to these questions, before turning to a problem and the formal outline of a solution.

Quinean theories of propositions use first-order quantifiers to generalise over propositions. Thus conceived, the domain of all objects includes these newly postulated propositions as well as more familiar objects like cats, dogs, and numbers, though they presumably have somewhat different features. (Propositions presumably don't bark, sleep in baskets, go for regular walks, or have successors.) In particular, Quinean propositions comprise a collection of objects corresponding one-one with all the different beliefs thinkers may in principle have.[9] On this view, thinkers enter into cross-type cognitive contact with reality by standing in intra-type cognitive relations to this special kind of object.

Although not usually presented in quite these terms, most extant conceptions of propositions are Quinean in this sense (e.g. Bealer 1982;

9 For simplicity, I ignore problems concerning the relative cardinalities of objects and candidate belief-contents.

Stalnaker 1984[10]; Soames 1987; Schiffer 2003; King 2007; Soames 2010; Richard 2013; King et al. 2014; Hanks 2015; Merricks 2015; Grzankowski and Buchanan 2018). Sometimes, that's because first-order quantification over propositions is explicitly used to formulate the theory. Sometimes, it's because propositions are identified with some kind of object, such as sets, functions, -tuples, or facts. Sometimes, it's because the questions investigated make little sense on non-Quinean views, for example concerning the representational properties of propositions.

Some relational expression is needed for the cognitive relation connecting thinkers with propositions. Because the Quinean's propositions are objects, they need a predicate of type $\langle e, e\rangle$. I use 'Bel' for this predicate, and call the relation it expresses *the Bel relation*, or often simply just Bel.

We can now see the outlines of a Quinean conception of cross-type cognitive relations. For each belief a thinker could have, the view postulates an object x such that x is a proposition and for a thinker to have the belief is for that thinker to Bel x. In particular, there are objects Tom, Dick, and Harry, which are all propositions, and which satisfy the following:

> To believe that Tibbles is hungry is to Bel Tom.
>
> To believe that cookies are delicious to Bel Dick.
>
> To believe that mountains are awesome is to Bel Harry.

Several issues now arise. For example, can Bel be adequately defined without circularity, and without invoking cross-type cognitive relations? Let us set this difficult question aside for the time being and consider a different problem.

As it stands, this view gets the subject matter of our beliefs wrong. We wanted a cognitive relation to type t phenomena like: Tibbles is hungry, cookies are delicious, mountains are awesome. Instead, we got a cognitive relation to these mysterious objects Tom, Dick, and Harrry. We wanted a cross-type $\langle e, t\rangle$ relation. Instead, we got the intra-type $\langle e, e\rangle$ relation Bel. The present version of the Quinean view doesn't merely get the subject matter of our beliefs wrong, it's not even got the logical form required in order to get it right. The veil of propositions screens belief off from its proper subject matter, and so precludes genuine belief about non-propositional reality.

The problem is that we currently have no account of the connection between Tom, Dick, and Harry, and the subject matter of the relevant beliefs. What has Tom to do with whether Tibbles is hungry? Quineans

10 (Stalnaker, 1984) is more naturally interpreted as Quinean than is (Stalnaker, 2012).

need a device with which to describe this connection.[11] Formally, they need an expression of type $\langle e, t \rangle$, that is, with one argument for singular terms (type e) and another for sentences (type t). I use 'PR' for this predicate and call the cross-type relation it expresses *the proposition-reality relation*, or often simply just PR. The next section asks what this relation is.

We can now describe the connection between Tom and the subject matter of one's belief that Tibbles is purring: Tom is the unique object that is both a proposition and PRs Tibbles is purring. More precisely:

> Tom = the unique proposition x such that PR(x, Tibbles is purring).
>
> Dick = the unique proposition x such that PR(x,cookies are delicious).
>
> Harry = the unique proposition x such that PR(x, mountains are awesome).

We can simplify the view and put it in more familiar form by introducing some terminology: *the proposition that p* is the unique object x such that x is a proposition and PR(x, p). Then the view says:

> To believe that Tibbles is hungry is to Bel the proposition that Tibbles is hungry.
>
> To believe that cookies are delicious is to Bel the proposition that cookies are delicious.
>
> To believe that mountains are awesome is to Bel the proposition that mountains are awesome.

More generally:

> $\forall p$(to believe that p is to Bel the proposition that p)[12]

This statement of the Quinean view employs higher-order quantification on a variable 'p' of type t. This is no accident. Because the goal is to analyse a cross-type relation, any adequate statement of the view will require quantification on variables of type t. The closest alternative drops the initial quantifier and replaces 'p' with a schematic variable. This

11 Here are two alternative approaches I won't discuss in detail because they raise foundational questions there isn't space to address properly here. The first introduces a cross-type identity predicate with which we can say things like: Tom Tibbles is hungry. The second modifies the type-structure by allowing either (a) argument positions that meaningfully accept expressions of multiple types, or (b) expressions that belong to multiple types. Note that the first response requires the second; for unless one can make sense of both *Fa* and *Fa* for some *F*, it is unclear what it would mean to identify *a* with *b*, whatever their types.

12 In λ notation, the cross type relation of belief is: $\lambda x, p.\ \exists y(y$ is a proposition $\land$ Bel$(x, y) \land \forall z(\mathrm{PR}(z, p) \leftrightarrow z = y))$

yields a metalinguistic characterisation of a collection of theses, but not a single general thesis within the language of theorising. As a result, it fails to capture what the instances of the schema have in common, cannot be properly negated, and provides no guidance about how to extend the collection of instances to worlds at which there are *p* not actually expressed by any sentence. This is an instance of a general problem for all purely Quinean theorising: since reality is not merely a collection of objects, Quineans cannot describe all its patterns and commonalities.

We now have the formal outline of a defensible Quinean theory of propositions. The challenge is to fill in the details: what are Bel, the proposition-reality relation PR, and propositions? I focus on PR, though this cannot be entirely separated from questions about the nature of propositions and Bel.

IV.

Lifting the veil? I now argue that no extant account of the proposition-reality relation is adequate. In particular, no extant account explains why Bel-ing an *x* that PRs *p* involves cognitive contact with *p*, even if Bel is a cognitive relation. The generality of the argument suggests that no possible account of PR is adequate. I begin with the two accounts most amenable to the Quinean project.

According to the first account of PR, there is no informative account to be had; this is explanatory bedrock. All there is to know about PR is that it's the $\langle e, t\rangle$ relation whose holding from *x* to *p* makes it the case that Bel-ing *x* involves believing that *p*. Although this is clearly unsatisfying, perhaps it's the best we can have. Nevertheless, an informative account on which PR is not an unexplained primitive would be preferable. So let us move on from this view of last resort.

According to the second account of PR, for *x* to PR *p* is for *x* to represent that *p*. On this view, one believes that *p* by Bel-ing the unique proposition that represents that *p*. This kind of view has received significant recent attention (e.g. King 2007; Soames 2010; King et al. 2014; Hanks 2015; Merricks 2015). In particular, many have argued that representational properties are always grounded in other phenomena. In the case of propositions, the only obvious candidate phenomena involve the activities of thinkers. On this view, whenever a proposition *x* represents that *p*, it does so because thinkers somehow use or treat *x* as representing that *p*. Assuming that using or treating *x* as representing that *p* involves some cross-type cognitive relation, it follows that cross-type cognitive relations cannot always be mediated via propositions, on pain of vicious regress or circularity. Although I am sympathetic to this view about the metaphysics of representation, there is also an underlying structural problem with the Quinean view.

The present Quinean project seeks to ground believing that *p* in Bel-ing an object that represents that *p*. Abstracting from the specific case of belief, Quineans aim to ground cross-type cognitive relations to *p* in intra-type cognitive relations to objects that represent that *p*. However, being intra-type cognitively related to something that represents that *p* does not typically yield cognitive contact with *p*. Something more is required. Yet the only obvious accounts of what more is required undermine the Quinean project by invoking cross-type cognitive relations.

Consider a map.[13] It represents various features as spatially distributed across a certain geographical region. In short, it represents that *p* for a wide range of *p* concerning the relative locations of represented features. Yet one can bear arbitrarily close and intimate intra-type cognitive relations to a map without being cross-type cognitively related to any *p* it represents. One can be studying the map closely, arguing heatedly about it, and trying to work out what it represents whilst failing to be in cognitive contact with what it represents. This can happen in at least three ways.

Firstly, you may be utterly unfamiliar with the places represented by the map. For example, you might never have heard of the region represented, or of anywhere named on the map. Then although you may know that the map represents something as to the South-West of something else, or that Helvellyn is in some region, you're not in cross-type cognitive contact with the singular contents the map represents, for example: Helvellyn is to the South-West of Glenridding, or Helvellyn is in the Lakes.[14]

Secondly, you may not know what the symbols on the map represent. For example, suppose you don't know that blue triangles represent trig points. Then although you might know the map represents that something is at Helvellyn's summit, you yet lack cognitive contact with something else it represents: a trig point is at Helvellyn's summit.

Thirdly, you may not know how relative placement of symbols on the map determines what the map represents. For example, suppose you don't know that when symbols are four centimetres apart, the map represents the things represented by those symbols as one kilometre apart. Then although the map represents that, say, Helvellyn is five kilometres from

13 Similar considerations arise for other kinds of representations, including photographs, artworks, and language.

14 (Hawthorne and Manley, 2012) defends an opposing view.

Glenridding, your study of the map doesn't place you in cognitive contact with that.

It's fairly clear what's gone wrong in each case. You don't know what the map's constituents represent, or how their spatial configuration within the map determines its representational content. If you knew, or even merely had true beliefs about, those matters, then scrutiny of the map plausibly would cross-type cognitively relate you to what it represents. Notice, however, that belief and knowledge are cross-type cognitive relations.

The same considerations apply to propositions, Bel, and cross-type cognitive relations. Suppose first that the representational properties of propositions are determined by those of their constituents. Then, given only what's been said so far about propositions, Bel, and PR, there is no relevant disanalogy from maps. So suppose you don't know what a given proposition's constituents represent, or how their configuration within the proposition bears on its representational properties. Then you can bear arbitrarily close and intimate intra-type cognitive relations to the proposition without being cross-type cognitively related to what it represents. But if you do know those things, you're already cross-type cognitively related; for example, you know that such-and-such propositional constituent represents such-and-such object. Intra-type cognitive relations to propositions therefore cannot explain all cross-type cognitive relations without vicious circularity or regress.

It's controversial whether propositions have constituents that determine their representational properties. But if they lack such constituents, things get worse for Quineans. The constituents of maps allow thinkers to come to know their representational properties by working them out from the constituents' representational properties and spatial configuration. So suppose a certain "map" *m* lacks representationally relevant constituents. Suppose also that you have no prior view about what *m* represents. Then, absent further information about what *m* represents, you can examine the map as carefully as you like without being cross-type cognitively related to what it represents.

Given only what's been said so far about propositions, Bel, and PR, there is again no relevant disanalogy between propositions and maps here. So suppose x is a constituent-free proposition, and you have no prior view about what x represents. Then, absent further information about what x represents, you can be arbitrarily closely and intimately intra-type cognitively related to x without being cross-type cognitively related to what x represents. But if you have a prior view, or acquire new information, about what x represents, then you already enter into, or acquire, cross-type cognitive relations to some type t entity of the form: x represents that p. Intra-type cognitive relations to propositions therefore cannot explain all cross-type cognitive relations without vicious circularity or regress.

To block the argument, Quineans need to make propositions relevantly disanalogous to maps. The only option seems to be to say more about Bel. We've seen that some intra-type cognitive relations can't serve the Quinean's purposes; it doesn't follow that none can. Yet as far as I'm aware, no known intra-type cognitive relation R behaves as Quineans requre: none is such that R-ing an x that represents that p always suffices for cross-type cognitive contact with p. So Bel must be a newly postulated theoretical relation. On one version of the view, different Bel-like intra-type relations account for different cross-type relations. On another version of the view, the same intra-type relation is somehow modified or supplemented in different ways to account for different cross-type relations. Without loss of generality, focus on this second version. Appropriating broadly Fregean terminology, call the intra-type cognitive relation in question *grasp*.

There are two kinds of views about grasp. One treats it as primitive. On this view, nothing explains why grasping something that represents that p places one in cognitive contact with p; unlike all other known intra-type cognitive relations, it just does and that's that. This is clearly not explanatory, and should therefore be a view of last resort. The other kind of view seeks to explicate grasp in other terms. I do not see how to do so without invoking cross-type cognitive relations, for example: to grasp x is to truly believe that x represents that p. That's incompatible with the Quinean project of grounding all cross-type cognitive relations in intra-type cognitive relations. Absent an alternative account of grasp, let us therefore move on to alternative accounts of PR.

The preceding argument generalises to all other accounts of PR that I can extract from the literature on propositions.[15] According to these views, for x to PR p is for it to be that…

… for any world w, x is true at w iff at w, p.

… $\Box(x \text{ is true} \leftrightarrow p)$.

… $x = \{w\text{: at } w, p\}$.

… x = the property of being such that p.

15 The argument also generalises to the following account of PR independently suggested to me by Sam Roberts and Agustin Rayo: for x to PR p is for it to be that x is true $\equiv p$, where '$\equiv$' is the identity predicate of type $\langle t, t\rangle$. To block my argument, we need a close and intimate relation between x and p. But this proposal supplies one only between x's truth and p.

> … x is an n-tuple $\langle y_1, \ldots, y_n \rangle$ such that, for it to be that p is for (n-1)-place relation y_1 to hold amongst $y_2, \ldots, y_n$ in that order.

On any of these views, one can be arbitrarily closely and intimately intra-type cognitively related to an object that PRs p without being in cross-type cognitive contact with p. That will happen whenever one has no view about whether the object PRs p. One can always define an intra-type cognitive relation with the requisite feature, for example this relation R:

> For x to R y is for x to believe that p for some p such that PR(y, p).

Identifying Bel with R ensures that Bel-ing a y that represents that p suffices for cross-type cognitive contact with p. Since this definition of R employs a cross-type cognitive relation, however, Quineans must reject this proposal.

I have argued that no extant account of PR is adequate to the Quinean project. Versions of this argument are plausibly available for any possible account of PR. I therefore hypothesise that no possible account of PR is adequate to the Quinean project. An alternative, non-Quinean conception of propositions is required.

V.

Propositions as entities of type. According to Quineans, propositions are objects. I now describe an alternative conception of propositions as entities of type t. On this view, there is no need for an intra-type $\langle e, e \rangle$ Bel-relation, or for a veil of mysterious objects between mind and reality.

My proposal is not a particular positive analysis of cross-type cognitive relations. Rather, it is to reject all putative analyses of such relations into (i) an intra-type cognitive relation from thinkers to objects (e.g. Bel), and (ii) a cross-type relation from those objects to entities of type t (e.g. PR). The idea is to cut out the objectual middle-men by construing cognitive relations as directly relating thinkers to entities of type t: the worldly relata of cross-type cognitive relations are entities of type t, whereas for Quineans they're objects. This eliminates the need for Bel and PR, and hence also the Quinean problem of explaining why combining those relations yields cognitive contact with reality.

This is a view about the logico-metaphysical form of cognitive relations. It is not a positive account of the nature of those relations. It should therefore be compatible with (suitably formulated) versions of all extant theories of belief. For example, consider the following simple pragmatist proposal: to believe a proposition x is to plan and act as if x is true. The proposal can be reformulated to fit the present setting by replacing type e

variables for propositions with type t variables, and eliminating the truth-predicate, thus: to believe that p is to plan and act as if p.

One key challenge for this kind of view is to make sense of commonalities amongst, and general facts about, propositional attitudes. For example:

Al and Nick do not believe the same thing

Nothing Al believes is true

Quineans can capture those generalisations as:

$\neg\exists x$(Al believes x $\wedge$ Nick believes x)

$\forall x$(Al believes x $\rightarrow$ $\neg x$ is true)

Those regimentations employ first-order quantification over objects that are believed. So they're acceptable to Quineans but not type theorists. It might therefore appear difficult for type theorists to make sense of the initial generalisations. However, as Arthur Prior (1971, ch. 2) observed, those who understand higher-order quantification, can capture the initial generalisations thus:

$\neg\exists p$(Al believes that p $\wedge$ Nick believes that p)

$\forall p$(Al believes that p $\rightarrow$ $\neg p$)

The original $\langle e, e\rangle$-predicate 'believes' has been replaced by the $\langle e, t\rangle$-predicate 'believes that'. The original $\langle e\rangle$-predicate 'is true' is not required because variables of type can be negated, and more generally occupy the argument positions of sentential operators. Note that Quineans cannot reject these generalisations on the grounds that they employ higher-order quantification; for as we saw in §II, Quineans need such quantification to properly state their view.

Finally, if propositions are not objects, there should be no metaphysical debate about what kind of object they are. Propositions aren't sets, or n-tuples, or any other kind of object. Rather, propositions are familiar entities of type t that all theorists implicitly recognise, for example: Tibbles is hungry, the sun is shining. This part of contemporary debate about the metaphysics of propositions can therefore be dispensed with.

Aspects of this view are not without precedent. As noted above, Prior (1971, ch. 2) used higher-order quantification to avoid treating propositions as objects. Prior was concerned, at least in part, with natural language talk about propositions. Unlike Prior, my proposal is silent about ordinary language; it concerns only the best logical form for metaphysical theorising about cognitive relations and propositions.

Mark Richard (2013) and Jeff Speaks (King et al. 2014, ch. 2) deny that propositions have truth-conditions or other representational properties. In different ways, they identify propositions with the truth-conditions others take them to represent. They also appear to regard propositions as objects.[16] Yet if propositions represent truth-conditions, they represent entities of type *t* such as: Tibbles is hungry. The best formulation of the view that propositions are truth-conditions is thus the view that propositions are entities of type *t*.

Scott Soames (2010), Jeffrey C. King (2007), Speaks (King et al. 2014), and Peter Hanks (2015) all deny that our mental states inherit representational properties from propositions; rather, they take propositions to inherit representational properties from the activities of thinkers. Similarly, the present view also denies that thinkers always stand in cognitive relations because of their relations to objects with representational properties. Unlike the authors just mentioned, however, there is no need for a substantive account of how propositions acquire representational properties, or of the deep metaphysical nature of objects that are propositions. Instead, we use higher-order quantification to dispense with such objects and theorise directly about the entities of type *t* that thinkers represent.

VI.

Two arguments for e-propositions. Let *e*-propositions and *t*-propositions be propositions conceived as entities of type *e* and type *t* respectively. I now discuss two arguments for *e*-propositions. I aim to show that even if sound, these arguments do not threaten the view described above, and do not establish that there is a deep metaphysical question about the true nature of *e*-propositions.[17]

The first challenge comes from semantic theorising, where propositions often serve as semantic values of sentences and ‘that’-clauses. Because these semantic theories are typically first-order theories, they’re true only if *e*-propositions exist. So either mainstream semantics is false, or *e*-propositions exist. I now provide three kinds of response to this argument.

16 Although Stalnaker (2012) also identifies propositions with truth-conditions, it’s unclear whether he’s also a Quinean.

17 Two other major challenges to this kind of view arise from Frege puzzles and thought about the nonexistent. There sadly isn’t space to discuss these issues here.

Firstly, and least concessively, one can deny that mainstream semantics is true. Even if *e*-propositions don't exist, there may be nearby true type-theoretic reformulations of the false theories that replace *e*-propositions with *t*-propositions. If so, then mainstream semantics at least approximates the truth.

Secondly, and more concessively, the argument establishes at most that *e*-propositions are the meanings of sentences and 'that'-clauses, not that they're worldly relata of cross-type cognitive relations. Even if -propositions play this semantic role, *t*-propositions may play the cognitive role. And if the argument of §§III–IV is sound, *e*-propositions don't play the cognitive role. So this argument for *e*-propositions isn't an argument against *t*-propositions as worldly relata of cross-type cognitive relations.

Thirdly, the argument doesn't even establish that *e*-propositions are meanings of sentences and 'that'-clauses; it shows only that *e*-propositions are semantic values. Linguistic semantics involves representing and modelling linguistic communication and meaning, and uses semantic values to do so. The precise metaphysical nature of what's thereby represented is largely irrelevant to that project. The *e*-propositions of linguistic semantics are devices for representing the facts, not constituents of the facts represented. Linguistic semantics itself does not determine their precise representational significance; that's a matter for metaphysics. Perhaps the facts represented have type-theoretic structure, and the semanticist's *e*-propositions represent *t*-propositions. If so, then mainstream semantics may be true and *e*-propositions exist, yet *t*-propositions be merely representational aids for theorising about the *t*-propositions that are sentence-meanings. On this view, there is no deep question about the metaphysics of *e*-propositions, since any appropriately structured collection of objects will suffice.

That second challenge draws on apparent quantification over propositions within natural language (e.g. Schiffer 2003, ch. 1). Consider this argument:

(1a) Nick believes everything Al says.

(2a) Al says that cookies are awesome.

(3a) So Nick believes that cookies are awesome.

The argument is valid. However, the quantification appears to be first-order. If so, then the argument has the form:

(1b) $\forall x$(Al says $x \rightarrow$ Nick believes x)

(2b) Al says a.

(3b) So Nick believes *a*.

Here, ‘*a*’ is a singular term (type *e*) which regiments ‘that cookies are awesome’. Similarly, ‘says’ and ‘believes’ here are of type $\langle e, e\rangle$. They have to be of these types to permit first-order quantification into ‘says’ and ‘believes’ in (1b). To see that the argument is valid, instantiate (1b) to:

Al says $a \rightarrow$ Nick believes

which together with (2b) yields (3b) by *modus ponens*. This regimentation of the argument requires a domain of objects for the quantifier in (1b). Those objects satisfy formulae like ‘Nick says *x*’ and ‘Al believes *x*’, and so are presumably what thinkers believe and say. So this is an argument for *e*-propositions as worldly relata of cross-type cognitive relations.

One kind of response denies that English quantification, and in particular the quantification in (1a), is always quantification into singular term position (see e.g. Prior 1971, ch. 2; Rayo and Yablo 2001; Rosefeldt 2008). Type-theorists may instead construe this as higher-order quantification properly regimented using quantification on variables of type *t*.

A more concessive response denies that *e*-propositions are what thinkers say and believe, even though they’re used in English to express generalisations about what thinkers say and believe. Assume that *t*-propositions are what we say and believe. Assume also that our language contains only first-order quantifiers. Then we are unable to communicate generalisations about what’s said and believed in the most direct way. To communicate such generalisations, we need to somehow simulate higher-order quantification with first-order quantification. Here’s one simple implementation of this idea.

First, we need a domain *D* of objects for quantifiers like that in (1a/b) to range over, and for English ‘that’-clauses to denote. Objects in *D* serve as representatives of *t*-propositions. In order to play this role, some $\langle e, t\rangle$-relation α must one-one correlate *D* with the *t*-propositions.[18] Call any such α an *assignment*. When $\alpha(x, p)$, x serves as the unique first-order representative of p relative to assignment α.

Second, we need $\langle e, e\rangle$-relations on objects to represent the $\langle e, t\rangle$-relations of saying and belief. Say that an $\langle e, e\rangle$-relation R represents an $\langle e, t\rangle$-relation S relative to an assignment α iff the following holds:

$$\forall x\ \forall y{\in}D(\ R(x, y) \leftrightarrow \exists p(\ S(x, p) \wedge \alpha(y, p)\ )\ )$$

18 This means: each $x \in D$ bears α to exactly one *t*-proposition; and each *t*-proposition is α’d by some $x \in D$.

Roughly, this says that R holds between objects x, y just in case the relation S represented by R holds from x to some p represented by y. Now, select an assignment α; let R_b and R_s be ⟨*e*, *e*⟩-relations that represent the ⟨*e*, *t*⟩-relations of believing and saying relative to α. Given predicates for R_b and R_s, we can use first-order quantification to simulate higher-order quantification over *t*-propositions said and believed.

Most straightforwardly, assume that R_b and R_s are semantic values of the English 'believes' and 'says'. Then sentences (1a/b) are true iff the following holds:

$$\forall x{\in}D(\ R_s(\text{Al}, x) \rightarrow R_b(\text{Nick}, x)\ )$$

Since R_b and R_s represent the ⟨*e*, *t*⟩-relations of believing and saying (relative to α), that's true iff the following holds:

$$\forall p(\ \text{Say}(\text{Al}, p) \rightarrow \text{Believe}(\text{Nick}, p)\ )$$

where 'Say' and 'Believe' express the ⟨*e*, *t*⟩-relations of saying and believing. We can thereby recover higher-order generalisations from suitable first-order generalisations. This allows us to communicate higher-order generalisations using only first-order quantification.[19]

One complication arises from an abundance of assignments and domains. If D one-one correlates with certain *t*-propositions, then so does any other domain of the same cardinality. And if α one-one correlates D with certain *t*-propositions, so does any permutation of α. So how are a unique domain and assignment selected?

The answer is that a unique domain and assignment needn't be selected because successful communication does not require a decision from amongst the candidates. On one approach, there's widespread indeterminacy between all the candidates. On a different approach, a single candidate is arbitrarily selected in each context, perhaps different candidates in different contexts, or even different candidates by different speakers in the same context. Neither approach hinders communication because the same higher-order generalisations are recoverable under each selection of candidates. If I interpret you as using one candidate when you're really using another, I can still recover the higher-order generalisation you

19 Note one limitation of the technique. If the *t*-propositions outnumber the objects, we cannot simulate absolutely unrestricted quantification over *t*-propositions. Either some *t*-propositions will lack representatives, or distinct *t*-propositions will have the same representative. This is problematic if speakers frequently seek to communicate absolutely unrestricted higher-order generalisations, but not obviously otherwise. When simulating restricted higher-order quantification, the sentential quantifiers used to characterise assignments and representation need restricting accordingly.

intended to convey, and so communication succeeds.

On this view, certain English quantifiers range over *e*-propositions. What are these *e*-propositions like? We've just seen that there need be no interesting answer to this question. Any collection of objects with appropriate cardinality will suffice. Even if *e*-propositions play an important role in linguistic communication, there therefore need be no deep metaphysical question about their true nature.

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