

Foundations of Generalism:
Symmetries, Non-individuals and Ontological
Nihilism

Thomas Forster
UCL, MPhil Stud Thesis

September 2022

Abstract

The topic of this thesis is the metaphysical theory of generalism: the view that the world is constituted by purely general facts. Whilst the connection may not be immediately obvious, generalism is also touted as a *qualitative* metaphysics: a theory that seeks to elevate, in some important metaphysical sense, the notion of qualities (i.e. properties and relations) over that of objects. As such, generalism is just as well individuated by its categorial commitments—its commitment to the fundamentality of certain metaphysical categories—as it is by its construal of fundamental facts.

My aim in this thesis is to make explicit these connections, providing a proper explication of the generalist position, as well as its motivations and its apparent consequences. Beyond this, the thesis can also be read as an extended argument in favour of individualism: the view that holds, contrary to generalism, that the category of individual, or object, is at least as fundamental as that of property and relation.

The subtitle of this thesis, ‘symmetries, non-individuals and ontological nihilism’, alludes to the topic addressed by each of the three chapters. In chapter 1 I explicate and critique the generalist’s primary argument against individualism, one based on the notion of a *symmetry*. In chapter 2 I investigate the tenability of a position dubbed ‘quantifier generalism’, a position that, I argue, can be further explicated through the notion of a *non-individual*. And in chapter 3 I turn to the most widely-discussed form of generalism found in the literature: algebraic generalism, a (purported) form of *ontological nihilism*.

Impact Statement

This thesis is an investigation into the categories that constitute the world's basic metaphysical structure. The research has consequences for a range of questions within metaphysics and philosophy of science.

For Bella

Contents

| | |
|--|-----------|
| Introduction | 6 |
| 1 Motivating Generalism | 9 |
| 1.1 The argument in panorama | 9 |
| 1.1.1 Absolute velocity and spacetime structure | 10 |
| 1.1.2 Permutations and individuals | 11 |
| 1.2 Individualism and the possibility of QIDs | 13 |
| 1.2.1 The general modal framework | 13 |
| 1.2.2 The specific modal commitments of individualism: haecceities | 15 |
| 1.3 Why are QIDs problematic? | 18 |
| 1.3.1 Empirical undetectability | 18 |
| 1.3.2 Physical redundancy | 20 |
| 1.4 Conclusion | 22 |
| 2 Generalism and Non-individuals | 23 |
| 2.1 Quantifier generalism | 24 |
| 2.2 Individual/non-individual | 26 |
| 2.3 Non-individuals part 1: entities with no identity | 29 |
| 2.3.1 Lacking an identity: the basic idea | 29 |
| 2.3.2 Formalising the basic idea: Q-sets | 30 |
| 2.3.3 Entities without identity and generalism | 32 |
| 2.4 Non-individuals part 2: entities with no <i>intrinsic</i> identity | 36 |
| 2.4.1 Extrinsic properties | 36 |
| 2.4.2 Graphs | 37 |
| 2.4.3 Discernibility | 38 |
| 2.4.4 Problem 1 | 41 |
| 2.4.5 Problem 2 | 43 |
| 2.5 Conclusion | 44 |
| 3 Paraphrase, Equivalence and Ontology | 45 |

| | | |
|-------|---|-----------|
| 3.1 | Paraphrase | 46 |
| 3.1.1 | Metaphysical semantics | 46 |
| 3.1.2 | The language of ontological nihilism | 48 |
| 3.1.3 | An aside: Alston's worry | 51 |
| 3.2 | Is \mathcal{L}_n merely a notational variant of \mathcal{L}_r ? | 52 |
| 3.2.1 | Two problems for the argument against nihilism | 54 |
| 3.3 | Realism regained | 57 |
| 3.3.1 | The argument in outline | 58 |
| 3.3.2 | The expressive function of our concept of object | 59 |
| 3.3.3 | Nihilism and placing categorial structure beyond our ken | 63 |
| 3.4 | Coda: realism, nihilism and anti-realism | 65 |
| | Conclusion | 66 |

Introduction

A theory is qualitativist just in case it elevates, in some important metaphysical sense, the category of properties and relations over that of individuals.

Characterised as such, qualitativism arguably encompasses a diverse range of views and thinkers throughout the history of philosophy. In the early modern era, for example, Berkeley took objects to be constituted by (so-called ‘secondary’) qualities; Hume held that the notion of an object is something we project onto our experience of successive qualities; and Leibniz—addressing a theme that will be particularly relevant to us here—denied that God could have created the world such that it differed from ours only in some non-qualitative way.¹ In the twentieth century, the later Russell (2013) defended his ‘bundle theory’, which holds that ‘what would commonly be called a “thing” is nothing but a bundle of coexisting qualities such as redness, hardness, etc.’ (97), and F.H. Bradley (2016) held that we are ‘driven to the conclusion that things are but appearances’ by reflection on the fact that ‘for a thing to exist it must possess identity; and identity seems a possession with a character at best doubtful’ (61).

Contemporary qualitativism also has a variety of manifestations. Various versions of the bundle theory live on, most prevalently in L.A Paul’s (2012, 2017) and Jonathan Hawthorne’s (O’Leary-Hawthorne, 1995; O’Leary-Hawthorne & Cover 1998). And in the philosophy of science a view known as ‘ontic structural realism’ has gained prominence, defending the idea that the world is nothing but structure: a nexus of relations floating free of individuals altogether (Ladyman 1998; Ladyman and Ross 2007; French 2014, chp. 7). On slightly less radical versions of this view, individuals, whilst not eliminable, are taken to be metaphysically determined by the structure of which they are a part (Esfeld and Lam 2011; McKenzie 2014).

Many of these ideas will, in some form or another, make an appearance in this thesis. They will do so, however, under the guise of another form, or conception, of qualitativism known as *generalism*; a position that, in line with its qualitativist credentials, opposes itself to *individualism*. Whilst an in-depth explication of the position and its antagonist is the task of this thesis, a short synopsis of the views

¹E.g. (Berkeley 2009, 83; Hume 1978, 20; Leibniz and Clarke in Huggett (ed.) 1999).

are in order here.

In brief, generalism contends that the world's fundamental facts are *general*, where a fact is general if it doesn't depend on how things stand with some particular thing. The following facts, for example, are general:

Someone is the president.

There are three apples in the world.

All massive particles are related by a gravitational force.

Such facts hold (if they do) just in case *something/s or other* is how the fact states it to be.²

Individualistic facts, by contrast, are facts whose truth depends upon how things stand with *particular* things. For example:

That (pointing at a particular apple) is juicy.

Joe Biden is the president.

The Eiffel Tower is smaller than the Empire State Building.

Someone has the property of being Queen Elizabeth.

Such facts obtain (if they do) just in case a particular thing or person exemplifies the property attributed to it. *Individualism* is the view that the world's fundamental facts are individualistic.

I said above that general facts hold just in case something or other is how the fact states it to be. But not all generalists would be happy with this gloss. In fact there, are two forms of generalism that will occupy us in this thesis. On the one hand, there are generalists who take general facts to have objects as constituents, albeit not the objects of individualistic facts; and on the other, there are those who think general facts have no objectual, or ontological, structure whatsoever. These latter generalists, unlike the former, thus subscribe to a form of *ontological nihilism*.

The thesis consists of three chapters. In chapter 1 I look at the main argument in favour of generalism found in the literature (what I call the 'no-difference argument') which is premised on the idea of permuting individual objects amongst qualitatively identical states. In brief, the argument contends that individualism is committed to a kind of structure that is beyond our ken, or, at least, in some important sense

²Here general facts are taken to ascribe only *purely qualitative* properties, thus precluding those that make reference to a *particular* individual: e.g. *Pegazises* or *Socratizes à la Quine* (1948, 27). For an analysis of what makes a property purely qualitative see, e.g., (Cowling 2015; Hoffman-Kolss 2019).

superfluous. My aims in this chapter are as much exegetical as critical—the structure of the no-difference argument, the framework it presupposes and the exact nature of its conclusions are often not clearly expressed or well understood. Once clarified I argue that there are reasons to be sceptical that the argument is wholly persuasive.

Chapter 2 investigates the possibility that fundamental general facts have a *kind* of ontological structure, albeit a structure distinct from that posited by individualism. Key to this chapter will be the notion of a *non-individual*, an idea already widely discussed within the literature on ontic structural realism. Two accounts of non-individuals are discussed; I argue that both fail to serve the generalist’s main aims. As well as critiquing this form of non-nihilistic generalism, part of my aim in this chapter is to shrink the landscape of the qualitativism-individualism debate, showing how previous positions taken up in the philosophy of science and physics can in fact be construed as positions within the generalist-individualist debate; and, conversely, how a previously under-explored generalist position might be given philosophical content by enlisting ideas developed by philosophers of science and physics.

The third (and final) chapter investigates the generalist position that has received most attention in the literature *algebraic generalism*, a purported form of ontological nihilism. Jason Turner (2011; 2016; forthcoming) has argued that algebraic generalism is untenable because it fails to avoid commitment to ontological structure. Such an argument depends on establishing some form of equivalence between the languages of algebraic generalism and individualism. I argue such an argument does not undermine the algebraic generalist position. Instead, I argue that what really undermines the algebraic generalist—somewhat ironically, given its purported motivation—is the scepticism it induces to questions it concedes are substantive.

Lastly, a note on those who may be turned off by bold claims about ‘the fundamental categorial structure of the world’, and the like. Whilst for the most part I allow that such claims are *prima facie* intelligible and thus deserving of philosophical scrutiny on their own terms, my own temperament toward such claims is perhaps best glimpsed in section 3 of the final chapter, ‘Realism regained’. There my argument for a realism with respect to the category of individual begins by outlining the *function* of individuals with respect to what we might call our ‘representational practices’. It would not require too much philosophical imagination to construe such an argument as more deflationary than is perhaps explicitly admitted by the argument itself.

Chapter 1

Motivating Generalism

The theory of generalism is undoubtedly revisionary. Much of our ordinary thought, if not all, and arguably most of our scientific theorising, conceives of the world as constituted by particular individual objects. One might reasonably think, then, that the generalist's hard work in excising individualistic facts from the world would be backed up by compelling reasons to reject them. In this chapter I put the most prominent argument in favour of generalism under the spotlight; I argue that it is at best inconclusive. Section 1.1 presents an overview of the argument and subsequently isolates its two key premisses: the first is the topic of section 1.2 and the second of 1.3. In 1.2 I argue that the individualist can resist the first premise by adopting a particular view of identity, a fact that subsequently reveals something of a tension in the generalist's own position. In 1.3 I argue that there is no direct way for the generalist to establish the second premise of the argument.

1.1 The argument in panorama

The argument against individuals that will occupy us in this chapter has been given its most perspicuous presentation in (Dasgupta 2009; 2016). The argument closely follows a certain kind of symmetry argument prevalent in the philosophy of physics literature.¹ The basic idea behind such arguments is the notion of a symmetry: a set of transformations that preserves some privileged piece of structure; *a change without change*, as it is sometimes put. In general, such arguments show some physical quantity to be variant under the set of transformations which preserve the the dynamics. It is then argued that such a quantity is physically redundant (and/or empirically undetectable) and thus, in some sense, unreal. The paradigm case here is the quantity of absolute velocity: variant under the set of uniform velocity boosts that preserve the truth of the dynamics, and consequently rejected, by most, as a

¹An excellent overview is (Brading & Castellani 2009).

physically real property.

The argument against individuals follows something of the form of that against absolute velocity. In order to properly appreciate the former, then, it will pay to revisit the latter.

1.1.1 Absolute velocity and spacetime structure

When coming to decide on what kind of structure our spacetime should possess our first port of call is the dynamics that govern the objects within it. To simplify things we will focus on the classical (non-quantum, non-relativistic) case. Accordingly, the dynamics that are of interest to us are Newton’s three laws of motion.²

The essence of the dialectic can be gleaned from an examination of Newton’s first and second laws. The first law states that an object not acted on by any force remains at rest or continues in uniform rectilinear, or *inertial*, motion. As such, the first law requires spatiotemporal structure that picks out a privileged class of trajectories through spacetime, namely, all those that are either at rest or moving inertially. In Newtonian physics such a privileged class is picked out by imbuing space with an immutable Euclidean structure that persists through uniformly passing time: what is called ‘absolute space’.³

Newton’s second law, however, states that a force acting on an object is a function of its mass and acceleration. As such, force is taken to be a *velocity-independent* quantity: applied to an object at rest a force will have the same consequences as the same force applied to an object moving inertially. The second law, therefore, does not, in this sense, *discriminate* between those trajectories that are moving inertially and those that are at rest with respect to absolute space. Nor, then, does it discriminate between possible states that differ from each other only with respect to facts concerning absolute motion, facts concerning objects’ motions with respect to absolute space.

The upshot of this brief dialectic, then, is that whilst Newton’s absolute space succeeds in picking out the frames required for the formulation of the first law, it does so by cutting a finer distinction than is required to formulate the dynamics embodied in the second. That is, it distinguishes those frames that are moving inertially from those that are at absolute rest. The spacetime structure of Newtonian physics thus

²Here, we will ignore—purely for convenience—Newton’s universal law of gravitation. Including it would, arguably, lead to a different conception of spacetime structure, see (Knox 2014).

³The details needn’t concern us here. Intuitively, taking spatial points to persist through time gives us a unique foliation of the space-time manifold corresponding to absolute temporal passage. An object is at rest during some interval if it is at the same spatial point at all times during that interval. An object is moving inertially during some interval if it is moving at a constant speed with respect to any object at absolute rest during that interval.

has *excess*, or *redundant* structure: structure that is in excess of what is required to formulate the dynamics.

It took a more than a century’s worth of mathematical progress to see that one could in fact precisely describe a spacetime whose structure matched the requirements of the first and second law perfectly: that picked out just the inertial frames without cutting any finer distinction between them. Such a spacetime has come to be known as *Galilean spacetime*: an affine space whose straight lines correspond to the inertial trajectories, but for which there is no meaningful statement of the persistence of spatial points across time. It is now nearly unanimously agreed that Galilean spacetime is the proper setting of Newton’s dynamics. The generalist contends that similar reasoning establishes an analogous preference for her generalist picture. Let us turn to that argument.

1.1.2 Permutations and individuals

As is now standard in the literature, can we enlist the tools of model theory to state the argument precisely. Take a language \mathcal{L} consisting of constants c_1, \dots, c_n , and predicate symbols R_1, \dots, R_m (of any adicity) representing the physical quantities relevant to an expression of the laws, i.e. all qualitative properties/relations. We then take \mathcal{M} to be an \mathcal{L} -*structure*, consisting of a domain M and interpretation function I that assigns i) each constant symbol an individual in M , and ii) for each predicate some set of individuals in M (or set of ordered n -*tuples* corresponding to the arity of the relation), such that $\mathcal{M} \models \Gamma$. For our purposes we take Γ to be the set of sentences of some physical system under an ‘individualistic description’, a description using names to make claims about particular things.

Given such a structure we can perform a permutation on its domain. Such permutations consist of a *bijection* $\pi : M \rightarrow M$. When $\pi(x) \neq x$ we take π to define a distinct \mathcal{L} -*structure*, \mathcal{N} , that will differ from \mathcal{M} in its assignment of constants c_1, \dots, c_n , but preserve qualitative structure. More precisely, π will satisfy the following condition: for all predicate symbols of R_1, \dots, R_m in \mathcal{L} and elements a_1, \dots, a_n of M , $R_{\mathcal{M}}(a_1, \dots, a_n)$ iff $R_{\mathcal{N}}(\pi(a_1), \dots, \pi(a_n))$. Any permutation that meets this condition we will call a *symmetry*. Any two structures related by such a symmetry are isomorphic and, thus, are elementarily equivalent, meaning that both structures will make exactly the same sentences true.

Again, note that in our case such sentences give a complete physical description of the state represented by \mathcal{M} and \mathcal{N} . Given this, it follows that the two states described by \mathcal{M} and \mathcal{N} will be empirically equivalent—in that no sentence with empirical content will be true in one model and not the other. It is also arguably the case that each state will be dynamically equivalent, in that no sentence expressing

some law will be true in one model but not the other. Despite this, the two models appear to describe distinct states of affairs, for the simple reason that they differ with respect to claims concerning which objects instantiate which properties and relations. The upshot, the argument contends, is that, just as we were inclined to excise absolute velocity from our theory of spacetime, so too we ought to excise from our theory of the world the structure that underpins the claim that $\mathcal{M} \neq \mathcal{N}$.

This model-theoretic expression of the argument is enlightening, but we must be careful not to read *too* much into it. Model theory, though helpful in explicating the outline of the argument, is not modal metaphysics, nor does it force any particular modal or metaphysical conclusions on us. At this stage, then, we can simply note that we are not *forced* by model theory to take the states the two models represent to be distinct. Indeed, if we were to follow standard *mathematical practice* and identify models only up to isomorphism, we would be largely justified in taking the models related by such a symmetry to be for all relevant purposes equivalent.

More will be said of this later. For now, however, we can tentatively extract from the above the skeleton of a deceptively simple argument, an argument we can call the ‘no-difference’ argument (for the simple reason that it takes individuals to, as it were, *make no difference*). Assuming, for now, that each distinct model does correspond to some unique possible state of affairs, we are led to the notion of *qualitatively identical states*, or *possibilities*, that differ in respect of their individualistic facts. I denote such states as ‘QIDs’ for ‘qualitatively identical differences’. The no-difference argument thus amounts to the following claims with respect to QIDs:

P1: Individualism entails QIDs.

P2: If a theory T entails the possibility of QIDs we ought to prefer an alternative theory T' that does not entail the possibility of QIDs.

\therefore We ought to prefer an alternative theory to individualism.

Of course, we have not yet met any alternative theory to individualism (introducing such alternatives will occupy us in chapters 2 and 3). Nevertheless what we will investigate here is whether such an argument can be made against individualism on the assumption that there is some (presumably generalist) theory that does not entail the possibility of QIDs. **P1** will occupy us in section 1.2, where I discuss the way in which the generalist takes individualism to entail QIDs; and **P2** will occupy us in section 1.3, where I discuss the way in which the generalist takes such states to be problematic.

1.2 Individualism and the possibility of QIDs

There are two aspects to the question of whether individualism entails QIDs. First, we have to ask what is deemed possible tout court, to ask what modal principles the argument takes to hold for the individualist and generalist alike; we have to unpack, that is, the modal framework within which the argument is couched. Second, once we have the general framework in view, we must ask what is possible with respect to the specific commitments of individualism: that is, what the argument presupposes as commitments specific to individualism that—given the general framework—are said to entail QIDs.

1.2.1 The general modal framework

The first distinction that will be of importance to the argument is a distinction between what we may call a *realist* and an *anti-realist* attitude to modality. On the former view, the modal structure of the world is taken to be a mind-/practice-independent feature of reality. There are, for the realist, *objective* facts about what is possible and what is not, and our modal discourse has the simple function of describing these facts. The anti-realist, on the other hand, is sceptical that our modal discourse serves such a descriptive function. Instead, the anti-realist will have some other kind of story to tell regarding our acquisition and proper application of modal concepts: for example, that they are reducible to conventions of language, or express pragmatically determined constraints within a context of inquiry, or are projected onto the world by us through habit, etc. Whilst the details may differ, the important point is that in each case the anti-realist rejects the idea that reality has an intrinsic, objective modal structure.⁴

The second distinction is a distinction within the realist attitude, to modality as either *fundamental* or *non-fundamental*. Roughly, modality is a fundamental feature of reality if modal facts cannot be further explained in non-modal terms. The non-fundamentalist, by contrast, holds that modal facts can be explained by non-modal structure, that is, by facts about how things stand in our *actual* world. In general, then, the non-fundamentalist will subscribe to the following:

for any (not necessarily atomic) fact p , $\Box p$ because q , where q is some (again, not necessarily atomic, nor, for that matter, finitely specifiable) *non-modal* fact, i.e. there is no occurrence of the necessity operator, or its equivalent, within q .⁵

⁴For a recent overview, and endorsement, of the anti-realist attitude see (Thomasson 2019).

⁵Usually this schema is cashed out in terms of ground, actual essences, dependence, etc. see e.g. (Fine 1994). Note also that my usage departs from that of Sider (2011, chp.12). For Sider

With these distinctions in view it should be fairly evident that the no-difference argument must presuppose both a realist and non-fundamentalist attitude to modality. With respect to realism: if one were not a realist but instead thought that the possibility of QIDs reduces to, say, a convention governing our use of concepts, then clearly such possibilities would not reveal anything about the fundamental categorial structure of the world.

The issue of non-fundamentalism is a little more subtle. Suppose that the individualist is a fundamentalist, then—as Dasgupta himself points out (e.g., 2011, s.7-8)—she could simply adopt a brute modal fact such as *anti-haecceitism*: the view that there can be no non-qualitative difference without a qualitative one. An immediate consequence of anti-haecceitism is that QIDs are metaphysically impossible: there simply can't be a possibility that differs only with respect to which individual instantiates which properties. The generalist takes issue with such a stance because, given the presumed realist attitude to modality, it leaves us in the dark as to exactly *why* our modal space should be so constrained—that individualism does not entail QIDs has, on this picture, little to do with *individualism*, but rather depends on brute facts about modality.

It is not my intention to contest any of these presuppositions. Instead, I bring them to fore for two reasons. First, it is important to note that non-fundamentalism is imposed on the debate by the generalist. As we shall see, there are various moves that the generalist may wish to make that would be inconsistent with such an imposition.

Secondly, many authors, contrary to the remarks above, take anti-haecceitism (or, as it is more commonly known in philosophy of physics circles, *Leibniz equivalence*) to be something of a golden panacea to any form of (non-qualitative) symmetry argument, including the no-difference one, e.g. (Saunders 2003; Baker 2010; Dewar 2016). Often, however, such authors are not explicit as to how exactly they conceive their anti-haecceitism with respect to the distinctions above. Most likely, I think, is that a certain anti-realist attitude underpins their endorsement of such a principle. When, for example, we read that ‘if two mathematical models of a physical theory are related by a symmetry transformation, then those models represent one and the same physical state of affairs’ (Greaves and Wallace 2014, 60), it appears that the perceived freedom to interpret the models as such depends upon there being a certain freedom to shape modal space according to principles of theoretical simplicity, rather than such a space being somehow determined by objective modal facts. As such, his position would instead be, on my classification, closer to an anti-realism rather than non-fundamentalism. However in so far as modal facts are taken to be *explained* by structural features of the world they would be deemed real but non-fundamental.

facts (beyond, of course, the nomological ones that determine the models in the first place). If so, then such authors need not be touched by the criticism that the adoption of anti-haecceitism suffers some explanatory deficit (rejecting as they do a realism with respect to modality). Equally however, nor can these authors use, it seems, such non-qualitative symmetries to derive substantive facts about non-modal structure.⁶ In any case, the take home point here is that such authors (for better or worse) engage with the debate with a distinct attitude toward modality than that presupposed by the argument. Failure to recognise this point, leads, I believe, many participants in the debate to simply talk past each other with respect to the import of various non-qualitative symmetries.

1.2.2 The specific modal commitments of individualism: haecceities

We can now turn to a proper evaluation of **P1**. In this section I highlight a tension within the generalist’s argument elicited by a possible response of the individualist.

Let us first turn to an understanding of QIDs. The most prevalent way of conceiving of QIDs goes by way of *haecceities*. The classic gloss is given by R.M. Adams (1979): for him a haecceity is ‘the property of being identical with a certain individual—not the property that we all share, of being identical with some individual or other, but my property of being identical with me, your property of being identical with you, etc.’ (6) Formally, we can represent a commitment to haecceities as commitment to the existence of properties of the form: $\lambda x(x = a)$ (i.e. the property of being identical to some particular object), or alternatively, and perhaps more commonly, to the existence of facts of the following form: $\exists x(x = a)$.⁷

If haecceities exist then two states could be qualitatively equivalent, and yet differ in which individuals instantiate which empirical and physical properties. Take, for example, some possible state of affairs in which an individual a instantiates qualitative structure $\phi(x, \bar{y})$ ⁸ and the haecceity $\lambda x(x = a)$. Compare this possible state of affairs to another in which an individual b instantiates qualitative structure $\phi(x, \bar{y})$ and the haecceity $\lambda x(x = b)$. Although such possibilities are qualitatively

⁶This might strike some as overly bold. To be clear, however, this is not to say that such symmetries become trivial matters. Instead, it is merely to say that there is no inferential link is made between the QIDs and non-modal structure. Instead, the reasoning would appear to pertain to the nature and interpretation of theories, rather than *directly* concerning the world itself.

⁷The latter is perhaps preferable, so as not to exclude, by fiat, nominalists who wish to endorse non-qualitative differences. In the following I will move freely between talk of haecceistic facts and properties, where any of those inclined to nominalism can read such occurrences exclusively in terms of haecceistic facts.

⁸Here, ‘ \bar{y} ’ represents the parametric variables of ϕ .

equivalent they differ in their distribution of non-qualitative properties, properties that determine which individuals instantiate which qualitative properties. Similar reasoning obtains when we talk of haecceistic facts. In sum: haecceities entail QIDs.

It is important that we understand this commitment to haecceities as an *ontological* commitment (in terms of either properties or facts) that obtain in actuality, and not the closely related commitment to *haecceitism*.⁹ Given the general framework set out above, it is clear that the argument can as little depend on an attribution of haecceitism to the individualist as its resolution can depend on the individualist adopting its contrary. Instead, the argument must show that QIDs, which are essentially modal, derive from more fundamental *non-modal* facts. In the case at hand, this reduces to the demand that the fact that individuals possess a non-qualitative identity across possibilities be *explained* by the fact they possess non-qualitative identities in actuality.¹⁰

If haecceities entail QIDs, the question remaining is whether commitment to individualistic facts entail haecceities. Here, the generalist no doubt has in mind the following: that for any individualistic fact, say Fa , we also have, given the reflexivity of identity, $a = a$, and from this (assuming we are not working within a free logic), the haecceity $\exists x(x = a)$. In short, the generalist will hold that, given some fact about a particular object, we can derive a fact concerning the particular non-qualitative *identity* of that object.

There are two ways in which the individualist might reject this line of reasoning. First, if the individualist chooses to work in a language that eschews identity then, even if we have a name for every object in the domain and thus can formulate a range of individualistic facts, we cannot formulate haecceities. One might think this is a rather *ad hoc* move: truncating one's language simply so that certain facts become inexpressible. But similar reasoning is exhibited by the generalist when she chooses to excise names from her logic so as not to be able to express individualistic facts (this will be explained in more detail in the next chapter). It seems that there is nothing in principle that would preclude the individualist from making the analogous move here.

Still, excising identity from one's language seriously curtails one's expressive powers, far in excess of simply precluding the expression of haecceities; so, even if the individualist is dialectically permitted to make such a move, it is unclear she

⁹Haecceitism being the doctrine that every individual has a unique world-bound identity, such that there are *necessarily* non-qualitative differences between qualitatively identical possibilities; see (Skow 2008) for an overview and clarification of terminology.

¹⁰Again, you might simply want to reject the inference from the existence of particular identity facts in actuality to the existence of non-qualitative differences across possibilities. Doing so, however, would again amount to rejecting the modal presuppositions of the debate.

should want to make it.

Let us turn then to the second line of response. This is that, even if the individualist does take our language to possess identity, she might still opt to introduce that predicate as a definition of qualitative equivalence. If she does then the “haecceities” (that is, facts of the form $\exists x(x = a)$) cannot ground the non-qualitative differences amongst QIDs: if identity is treated as qualitative equivalence in actuality (and, further, facts that hold in actuality are taken to explain the shape of modal space) then QIDs ought, in this case, to be deemed impossible. Such “haecceities” would lack the non-qualitative aspect that was taken to ground the non-qualitative differences across possibilities.

One might think that all this is all obvious enough. But the consequences for the debate have not, it seems to me, been properly acknowledged. First, note that adopting an account of identity such that that notion is defined in terms of something like qualitative equivalence is not inconsistent with the categorial commitments of individualism, i.e. the existence of individuals. Nor is it, as we have just seen, inconsistent with the commitment to individualistic facts.

Now, many generalists may think I have so far simply failed to accurately set up the debate. They may contend that really what is intended by individualistic facts (and thus, the commitments of individualism) simply *are* non-qualitative facts concerning the identity of an individual; adopting an account of identity that is defined in terms of qualitative equivalence is thus simply inconsistent with the individualist’s commitments.

In the next chapter I will spend much more time making explicit exactly how the categorial commitments of individualism tie up with a specific commitment to individualistic facts and the non-qualitative identities of individuals. Setting this aside for now, however, we can remark on what I believe is a real tension at the heart of the generalist’s no-difference argument. On the one hand, the generalist takes individualism to go metaphysically astray by endorsing facts about object’s non-qualitative identity; yet, on the other, she explicitly *accepts* facts of the form $\exists x\exists y\forall P(Px \wedge Py \wedge x \neq y)$. Whilst this latter fact differs from the former in its use of constants, it is inconsistent with the analysis of identity in terms of qualitative equivalence. So, if what characterises haecceities as such is their expression in terms of an identity predicate that does not reduce to qualitative equivalence, then the generalist ought to be equally suspicious of these latter kind of facts as she is of the facts of individualism.

There are, then, two take-home points to this section. First, that individualistic facts entail haecceities is an inference in need of further support, given that the individualist can block such an inference in the ways set out above. Obviously,

what is being assumed by the generalist is the individualist's commitment to a specific account of identity *alongside* individualistic facts.

The second upshot—something that is more concretely in favour of the individualist—is that even if the individualist is taken to be committed to haecceistic facts—construed as those that *essentially* involve non-qualitative identity attributions—so too, it would appear, is the generalist. Any possibility that is entailed by the former would then be entailed by the latter; equally, any problem taken to pertain to such possibilities would be suffered as much by the generalist as by the individualist.

1.3 Why are QIDs problematic?

Of course **P1** is only half the no-difference argument; in this section, I put **P2** under the spotlight. I argue that even granting **P1** there is no easy way for the generalist to show such states to be *problematic*, such as to force a preference for a theory that does not entail QIDs, and thus establish **P2**.

If QIDs are problematic we need an explanation as to *why* they are problematic: that they are cannot be a mere brute fact about them. This point is perhaps easily forgotten. Often it can seem just obvious that, if two theories are for all intents and purposes 'equal' and yet only one entails QIDs, whilst the other does not, we ought to prefer the latter over the former. But we have to be careful how we understand this reasoning. Given the modal presuppositions of the argument (that modal facts are grounded by actual facts) it may simply be a fact about the world that our best theory of it entails QIDs, and this would be a fact that overrides any unexplained preference for non QID-entailing theories: it may, that is, simply be something that we happily embrace rather than have to defend against. The problematic nature of QIDs, then, has to be located in facts about actuality, rather than a brute preference for a certain kind of modal space. Furthermore, in order not be question begging, the problematic nature of QIDs must be located in features that are independent of individualism.

With this in mind, note that generalists do *not* usually take QIDs to be brutally problematic. Instead, they point to two distinct aspects of their supposedly problematic nature: that they highlight *empirically undetectable* and *physically redundant* structure.

1.3.1 Empirical undetectability

Let us take the issue of empirical undetectability first. Such undetectability is manifest in QIDs by their empirical equivalence. Take the case of absolute velocity. There, the empirical equivalence of states which differed with respect to facts con-

cerning absolute velocity was taken as a *symptom* of the fact that such a quantity is deemed empirically undetectable: facts about a body's absolute velocity could not, even in principle, be detected.¹¹

Things, however, are a little subtler than this simple piece of reasoning would suggest. Again, take the case of absolute velocity. Facts concerning absolute velocity are constituted by an ontology, namely, by the existence of absolute space (and the trajectory of bodies through it). Whilst the facts concerning absolute velocity that vary across the empirically equivalent states are empirically undetectable, this does not, in and of itself, determine the ontology underpinning such facts to be empirically undetectable. Indeed, Newton himself took absolute space to be detectable through his famous spinning bucket. What constituted a proper test of the existence of absolute space was determined, for Newton, by his understanding of dynamical phenomena within the context of his current theoretical perspective. So too do we, like Newton, have to rely not only on the theory itself, but also our background presuppositions, to determine what exactly is taken as empirically detectable, and what is not. As such, the empirical equivalence of a certain set of facts (concerning, say, absolute velocity) does not necessarily determine the ontology that underpins such facts to be empirically undetectable.

Something of the same conclusion can be drawn from what ought, I think, to be the moral of Tim Maudlin's 1993 paper on the absolutism-relationism debate. There Maudlin holds that non-qualitative differences *are* always empirically detectable—indeed trivially so: for they are always indexically denoted. For Maudlin, non-qualitative differences that exist in the symmetries of space-time are not the problem many take them to be because there is nothing more to be had concerning, say, my position in space, other than it is *here* (and not 5 metres to the left of here). My intention is not to endorse Maudlin's point here, but rather only to point out, again, that criteria of empirical detectability can vary even for those who agree on the existence of symmetries.

Admittedly, both these points are more subtle than the rough gloss they are given here. Nevertheless reflection on these cases ought to make us pause over what might have seemed a straightforward inference from the existence of symmetries to the undetectability of some piece of ontology. Much will depend on what exactly is underpinned by such an ontology, and our epistemic relation to it (e.g., whether facts concerning position, say, transcend our ability to denote them indexically). In short, there is no direct, or even necessarily easy route, from the empirical equivalence of QIDs to the empirical *undetectability* of non-qualitative differences.

¹¹The 'in principle' here is determined by the dynamics: already we have evidence of the crucial interplay between empirical undetectability and physical redundancy.

Another problem that the generalist incurs by placing the weight of the problem with QIDs on empirical detectability is that she risks undermining her own position. The problem is that the generalist position can itself be thought of as committed to empirically undetectable structure manifest, for example, in its empirical equivalence to individualism (and other theories of metaphysical categorial structure: factalism, trope theory, Aristotelian substance theory, etc.)—the structure, that is, that underpins the substantivity of the question that sustains the debate over the categorial structure of the world. In short, by placing the weight of the problem of QIDs on empirical detectability, the generalist places herself atop a slippery slope leading to a kind of positivism.

1.3.2 Physical redundancy

Such worries, I believe place a strain on the generalist claiming the problematic nature of QIDs to reside in their connection to empirically undetectable structure. The question still remains then as to why we ought to favour a theory that does not entail QIDs over one that does. If empirical equivalence is not the problem, then the weight of **P2** must fall on the physical equivalence of QIDs. Like the empirical equivalence of QIDs, their physical equivalence is taken to be a symptom of a deeper underlying problem, namely, that individualistic facts are, in some sense, physically *redundant*.

Before moving onto the problem of physical redundancy, it is worthwhile addressing the question of whether empirical detectability and physical redundancy denote distinct criteria. Whether they do depends, evidently, on the generalists view of laws. On a certain ‘thin’, essentially instrumentalist, understanding of laws, empirical equivalence and physical invariance will be co-extensive across possibilities: for there is no more structure to . We can call this ‘thin physical redundancy’. If one has a more robust understanding of the laws, however, in which the laws themselves contain/denote non-empirical structure, then physical equivalence is a strictly more discerning notion than empirical equivalence. We can call this ‘thick physical redundancy’. To give a somewhat crude illustration, if one assumes ‘thin physical redundancy’ then the commitments of, say, either a Bohmian, collapse or Everettian interpretation of quantum mechanics will be physically redundant. If one takes a ‘thick view’ of physical redundancy then they will not.)

In a 2016 paper Dasgupta asks whether physical redundancy provides suitable justification for excising structure that varies across a set of symmetries. His answer is *no*, for the simple reason that anyone who takes such structure to be real will correspondingly take facts pertaining to such structure to faithfully describe some aspect of the world. In short, Dasgupta finds any reasoning based on physical

redundancy to be question begging.

In many ways, Dasgupta's reasoning in the case of physical redundancy mirrors my claims concerning empirical undetectability above. For judgements concerning physical redundancy, just like empirical detectability, will always be relative to some theoretical perspective, a perspective that may already encompass reasons to grant the questioned piece of structure empirically detectable or physically salient. This is perhaps even clearer in the case of physical redundancy, for those claims which one thinks are substantive will *ipso facto* be paradigmatic non-redundant facts: facts concerning non-redundant physical structure.

What, then, our reflections on the notions of empirical undetectability and physical redundancy reveal, is that symmetries by themselves do not determine the empirical undetectability or physical redundancy of some piece of ontological structure. Instead, such judgements take place against a whole backdrop of beliefs. Judging a piece of structure redundant or empirically undetectable is a far more holistic enterprise than merely following from the existence of symmetries within a particular theory.

Now, whilst this general moral holds, I believe, across all kinds of symmetry reasoning, I also believe that there is a salient disanalogy between the case of absolute velocity and individuals, one that makes the former a more compelling case of symmetry reasoning than the latter. This is that the requisite theoretical perspective from which judgements of physical redundancy are effected is more wide ranging in the case of the category of individual or individualistic facts, than it is in the case of absolute velocity. In the case of absolute velocity the move from Newtonian to Galilean spacetime is compelling in so far as we are committed to formulating a spacetime whose sole function is to support the dynamics embodied in the second law. Once we see that absolute velocity is not required for such a function (evidenced most perspicuously by the formulation of the dynamics within Galilean spacetime), we are happy to see the back of it. In the case of individualistic facts, however, our theoretical perspective from which we effect judgements as to the purported redundancy of such a particular piece of metaphysical structure necessarily encompasses more than a mere consideration of the dynamics; the role of the category of individual outstrips that of absolute velocity. In short, the job that individuals and individualistic facts *do* make their redundancy a far more difficult and contentious matter to establish. Over the next two chapters we will have occasion to see just what broad roles individuals play, as well as examining distinct kinds of generalist theory that do without them. Only then, it seems, can a proper judgement be made of these matters.

The generalist might claim that I have shifted the goalposts. Putting aside

the broad *metaphysical* function of the category of individual, the generalist might contend it is obvious that the non-qualitative differences of individualism are not required to articulate any kind of *physical law*.¹² But even here things are not so simple. As we will see in the next chapter, it has been argued by some that quantum statistics in fact *requires* non-qualitative differences for a proper interpretation of the state space; if so, any dynamics articulated with respect to such a state space would therefore seem to presuppose non-qualitative differences.

In sum, **P2** holds that given two theories, one that entails QIDs and one that does not, we ought to opt for the latter. But QIDs, in and of themselves, cannot be considered problematic. Instead, symmetries in general (and QIDs in particular) are ‘bad’ only in so far as they are symptoms of a theory’s empirically undetectable and physically redundant structure. Furthermore, the exact relation between such structure—as well as its standing as empirically undetectable and physically redundant—and the the existence of symmetries is no straightforward matter. I have suggested that whether individualism can be faulted on either count is not as clear as standard presentations of the no-difference argument suggest.

1.4 Conclusion

We have seen that the no-difference argument, to be successful, must do two things: first, it must show that individualism is committed to the possibility of QIDs, and second, show that QIDs are problematic. I have argued, however, that there are no straightforward means by which the argument has established either. With respect to the former it was unclear, first, whether individualistic facts entailed haecceistic ones, and second that generalism itself is arguably just as committed to such haecceities (conceived as irreducible non-qualitative facts concerning identity) as is individualism. With respect to the latter, we saw that there is nothing straightforwardly problematic about QIDs that would justify the original statement of the premise. Instead, the permissibility of QIDs was taken to be relative to a whole host of metaphysical questions. As such, we have seen that the no-difference argument does not straightforwardly establish individualism as a problematic metaphysical doctrine.

¹²Indeed, Hempel and Oppenheim (1948) even go so far as to make this a condition of adequacy of lawhood.

Chapter 2

Generalism and Non-individuals

The generalist takes the world to be fundamentally *general*—constituted, that is, by purely general facts. At first glance, however, it may be unclear why generalism is thought any less committed to individualistic facts than is individualism. General facts appear committed, for example, to *something* being darker than *something* white, or *everything* that is an apple being juicy, and it is difficult to know what to make of these *things* other than their being the particular individual objects that constitute individualistic facts.

There are a couple of ways one might react to such a worry. One might, for example, try to *paraphrase away* the commitment to objects that ostensibly pertain to such facts—to show, that is, that all such facts *really* require for their truth are properties and relations, rather than objects of any kind. This *nihilistic* response will occupy us in the next chapter. Another response one might have, however, is not to *eliminate* such facts' apparent commitment to objects, but rather to maintain that the (objectual) *constituents* of general facts occupy a distinct category of entity to the (objectual) constituents of individualistic facts, thereby undermining the claim that general facts are simply individualistic ones in disguise.

In this chapter I am going to investigate two possible ways we might understand the notion of an object that falls outside the individualist's categorial commitments—two possible ways, that is, of understanding the category of *non-individual*. I argue that neither are suited to serve as the constituents of fundamental general facts because both fail to constitute a fundamental metaphysical category: the first, because it cannot serve as the constituent of *all* general facts, the second, because its conception of a *non-individual* can be seen to metaphysically depend upon the notion of an individual.

I begin by relating the content of this chapter to a previously hinted at (but mostly undeveloped) position in the literature termed 'quantifier generalism' (sec. 1). I then set out how I will understand the individual/non-individual distinction (sec.

2). In sections 3 and 4 I look at the two accounts of the category of non-individual previously proposed, situating them both within the generalist-individualist debate, and critiquing their generalist credentials.

2.1 Quantifier generalism

Before we begin let me first clarify how this chapter fits into the extant literature. One way in which to characterise what is at stake in the debate is in terms of how one ought to regiment generalist, compared to individualistic, facts. The most natural (or at least the standard) way of formalising general facts are with the use of first-order quantifiers. For example (with the predicates interpreted accordingly):

Something blue is darker than something white becomes $\exists x\exists y(Bx \wedge Wy \wedge Dxy)$,

Someone is the president becomes $\exists xPx$, and

All apples are juicy becomes $\forall x(Ax \rightarrow Jx)$.

The view that takes such quantificational facts as fundamental is dubbed *quantifier* generalism (this is compared to the algebraic variety of generalism we will meet in the next chapter). Quantifier generalism was first introduced and then quickly dismissed in (Dasgupta 2009). The reason given for quantifier generalism's inadequacy as a proper form of generalism was that quantificational facts must be grounded in their individualistic instances, thus undermining the generalist's claim that such facts are *fundamental*.

In fact, I think we can separate out two strands to such a criticism. The first is a thought explicitly concerning *ground*. Gideon Rosen (2010), for example, takes an 'easy' case of grounding to be exemplified by the logical relation between a quantified statement and its instance. In Rosen's words:

If Jones voted for the anarchists, then someone voted for the anarchists.
 And if we ask *in virtue of what is it the case that someone voted for the anarchists?*, one good answer will be: *someone voted for them in virtue of the fact that Jones voted for them*. In general: (\exists) : If $\phi(a)$ is true, then $[\exists x\phi x] \leftarrow [\phi a]$ (117),

(Where ' \leftarrow ' represents the metaphysical dependence of fact on the left hand side on that of the right.)

The second worry is closely related, but importantly different, to the first. This worry stems, not from a particular view of ground, but rather from the standard semantics we give our quantifiers. Roughly, a statement of the form $\exists x\phi$ is taken

to be true (in a model \mathcal{M} , consisting of a domain M and valuation function I) just in case there is an assignment of x to some element in M such that ϕ holds of that element with respect to I . Dasgupta (2009) seems to take it that this latter thought, concerning the semantics, is *sufficient* to establish the former concerning ground: as he says, ‘...we have been brought up to understand that quantifiers range over a domain *of individuals*. So our natural understanding of the [quantificational] facts listed above is that they hold in virtue of facts about individuals, and it would therefore appear that we have made no progress’ (50). In a follow up 2016 paper Dasgupta elucidates further, reflecting that it is arguably ‘analytic, or perhaps essential, of the existential quantifier that existential facts hold in virtue of their instances’ (13).

As many in the literature have pointed out (Donaldson 2015, Turner 2017) this reasoning seems too quick. There is little reason to think, such authors contend, that our formal semantics forces the grounding, or essentialist, thesis on us. With this I totally agree. Such authors, however, go further, seeming to suggest that simply rejecting the grounding thesis would thereby clear the way for the fundamentality of quantificational facts, and thus the tenability of quantifier generalism as a theory concerning the fundamental nature of reality. I am not so sure. Rather the real difficulty that the semantics for quantificational statements reveal, I think, is that that general facts appear to have individuals as *constituents*.¹ As such the generalist would appear not to have avoided the categorial commitments of individualism. Simply rejecting the grounding thesis (and yet maintaining a formal semantics that consists of a domain of individuals with respect to which quantificational facts are evaluated) does nothing to assuage this worry. On the other hand, if we can provide a non-individualistic category of entity to serve as the constituent of general facts then we can also happily keep our formal semantics, simply taking general statements to be evaluated with respect to a domain consisting of the entities of such a category. Indeed, if we are so inclined, we could even endorse some kind of grounding thesis that mirrors this new domain. My point here is simply that, whether or not we do, the grounding issue is strictly secondary to that of the categorial commitments constituted by the sub-factual structure of general facts, and revealed by the form of the standard semantics we give for quantifier phrases.

¹I find talk of *constituents* of facts helpful in seeing what is at stake between the individualist and generalist. Others have demurred, however (Tim Button, p.c.). Let me just say, then, that here the overarching question concerns the *subfactual structure* of facts, whether or not this is most perspicuously captured by talk of constituents. That facts have a kind of subfactual structure is, I hope, not too contentious a thesis to assume (though of course, some might want to resist a certain construal of this idea, e.g. Turner (2016) and Rayo (2017)).

2.2 Individual/non-individual

So far I have hinted at a metaphysical category whose instances are i) not individuals ii) and yet can still serve as the ‘elements of the domain’ for which general statements are taken to hold. To begin to get an idea of what kind of a category of entity this could be we should start by asking what exactly it is that such a category is attempting to avoid: we need to know what it is that makes an entity an *individual* in order to know what might be meant by an entity that is a *non-individual*.

Now, the consensus in the literature is that what is characteristic of individualism is that individualistic facts make essential use of names. Jason Turner (2017), for example, holds that ‘a fact is an “individual fact” if it can be expressed by a sentence that uses an individual’s name — such as “*Fa*” or “*Pa & Qa*” (2); and Dasgupta (2016) similarly: ‘[w]e express individualistic facts with directly referring expressions’, and that, ‘in first-order logic we regiment our talk of individualistic facts with constants’ (7).

As a characterisation of what makes a fact individualistic, however, this is far from ideal. For one could get the impression that the individualistic/general distinction is constituted by how we pick out, or *refer*, to an object, rather than a genuine distinction between two kinds of facts. That we pick out an object by directly referring to it with a name, tells us, *prima facie* at least, little about the *constituents* of the fact, and so the nature of the fact itself.

John Stachel, in his (2005) on Putnam’s model-theoretic arguments, presses Putnam on just this point. After setting out the problem of *reference* that Putnam’s arguments are traditionally taken to manifest, he suggests that Putnam ‘takes for granted... the individual identity of the members of his sets... and he never considers the possibility of a set of entities, the members of which cannot be uniquely referred to by a name... not because of either of the aforementioned problems of reference [its underdetermination by the model-theoretic semantics], but because such entities lack the feature of intrinsic individuality’ (204). We will see exactly what Stachel means by intrinsic individuality later; the aspect of Stachel’s criticism relevant to us now is simply that Putnam (according to him) never considers that the problem is more metaphysical than linguistic: to do with the nature of the entities referred to, rather than the nature of reference or the limits of what we can express. We can make much the same point with respect to the individualist/generalist distinction: the focus should not be on how we *express* individualistic as opposed to general facts, but rather on what constitutes the fact as individualistic or general, independently of its expression.

A better question to ask, then, is what it is about the named objects that make them suitable constituents of individualistic facts. E.J Lowe (2016), in his investiga-

tion of the individual/non-individual distinction, provides us a good starting point. Lowe takes the following as the criterion of individual:

[**Def Ind**] Something, x , is an individual if and only if (1) x determinately counts as *one* entity and (2) x has a determinate *identity*. (50)²

As Lowe remarks neither condition appears trivially satisfied. The first condition fails, for example, with respect to pluralities, for example, *the planets of the solar system* or *the Tudor kings of England*. It also fails for those things that fail to have a number altogether: *the water in my bathtub*, or *all the gold in the universe* (and more generally, it seems, for anything denoted using mass nouns). Of more interest to us, however, are cases where the second condition fails.³ Lowe thinks that *prima facie* this is at least metaphysically possible. It could be the case, for instance, that we have two objects and yet there be no determinate fact of the matter as to which object is which.

When talking of what exactly might be meant by determinate identity, Lowe remarks, first, that it is primitive and so not definable in other more basic terms, and secondly that it is closely related to what John Locke called ‘essences’: that is, ‘the very being of any thing, whereby it is, what it is’ (Essay, III, iii, 15).

Lowe also remarks that such a use of the term ‘is evidently a *nonrelational* use of the expression’ (Lowe 2016, 50, my italics). Now, there are many ways in which one could interpret the ‘non-relational’ here. My suggestion is that Lowe is alluding to another feature that we often assume is bound to the notion of an object’s identity, namely, that such an identity is *intrinsic* to that very object. Such a notion, however, introduces a non-trivial condition that goes beyond the two conditions already set out above. As such, to Lowe’s two conditions on individual-hood, I will add a third:

[**Def Ind**] Something, x , is an individual if and only if 1) x determinately counts as *one* entity; (2) x has a determinate *identity*, and 3) such an identity is *intrinsic* to x .

Any object that fails in at least one of these conditions I will call a non-individual.

With this in mind, we can begin to set out a more detailed account of individualism. What makes a fact individualistic, I contend, is that the objectual constituent

²Talk of ‘an object’s identity’ may feel a little awkward. Are we not perhaps wrong to reify such things in these terms? Perhaps. But I think we could just as easily parse such a condition in terms of *facts* concerning an object’s identity. Thus, in what follows I will switch between the two locutions freely, bearing in mind that if needs be we can always parse ‘an object’s identity’ into ‘a fact concerning that object’s identity’.

³This is because in order to serve as *an* element of a domain (as is required for our account of quantifier generalism) the entity must at least be a single entity. Indeed as will be made explicit below, this effectively amounts to the condition that we are able to, as it were, ‘collect’ such entities into our domain—they must be, in some sense, ‘countable’.

of the fact is an object that meets all three conditions of **Def Ind**. Our search for a proper account of quantifier generalism, then, amounts to the search for, and defence of, the category of non-individual, instances of which can serve as the objectual constituents of general facts.

It is perhaps interesting to relate our metaphysics back to the predominantly linguistic phenomena that we have seen often characterises the debate. That the two characterisations coincide can be taken as good evidence that we are on the right track. Here the semantics we give for names can be enlightening. What distinguishes the role of names from mere bound variables is the idea that the use of names has to be, within the context of a given model, *systematic*: the name denotes the *same* object on each occasion of use within a model or assignment. This is of course very rough, but it is also illuminating, for it is a short walk from this thought to the thought that what is essential to our use of names to capture or express individualistic facts is that they sustain a variety of claims across, as it were, a variety of contexts, claims that are underpinned by the *identity* of the objectual constituent of that fact. That an object's identity be both determinate and intrinsic is obviously key for sustaining this role—key, we might say, to an entity's aptness for naming, or its *nameability*.⁴

Non-individuals: two accounts

With the framework of individual/non-individual in hand, let us turn to generalism. Generalists reject individualism: they think the world does not consist of individuals or individualistic facts. And as we have seen there are two ways in which an object may fail to be an individual. First, it might lack an identity altogether, and second it might lack an intrinsic identity. The former will occupy us in section 2.3, the latter in 2.4. As we shall see both kinds of non-individual have in fact already been significantly developed by so-called 'ontic structural realists'.

⁴The problem of whether one can successfully refer to objects that are not individuals in the sense above is something of a fraught issue. Note here again that my claim is not that reference to non-individuals by directly referring expressions or names is necessarily flawed, rather I wish only to make the connection between a traditional construal of the debate in terms of those notions, and the more explicitly metaphysical characterisation put forward above.

2.3 Non-individuals part 1: entities with no identity

I begin by developing the relevant notion of non-individual and then turn to the application of that concept to quantifier generalism. At first glance the claim that an object could lack an identity may seem so far-fetched as to not be even worth considering. Most are inclined to agree with Lewis (1986, 192-3) (amongst others) that any object whatsoever *must* be identical with itself—indeed, this truth is taken to be *the* paradigmatic trivial truth. Note, however, that holding that some object fails to be self-identical is not to affirm the (evidently implausible) claim that such an object is distinct from itself, instead the intended claim, I take it, is that *no identity or distinctness* fact is true of such an entity. Such an idea has been proposed to hold by some for a restricted class of objects—namely, same type quantum particles—for some time now. As already mentioned, the restricted version will have to be expanded in scope if it is to provide for a metaphysics of quantifier generalism; nevertheless it will pay to introduce the idea in its original, restricted, quantum mechanical setting.

2.3.1 Lacking an identity: the basic idea

The motivations for denying that the notion of identity is properly applicable to quantum particles are easily grasped, so it is worthwhile visiting them here, even if only briefly. Imagine you are presented with a cricket ball and allowed to inspect all of its properties: you weigh it, note the colour, the marks to the surface, its stitching, and so on. If, on another occasion I presented you again with a cricket ball and asked if this is the same one as before, you would likely go away and inspect it again. Seeing that it has the exact same features as the one I presented before, you conclude that it is the *same* ball. Still, perhaps there is room for doubt. Perhaps, for instance, I created a replica of the original cricket ball, one that shared all of the features you noted. Imagine now, then, that I tell you that the two balls that I presented have shared their spatio-temporal history, and so share their current location, too. Justifiably it seems, you would conclude that the two balls are indeed the *same* ball, or, as we would perhaps more naturally say, that there is just a single ball.

In quantum mechanics one gets something very much like the situation above except that, whereas in the cricket ball case we would apparently be justified in taking there to be only a single ball, in quantum mechanics we would not. This is because in such cases it is entirely possible for there to be two quantum particles that

nevertheless share all of their properties including their spatio-temporal location.⁵

In the literature this state of things is often presented as a dilemma.⁶ Either we take identity to consist in some non-qualitative feature of the particles (one that does not feature in the dynamics, and so not in the state-space with which we represent them), or we instead take it that identity is not properly applicable to the particles at all, even though a notion of cardinality can be attributed to their collection. This latter option is presented as the naturalistically friendly option, for the simple reason that it allows us to preserve a notion of identity—albeit one restricted in scope—that can be defined with respect to qualitative, causal, and nomological, properties, rather than one that is defined in terms of some non-qualitative, non-causal and so non-empirical feature of objects. In this we have what is dubbed in the literature ‘the received view’, whose adherents go back to the birth of quantum mechanics itself. Here, for instance, is Weyl’s oft-quoted synopsis, where the quantum particles are colourfully denoted by the identical twins Mike and Ike:

the possibility that one of the identical twins Mike and Ike is in the quantum state E1 and the other in the quantum state E2 does not include two differentiable cases which are permuted on permuting Mike and Ike; it is impossible for either of these individuals to retain his identity so that one of them will always be able to say “I’m Mike” and the other “I’m Ike”. Even in principle one cannot demand an alibi of an electron! (1931, 241)⁷

2.3.2 Formalising the basic idea: Q-sets

Whilst the idea of a collection of objects lacking self-identity may strike one as peculiar, Stephen French, Decio Krause and Jonas Arenhart (French and Krause 2006; Arenhart and Krause 2014) show how one can formalise the basic ideas, the

⁵Such a situation is perhaps a *little* less paradoxical than one might at first think, for in quantum mechanics the position of a particle can only be specified within a certain range of uncertainty: it is thus something of an indeterminate quantity of the two particles.

⁶See, e.g., (French 2000)

⁷A caveat is in order here, for whilst I have provided the standard presentation of the dialectic, there are many points of contention along the way, including whether Weyl can justifiably be taken to adhere to the received view (see e.g., Heathcote 2021). Indeed, the quote from Weyl is truncated in the contemporary literature so as to exclude the last line reading: ‘In this way the Leibnizian principle of *coincidentia indiscernibilium* holds in quantum mechanics.’ Exactly what Weyl meant by this is not entirely clear. Another issue of confusion is the assimilation of the permutation invariance of quantum particles to other (perhaps somewhat more ‘intuitively understood’) symmetries such as the diffeomorphism symmetries of space-time. It is not often acknowledged that more is afoot in quantum mechanics, notably in the phenomena of entanglement, than appears in these other symmetries (the exception is (Pooley 2006)).

resultant theory is that of *quasi-sets*. The formal treatment shines a little more light on the philosophical ideas, and a brief exposition is included here for those so inclined.

Quasi-set theory is housed in first-order logic without identity. The theory extends standard ZFU (ZF with Ur-element) by adding a non-standard Ur-element to the theory. On the one hand there are ‘M-atoms’, which behave as standard elements of set theory and are taken to represent ordinary objects, and on the other are ‘m-atoms’, those elements that are taken to represent *non-individuals*. Identity is then defined (as qualitative equivalence)⁸ *only* for M-atoms. So, if x or y is an m-atom then ‘ $x = y$ ’ and its negation are not well-formed formulae—it is, as it were, simply *meaningless* to state within quasi-set theory that m-atoms are identical or distinct to themselves or anything else. (Note, however, that although identity is not defined in terms of it, we still can make the claim that two m-atoms are *qualitatively indiscernible*. For this we introduce the binary predicate ‘ \equiv ’.)

Despite this difference between the two kinds of atoms, both can be the elements of some collection. The membership relation is therefore defined for both and we can proceed to build quasi-sets, or q-sets, out of our theory’s atoms. q-sets obey extensionality as it is standardly understood. So,

$$x = y =_{Def} (Q(x) \wedge Q(y) \wedge \forall z(z \in x \leftrightarrow z \in y)) \vee (M(x) \wedge M(y) \wedge \forall z(x \in z \leftrightarrow y \in z)),$$

where the predicate Q denotes ‘is a q-set’ and M ‘is an M-atom’. Those q-sets whose transitive closure contains only M-atoms are called ‘classical’, denoted by $Z(x)$. Such q-sets are sets as standardly understood.

Quasi-set theory then proceeds by adopting the usual axioms of ZFC or their q-set equivalent: empty q-set, unordered pairs, power q-set, the separation schema, union, infinity, regularity and the axiom of choice. (For the details see: French and Krause (2006, chp.7).) And much of quasi-set theory rolls out of these basic ideas as you would expect. Here, I will focus on what are the most important aspects pertaining to the idea of a non-individual.

In this regard, note first that whilst the usual pairing axiom will deliver the expected results for x when $Z(x)$, it will not do when the elements of x are m-atoms. That is, we cannot define the pair x, y as the collection $\{z : z = x \text{ or } z = y\}$, for if x or y are m-atoms the condition on the set is not well-formed. Instead, we take the following:

[Weak-Pair]: $\forall x \forall y \exists_Q z \forall t (t \in z \leftrightarrow t \equiv x \vee t \equiv y)$, where \exists_Q says there exists a q-set.

⁸I.e. $\forall F(Fx \leftrightarrow Fy) \rightarrow x = y$, where ‘ F ’ ranges over only qualitative properties.

That is: For all x and y , there exists a q-set whose elements are indistinguishable from either x or y . Such a collection is denoted $[x, y]$. Note that because this is the set of elements indistinguishable from x and y it may contain more than two elements (if, that is, either x or y is an m-atom).

Similar reasoning also effects the standard definition we give for ordered pairs. The standard Kuratowski definition of $\{\{x\}, \{x, y\}\}$ will not cut the mustard when m-atoms are involved, for the corresponding $[[x], [x, y]]$ fails to distinguish between the ‘first’ and ‘second’ element. Arenhart and Krause (2014) take the upshot to be clear: ‘If items are indistinguishable and do not have identity, then we cannot order them. Without order, the collection of items in question cannot have an ordinal, in the sense that there is a first element, a second, and so on. Without ordinals, there is no cardinal in the von Neumann sense, according to which cardinals are a special kind of ordinals, known as initial ordinals’ (9). When we are dealing with m-atoms, then, we cannot, it is contended, count them (when this is understood as relying on ordering the elements of the collection) precisely because they lack identity to or from each other.

In spite of this, however, one can still meaningfully talk of the cardinality of a collection of m-atoms within quasi-set theory. In (Krause and French, 2006) this concept of cardinality is simply an undefined predicate in the theory. Arenhart and Krause (2014) go a step further, however, and *define* the concept of quasi-cardinal, roughly, in terms of the iteration of a quasi-function that removes a single indistinguishable m-atom at a time from a q-set. The quasi-cardinality of a q-set is simply the number of iterations needed to reduce the set to the empty set.

In sum, the non-individuals represented by m-atoms are *only* numerically distinct: ‘numerically’ because they belong to a collection that has a quasi-cardinality; but ‘only’ because they are neither distinct, nor identical, to themselves or each other.

2.3.3 Entities without identity and generalism

Such an account presents many questions. Mainly the discussion has focussed on whether the concepts of cardinality, identity and objecthood can really be prised apart in such a way, e.g. (Berto 2017; Jantzen 2019). Rather than get lost in such debates, my focus here will be on whether the notion of a non-individual thus construed is suitable for the quantifier generalist’s project. In what follows, then, I will simply assume that quasi-set theory formally captures a category of non-individual that is in metaphysical good standing.

As we noted above, the problem that the generalist needs to overcome is the concept’s restriction in scope. As presented, non-individuals are assumed only to

appear at the sub-atomic level. The generalist, by contrast, needs such a category of entity to satisfy every general sentence, including those predicates that ascribe non-quantum properties to objects (Glick (2021, 764-5) makes essentially the same point in a slightly different context). If the category of non-individual is restricted only to the sub-atomic domain, all that could be said is that a certain class of facts are general, and the rest are individualistic, and we would thereby have rescinded on the generalist's claim that the world is constituted by purely general facts.

One obvious response to this point is that, for the generalist, all objects are non-individuals (and so all facts are general) in some *fundamental* sense. There are two at least two interpretations of this claim. First what might be meant is that generalism holds only with respect to quantum mechanical particles and that all medium sized objects are composed of such quantum particles. This claim, then, is best parsed as the idea that, for all non-fundamental objects x , $\phi(x)$ is true because there are fundamental objects y_1, \dots, y_n that compose x , and y_1, \dots, y_n are non-individuals. This may well be a tenable hypothesis (and it is surely one some physicalists would be inclined to accept), but it clearly does not get at the heart of generalism. Again, the problem is that *every* general statement, even those featuring non-quantum mechanical predicates, have to be 'made true by' (in the sense specified by the formal semantics) a non-individual. The proposal under discussion here has not made good on this requirement. At most we have been given a collection of non-individuals that stand in the relation of composition to the 'value of the variable' of the general statement. Clearly this is simply a restatement of our original worry that generalism will only hold true of some restricted class of objects—not an answer to it.⁹

If the proposal is to work there has to be some other way of understanding the sense in which all general statements are made true by non-individuals, an understanding that preserves the proposed universality of generalism. A better construal of what we are after, then, is the following:

(#): for all objects x , such that $\phi(x)$ is true (where $\phi(x)$ is some general statement), fundamentally, x is a non-individual.

Here 'fundamentally' qualifies *each* object, rather than only some restricted subset of all objects, thus ensuring the universality of the thesis of generalism.

There may of course be several ways in which to establish (#). Here I will focus on just one, perhaps initially tempting but ultimately flawed, route.

⁹Of course, if the generalist is also a compositional nihilist, such that all higher level general 'truths' are in fact false, then the challenge is diffused. This, however, is a revisionary generalist picture which will not be discussed here.

The Non-fundamentality of identity

The route I have in mind here is the rejection of identity as a fundamental notion. The thought here is that a necessary condition on a notion being non-fundamental is if that notion does not feature in a fundamental fact. If so then all fundamental facts about objects cannot include facts about that object's identity, and, given that what characterises a non-individual as such is its lack of a determinate identity, *this*, it seems, is equivalent to saying that, fundamentally, every object is a non-individual. In such a way the generalist may attempt to derive the fundamentality of non-individuals from the non-fundamentality of the notion of identity. Now, such reasoning is not, I take it, water-tight; nevertheless, let us grant it. The problem, I shall argue, is that, even if we could derive the fundamentality of non-individuals from the non-fundamentality of identity, it cannot account for a coherent account of generalism.

To see why, note that if identity is non-fundamental, then unless we are to reject the notion outright (something that seems wildly implausible) we will have to explain the sense in which that notion is grounded. There are two plausible candidates for the grounding of identity¹⁰—the problem is that neither of them are available for the generalist.

First, what can be called the 'existential approach', which takes identity to be grounded in *existence*. Alexis Burgess (2012) motivates such an approach nicely:

Imagine God creating a field of poppies. Once the flowers exist, there's no need for Her to survey the field and stipulate that this poppy will be identical to itself, and distinct from that poppy, that poppy, etc. Intuitively, the identity/distinctness facts come along for free; they seem to be nothing over and above the relevant existential facts. (90)

The obvious problem with this approach is that the quantifier generalist is trying to make good on an account in which, fundamentally, only non-individuals exist. But such non-individuals are characterised by the non-applicability of identity. Clearly, then, identity facts cannot 'come along for free' from entities for which such a notion is non-applicable. Indeed, what makes the idea that identity comes along for free intuitively plausible, it seems, is if one assumes that such objects are individuals: objects that have determinate identities.

The second approach that Schumener discusses is the 'property' approach. Here, we take identity to be grounded in an object's qualitative features. Because grounds necessitate, those who take identity to be grounded in qualitative equivalence will, at the very least, be held to the following conditional:

¹⁰Here I am working from the framework introduced in Schumener 2017

[**Qual Iden**]: $\forall F(Fx \leftrightarrow Fy) \rightarrow x = y$,

where, to save the conditional from triviality, the quantifier ranges only over non-identity involving properties. How permissive we ought to be with respect to other (non-identity involving) properties is another contentious aspect of **Qual Iden**. Here, I suggest that the generalist ought to restrict the domain to merely monadic properties.¹¹

Given this, however, it ought to be entirely apparent why the generalist cannot subscribe to the grounding of identity in qualitative equivalence, for it was precisely *because* non-individuals are qualitatively indiscernible that we restricted the range of the first-order variables so as *not* to range over them. Otherwise put, it was only by *restricting* the first-order domain of ‘**Qual Iden**’ to cases where duplicates are deemed impossible (where, for example, classical laws forbid two objects’ co-location) that we are able to preserve the principle’s tenability.

So, the generalist cannot take identity to be grounded in either existence or qualitative equivalence. Unless the generalist has some other story to tell concerning how identity is grounded, the fundamentality of non-individuals cannot depend on the non-fundamentality of identity.

(Of course, this is not to say that (#) cannot be established some other way. Adrian Heathcote (2021), for example, holds that fundamentally *all* objects (whether classical or quantum) are non-individuals in virtue of the fact that all objects are *entangled* with quantum particles. An assessment of Heathcote’s argument would take us too far afield here. Let it be said, however, that such a move places the quantifier generalist’s position on shaky foundations, not only with respect to the contentious issue of quantum non-individuality (that we have granted) but now also with respect to the—perhaps even *more* contentious—issues of quantum entanglement, the transition from quantum to classical energy scales and the like. Once again, then, the conclusion of this section can be read as a challenge to the quantifier generalist: if she is to make good on the idea of non-individuals providing for the constituents of general facts she must show just how exactly (#) is established.)

¹¹Such a restriction is appropriate here because we have not yet come to reject identity as an intrinsic property. For if identity *is* to be an intrinsic property it had better be grounded in intrinsic properties. Putting aside complications such as the relations between an object and its proper parts, arguably most intrinsic properties of relevance will be monadic. For those who think that we ought to be far more permissive with respect to the second-order domain of **Qual-Iden** I suggest they wait until section 2.4, where a notion of extrinsic identity is properly examined and the permissiveness of **Qual Iden** put under review.

2.4 Non-individuals part 2: entities with no *intrinsic* identity

Our first attempt at trying to provide for the constituents of general facts, by taking the constituents of such facts to *lack* identity, faltered. Let us now turn to our second proposal. This proposal takes the constituents of general facts to be non-individuals by denying our third condition of **Def Ind**: denying, that is, that such objects have an *intrinsic* identity. Instead, such a position will take an object's identity to be *extrinsic*: determined by the state, or structure, of which it is a part. This idea can be thought of as what John Stachel (2005), and following him James Ladyman (2007), call 'contextual identity' or 'contextual individuality'.¹²

The basic idea behind contextual individuality is easily stated: in the words of one prominent endorser it holds that 'the facts about [objects'] identity and diversity is grounded in relations they bear to each other' (Ladyman 2007, 29). Slogans, however, are not fully developed metaphysics: if we are to be able to provide for generalism in this way we will have to get more precise.

2.4.1 Extrinsic properties

The first question we must ask is what exactly it means to say that identity is *extrinsic*. Mostly the intrinsic/extrinsic distinction is taken to hold of properties, and there are two prevalent schools of thought on how best to characterise the notions with respect to them; one attempts to make good on the notion in purely modal terms, the other enlists a notion of ground or metaphysical explanation.

On the former view we are told that a property is intrinsic to an object just in case the object would have the property were it the sole existent of some world, and extrinsic just in case it would not have that property were it the sole existent of some possible world. But if identity is an extrinsic property then any sole existent of some world would *lack* an identity. Now either the generalist will take this to be a metaphysical impossibility, or such an account is committed to the possibility, though perhaps not the actuality, of non-individuals as we understood that term in the previous section (an object lacking a determinate identity altogether).

Now, the commitment to such possibilities may or may not be problematic in itself, but it does point to a particular (albeit somewhat nebulous) worry. This is that conceiving of an object as the sole existent of a possible world would seem to require us conceiving of an individual with at least some intrinsic properties, and it

¹²Related positions are rife in the literature on ontic structural realism: arguably most kinds of 'sophisticated spacetime substantivalism' endorse a version of this kind of contextual individuality. See also (Linnebo 2008) for a similar view with respect to mathematical objects.

seems something of a philosophical abuse of language to deny that such an individual would *have* an identity at such a world. But if it does, then, such a property is, by definition, *intrinsic*.

Perhaps all of this is not insurmountable, but it most definitely should raise eyebrows. Our goal here was to get clear on the idea of what it means to take identity as extrinsic; instead of such clarity, the modal analysis has led us down further philosophical rabbit holes.

Luckily for the generalist, the second way of conceiving of the intrinsic/extrinsic distinction fares better. On this account a property is intrinsic just in case it has that property in virtue of how things stand with respect only to the object itself, and extrinsic just in case it has that property in virtue of some larger whole (e.g. Lewis 1983, 197). Making the basic idea precise, Gideon Rosen (2010) suggests:

[Intrin]: F is an intrinsic property iff, as a matter of necessity, for all x : If x is F in virtue of $\phi(y)$ — where $\phi(y)$ is a fact containing y as a constituent — then y is part of x .’ (112)

(The corresponding condition on a property’s being extrinsic consists, I take it, in negating the conditional.) In our case, then, we have:

[Intrin Iden]: $\lambda x(x = x)$ is intrinsic just in case, if $\lambda x(x = x)a$ in virtue of $\phi(y)$ then y is part of a .

The condition obviously fails if we take $\phi(y)$ to be some fact about the structure of which a is a *part*.

2.4.2 Graphs

Given an account of what is meant by extrinsic, the next question we can ask is what exactly is meant by *structure*. Many in the literature have found the mathematical concept of graph helpful in explicating the relevant concept. Here I briefly introduce the main ideas.

Graphs consist of a set of *vertices* V and a set of pairs of elements of V known as *edges*. Edges can either be directed or undirected, in that the pairs of elements can either be ordered or unordered. Graphs also come as either labelled or unlabelled. In a labelled graph each element of V is named by a constant.

One distinction particularly important to our concerns is between graphs that are symmetric and those that are asymmetric. Key to this distinction is the notion of a graph isomorphism. We say that two graphs G_1 and G_2 are isomorphic just in case there is some bijection f between the vertices of G_1 and G_2 such that $\{u, v\}_{G_1}$ is an edge just in case $\{f(u), f(v)\}_{G_2}$ is an edge (that is, $\{u, v\}$ is an edge in G_1

just in case the pair consisting of the image of u and the image of v under f is an edge in G_2).¹³ In such a case we can say that the bijection preserves the graph's structure. Where G_1 is the same graph as G_2 the isomorphism is known as an automorphism. Every graph has at least one automorphism, the identity mapping, which simply maps each vertex to itself, otherwise called the *trivial automorphism*. Some graphs, however, allow of *non-trivial* automorphisms, an isomorphism whose associated bijection maps at least one vertex to some *distinct* vertex. Such graphs are called *symmetric*. Graphs that have *no* non-trivial automorphisms are called *asymmetric*.

Graphs, and their diagrammatic representation, can be given an obvious interpretation in terms of physical states by taking the vertices to stand for objects and the edges to represent the structural properties of the relations that hold between them. Interpreted as such labelled and unlabelled graphs have obvious counterparts with respect to the individualist/generalist debate. Much like the use of constants in first-order logic, labelled graphs nicely represent the individualist's commitment to each object's intrinsic identity, one that distinguishes it from every other object. Indeed, if we allow our graphs to be labelled and define identity in terms of the constants we attribute to each vertex, then we can easily prove that identity is intrinsic according to **Intrin Iden**. In an unlabelled graph, by contrast, each vertex is intrinsically indistinguishable from every other.

2.4.3 Discernibility

If identity is extrinsic, then one might think that the identity of an object ought to be wholly determined by some structural property or relation. One might think that the extrinsic identity of objects should amount to the acceptance of **Qual Iden**. That principle, remember, told us that qualitative equivalence amounted to identity:

$$[\mathbf{Qual\ Iden}]: \forall F(Fx \leftrightarrow Fy) \rightarrow x = y,$$

where, again, the second-order quantifier is restricted so as not to range over properties/relations involving identity.

We might wonder now, however, whether we ought to be more permissive with respect to the second-order quantifier of **Qual Iden**, then we were previously. It is common in the literature to distinguish three grades of indiscernibility with respect to such a principle.¹⁴ We can say that two objects are *absolutely discernible* if there is a monadic property that is true of one object but not the other; they are *relatively*

¹³This is of course simply an instance of our earlier more general model-theoretic definition of a symmetry.

¹⁴Although see (Button & Walsh 2018, chp. 15) for an extensive cataloguing of further finer grades of discernibility within the context of various natural extensions of the logic.

discernible if there is an asymmetric relation that is true of one object but not the other; and *weakly discernible* if there is an irreflexive relation that both objects satisfy.

Those are the glosses; a little more precisely, we can say that, given a structure (in the model-theoretic sense) \mathcal{M} of a language $\mathcal{L}_{\mathcal{M}}$ and two elements of the structure's domain a, b :

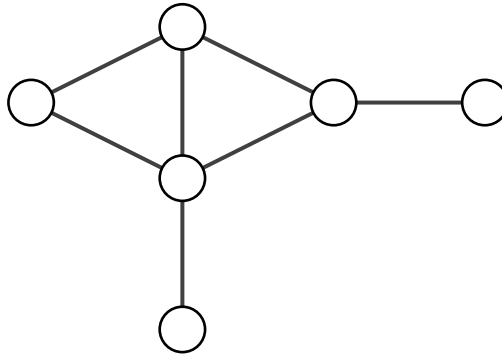
Absl: a and b are absolutely discernible in \mathcal{M} if there is a formula $\phi(x)$ in $\mathcal{L}_{\mathcal{M}}$ such that $\mathcal{M} \models \phi(a)$ and $\mathcal{M} \not\models \phi(b)$.

Rela: a and b are relatively discernible in \mathcal{M} if there is a formula $\phi(x, y)$ in $\mathcal{L}_{\mathcal{M}}$ such that $\mathcal{M} \models \phi(a, b)$ and $\mathcal{M} \not\models \phi(b, a)$.

Weak: a and b are weakly discernible in \mathcal{M} if there is a formula $\phi(x, y)$ in $\mathcal{L}_{\mathcal{M}}$ such that $\mathcal{M} \models \phi(a, b)$ and $\mathcal{M} \not\models \phi(a, a)$.

Now, given that we are no longer taking identity to be an intrinsic feature of objects there seems little reason to restrict **Qual Iden**, as we did previously, to only monadic properties. Instead, it seems there is no reason why it should not range over relations also, including irreflexive ones.¹⁵ The problem, however, is that even with such permissibility, **Qual Iden** still generates problems for the generalist.

Let us begin with an easy case for the generalist: asymmetric graphs. It turns out that if a graph is asymmetric, then each vertex will be absolutely discernible.¹⁶ Take, for example, the following asymmetric graph (from Ladyman 2007):



Call the number of edges that a vertex has as an end-point the *degree* of the vertex. We can then distinguish each vertex of the graph as follows: The right most

¹⁵Note everyone is so convinced: sceptics over the permissibility of irreflexive relations to ground identity include Lowe (2015 sec.7-11) and Hawley (2004, sec.3.2).

¹⁶In fact, this fact can be seen as following from a more general model-theoretic proof. Call a set X *definable* (in a structure \mathcal{M} with domain M), if there is some formula ϕ of $\mathcal{L}_{\mathcal{M}}$ such that $X = \{(a_1, \dots, a_n) \in M^n : \mathcal{M} \models \phi(a_1, \dots, a_n)\}$. If $X = \{a\}$, we say the *element* a is definable in \mathcal{M} . The relevant theorem is that, every element of the domain of some structure \mathcal{M} is definable in \mathcal{M} iff \mathcal{M} has no non-trivial automorphisms. See Kossak (2021, chapters 3-4) for details and proof.

node is distinguished as the unique vertex related to a vertex of degree 2; the second from the right vertex is the unique vertex related to i) a vertex of degree 1 ii) a vertex of degree 3, and iii) a vertex of degree 4; the top most vertex is the unique vertex related to i) a vertex of degree 3, ii) a vertex of degree 4, and iii) a vertex of degree 2, and so on for each of the vertices. Such a description uniquely picks out each vertex via the relations of the graph structure. As such the graph structure ensures the absolute discernibility of each vertex.

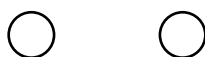
Assymmetric graphs present particularly ‘easy’ cases for the generalist.¹⁷ But things get tougher. The elements of the following symmetric graph, for example, are only relatively, but not absolutely, discernible:



And in the following, the vertices are only weakly, but not relatively discernible:



Still grant the generalist the strong form of **Qual Iden**, and she can still understand the possibility of such structures within the framework of her views on extrinsic identity. The real challenge for generalist, as Ladyman himself points out, come from cases where even granting **Qual Iden** to range over irreflexive relations will not uniquely individuate vertices in a graph. Take the following, G' :



Here there is no, even weakly discerning, relation that could distinguish between the two vertices. Nevertheless, such vertices are, from the perspective of graph theory, *bona fide* distinct mathematical objects. As Ladyman says, ‘the fact that G' consists of two nodes is simply part of what G' is being part of its graph-theoretic structure’ (35).

The upshot for the generalist is that **Qual Iden** cannot be the whole story concerning the identity of objects in a structure; at least, not if we are to take G' to represent a possible physical structure. In light of this, Ladyman distinguishes between *primitive* individuality and *contextual* individuality. For Ladyman, this

¹⁷Indeed so much so that some have even contended that the world must itself be an assymmetric graph. E.g., (Dipert 1997), and (Oderberg 2011) for a reply).

distinction is not exclusive: one can accept both. Indeed, the apparent upshot of G' is that we can still accept that individuality is primitive (in that the identity of vertices may not be determined by any relation that uniquely individuates it), whilst still holding that the identity of the vertices is contextually determined—determined, that is, by the properties of the graph itself. As Ladyman says, that “there is no more to the individual nodes “in themselves” than the relations they bear to each other’ is true provided that *identity and difference of nodes is included among the relations that the nodes in a graph bear to each other*’ (ibid., my italics).

In many ways, denying that identity is an intrinsic feature of the constituents of general facts creates a simpler and more appealing form of quantifier generalism than does the view that denies that identity applies at all. But the view is not without its problems. There are two issues I wish to raise for the position. The first has two versions: one epistemological, the other more explicitly metaphysical. The second complaint holds that commitment to primitive identity is in fact incompatible with identity as necessarily an *extrinsic* relation.

2.4.4 Problem 1

Let us begin with the epistemological problem. The metaphysics presupposed by the quantifier generalist commit her to the following schema:

Extrin Iden: What makes x this very x is Γ ,

where Γ is the total set of facts comprising the structure of which x is a part. Such a schema is simply a statement of what a determinate, non-intrinsic identity consists in. But it raises questions. Take person S who judges at time t , that $x = a$, on the basis of some proper subset of Γ , Δ that is local to both S and x . Now imagine at some later time that the structure that x is a part of evolves into Γ' , where it is still the case that $\Delta \subset \Gamma'$. S now judges at this later time t' that $x = a$, again on the basis of Δ . But both judgements cannot be correct. If $x = a$ at t then the second judgement at t' must be incorrect. (On the other hand, if we assume that the second judgement is correct then the first cannot be.) This is because the objects denoted by a in both judgements cannot be the same object: extrinsic identity determines that such objects are distinct. In sum, despite there being no change in the local structure that comprises the evidence of S about the identity of x , S must be mistaken in at least one judgement.

One response from the generalist might be that this problem requires an illicit use of names. After all, names, remember, are taken by the generalist to be defective in that they denote an individual that would be able to ‘keep its identity’ throughout a change of structure. The reason why S is mistaken in at least one of her judgements,

the generalist might contend, is dependent on her use of names, and, thus, on expressions that lack, for the generalist, metaphysical salience. Indeed, the generalist might continue, if we quantify out the name we are left with two the two trivial judgements, that at time t , $x = x$ and that at time t' , $x = x$ —two judgements that each object is identical to itself, something the generalist is more than happy to accept.

Indeed, the generalist might contend that we ought to take the total structural evidence p holds at time t/t' , δ (or some suitable subset), as a *definite description* of x . The corresponding judgements now are $x = \iota x(\Delta)$ at t and $x' = \iota x(\Delta)$ again at t' . By the transitivity of identity S then judges that $x = x'$. But it is hardly surprising, the generalist might contend, that this judgement is mistaken: just because Trump is the president of the United States at t and Joe Biden is at t' , it does not follow that Donald Trump=Joe Biden.

Be that as it may, there is still a lingering worry here. Indeed, the above problem can really be seen as something of an epistemological shroud for what is, at its heart, a metaphysical concern. To put the point directly: why think that a change in something to which an object has no *direct* relation effects a change in the identity of the object? To take a concrete example, given that there is very plausibly some indirect chain of structural dependence between an object on my desk and some star in some epistemically unreachable galaxy (such that both objects are parts of some single structure), why think that, say, the destruction of that star should alter the identity of the object on my desk. Such claims concerning identity are, it seems, just as fanciful, baroque and ultimately problematic as the individualist's primitive intrinsic identities.

One way the generalist might want to respond is to restrict the range of relations through which extrinsic identity is conferred to some preferred subset of structures, one that is in some suitable sense local or relevant to the object x . But how exactly one decides on how to circumscribe such a 'local' structure opens up, it seems, exactly the kind of fraught, traditional metaphysical issues concerning what ought to be conceived as 'essential' to an object. The reason this is particularly problematic for the generalist is not that generalist ought to reject such questions as meaningless—indeed, a good construal of what those who deny intrinsic identity are proposing is a kind of structural essentialism—instead, what is potentially problematic with the generalist's engagement with such questions is that any justification for restricting identity-conferring structure would appear to presuppose something very much like an understanding of an intrinsic identity to that object.

Perhaps then, the generalist ought to simply bite the bullet with respect to our first worry: to take the holistically defined identity to be more of a feature than a bug.

Some, including myself, will be less than satisfied with such a move; nevertheless, it must be said on the generalist's behalf that one must be willing to embrace at least some unintuitive consequences when proposing a revisionary metaphysic such as generalism.

2.4.5 Problem 2

Let us turn, then, to the second problem I wish to raise; it is, I think, the more damaging for the generalist. The crux of the problem is that there is a real difficulty in reconciling the generalist's notion of *primitive* individuality with that of *contextual* individuality. Primitive individuality is introduced in order to account for distinct objects/vertices that cannot otherwise be distinguished by any relation (irreflexive or otherwise). We are then told that the status of such a primitive notion of individuality is still contextual because primitive identity facts are 'included in the relations that the nodes in a graph bear to each other'.

Now, Ladyman is never explicit on how exactly we ought to understand the claim that identity is both contextual and primitive. Obviously, such a claim is supposed to be different from the clearly inadmissible one that the vertices *themselves* have an primitive identity that distinguishes each vertex from every other. The only sense, then, that the distinctness of the vertices can be said to be 'contextual', it seems, is with respect to the graph as a whole. That is, we must understand the claim that the distinctness of the vertices depends upon facts concerning the identity *of the graph*. This means we must reify those structures, if only in the minimal sense of having to attribute the structure a property that is not reducible to the structure's constituents.

The problem now is that it is unclear that the *graph's* identity can itself be extrinsic. First, note that we cannot take the graph's identity to depend on the vertices and their properties/relations. This is not only because we would then have dependence loops, where the identity of the vertices depends on the structure of the graph, and the identity of the structure of the graph depends on the identity of the vertices. More problematic than this, the graph's identity would in fact turn out as intrinsic—the vertices being proper parts of the structure (see our previous definition **Intrin** above).

It is also unclear that the identity of the graph/structure can be extrinsic in the sense of depending on other graphs/structures. For example, the generalist might be tempted to take each graph's identity to depend on the equivalence relations that hold between the structures themselves. But this is only to push the problem up a level. For now when we ask whether the identity of the equivalence class upon which the structures' identity depends is intrinsic we are faced with the same problem. The

generalist cannot take the identity of these equivalence classes to be intrinsic, and if she attempts to rise to a higher-level of abstraction we are obviously on our way to an infinite regress.

You might think that the generalist could avoid such worries by simply taking the graph's identity (as well as the vertices) to be a primitive fact about it. But this will not help. For Ladyman, the question of the primitive or non-primitive identity is separate to that of the intrinsic or extrinsic nature of an object's identity. As such, it is still presumably an open question whether the primitive structure's identity is intrinsic or extrinsic, and so far we have no reason to think that it is extrinsic rather than intrinsic. (Indeed, there is reason to think that the primitive status of the structure's identity is at odds with it being extrinsic. For if the identity of the graph is a primitive fact about the graph, then it cannot *depend* on entities outside of it, precisely because, being primitive it depends upon nothing.¹⁸

So far as generalism is concerned this is devastating. Remember the whole project of quantifier generalism is to provide a suitable category of entity to serve as the constituents of general facts. On the account under consideration here, we took that to be the introduction of the notion of an entity with no intrinsic identity. Far from evading such a notion, however, we have just seen that the notion of primitive, contextual identity of objects (vertices) depends on entities that are paradigmatic individuals: entities possessing an intrinsic, *non*-contextual identity; namely, the structures themselves.

2.5 Conclusion

In this section I introduced the theory of quantifier generalism. We saw that a condition of adequacy on such a theory was to provide for the (objectual) constituents of general facts that would not simply collapse such facts into individualistic ones; in short, to provide for the category of non-individual. Given what an individual is, we saw there were two ways the generalist might do this: first, by introducing a kind of entity that lacked an identity, and second, less radically, by introducing an entity that lacked an *intrinsic* identity. Both, however, failed to provide for generalism as a thesis concerning the fundamental categorial structure of the world.

¹⁸You might argue that neither then can it be intrinsic, as the identity would thereby not *depend* on the object itself either. But here the generalist is clutching at straws. The only real sense that could be made of the statement that the identity is neither intrinsic nor extrinsic is, I think, that such an object lacks an identity altogether, something we have already seen puts the generalist in highly contentious territory.

Chapter 3

Paraphrase, Equivalence and Ontology

I have argued that the problem facing quantifier generalism is the problem of specifying the objectual constituent of general facts such that those facts do not simply collapse into individualistic ones. But if you think (as in fact I am inclined to) that the notion of a non-individual is itself not in good standing (regardless of whether it can serve as the constituent of general facts) then you'll likely think that such an approach was wrongheaded from the start. Instead, you'll probably think that the proper reaction to our initial worry—that general facts seemed to have *some* kind of ontological structure—is to *paraphrase away* the commitment to this structure: paraphrase away, that is, general facts' apparent commitment to objects of any kind. Such a position has been dubbed *ontological nihilism* in the literature, or (assuming the context is known) simply *nihilism*.

I think nihilism is a flawed doctrine: I believe, contrary to that position, that the metaphysical category of object is in good standing. I also think, however, that the reasons *why* nihilism should be rejected have not been fully appreciated. Mostly such criticisms have focused on proving a certain equivalence between the nihilist position and its realist antagonist. Such moves are, I think, dialectically weak. Instead, I argue that nihilism ought to be rejected because of the kind of scepticism it induces.

I begin, in section 3.1, by introducing a framework, drawn from (Sider 2011), for understanding the nihilist project. In section 3.2, I introduce, and criticise, a prominent argument against nihilism by Jason Turner (2009; 2016). In the final section (section 3.3) I put forward my own argument for realism, based on the expressive function of a language as a whole.¹

¹In this chapter I refer to the (nihilistic) generalist's antagonist as the *realist*. Such a realist can be read of course as endorsing individualism, understood as a realism with respect to that category. I warn the reader that this may be slightly confusing, given that previously the language

3.1 Paraphrase

The ontological nihilist denies that there is anything in the world that answers to the category of object. Where we might have thought there were things such as cats, tables and laptops, the ontological nihilist thinks we are ultimately mistaken. I say ‘ultimately’ because the ontological nihilist evidently cannot maintain that we are mistaken *tout simple*. The belief that there are cats, for example, does not get things so wrong as the belief that Tony Blair was a Tory Prime Minister—whilst I could be rightly admonished for uttering the latter, I could not be admonished in the same way for uttering the former.

The task of the nihilist, then, is two-fold: to show not only the sense in which we are ultimately mistaken in our beliefs about objects, but also to show what exactly those beliefs get right about the world. To show, that is, how the doctrine of nihilism coheres, explains and ultimately *vindicates* our beliefs and utterances about the objects she denies exist.

Such a project is hardly new to the metaphysician. When the nominalist denies that there are mathematical objects she doesn’t think that mathematics departments are talking gibberish. And when the presentist denies that past objects exist she doesn’t think that historians are making it all up. Instead, what the metaphysician intends is that if we take such talk at face-value we run the risk of being misled about how things *really* are—we run the risk, that is, of being misled *metaphysically*.

3.1.1 Metaphysical semantics

There are many ways we might want to construe the import of this ‘how things really are’ locution, and so multiple ways we might vindicate our ontological talk in spite of the non-ontological nature of the world. Whilst much ink has been spilled arguing over the pros and cons of particular precisifications of such an idea, at a certain level of coarse graining—and at least for our purposes—they can, I think, be treated as near-enough equivalent. Here, then, I settle on Ted Sider’s *metaphysical semantics* (Sider 2011). I invite the reader to adjust what I say to their preferred framework, if they so wish.²

Metaphysical semantics aims ‘to show how what we say fits into fundamental

of realism was characterised as the language of quantifier generalism. Nevertheless, it is standard in the literature, when discussing the nihilism-realism debate, to take this language to be that of the realist/individualist, and here I follow this standard.

²Many philosophers think there is something corrupt about the whole project of showing what the world is ‘really’ like, in some deep metaphysical sense. Although I raise such thoughts when they clearly impinge on, or provide context for, the debate, they are for much of this chapter simply bracketed.

reality' (ibid., 112). Just like (one version of) its natural language cousin, metaphysical semantics does so by providing truth-conditions for natural language sentences. However, the conditions of adequacy on such truth-conditions are quite different in each case. Whilst, for example, the truth-conditions of natural language semantics aim to capture the intuitive semantic content of the language—roughly, what speakers think they mean by their sentences—metaphysical truth-conditions, by contrast, are indifferent to such content.³ Instead, the primary goal of metaphysical semantics is to provide truth-conditions for everyday sentences in a *fundamental language*, thereby exhibiting the *metaphysical content* of the sentences one is providing truth-conditions for.

Sider has his own vision of how to cash out the notion of a fundamental language. In brief, his thought is that a language is fundamental just in case all its terms are joint-carving, or 'structural'. Take for instance the well worn example of the predicate 'grue' (where something is grue just in case it is green before time t and blue thereafter). 'Grue' is, for Sider, less of a structural term than the predicates it is defined in terms of: unlike such predicates, it fails to cut nature at its joints. Sider's notion of structure, however, isn't confined to predicates, the novelty in his approach is the extension of this familiar picture to other syntactic categories, such that questions such as whether, say, the box operator (under a certain interpretation), or negation, or the existential quantifier, are structural, become well-formed and meaningful questions to pose.

The notion of structure is contentious, however. Luckily, then, the idea of providing metaphysical truth-conditions needn't be tied to this more idiosyncratic aspect of Sider's account. Instead, all we need be committed to here is the idea that everyday language can be given metaphysical truth-conditions and metaphysical content that shows what it is about what the world is *really* like such that the statement is true.

Let us get a little clearer on the mechanics of this all. First, let us take paradigmatic everyday uses of true sentences that would appear to entail commitment to objects: 'there are electrons', 'my laptop just broke', 'those [pointing] are dogs', 'everything is either a book or is not', 'Prince Charles exists', (you get the picture. . .). Let us collect all possible utterances of this kind into a single language we can call the 'target language'. For convenience I will refer to this as \mathcal{L}_t (' t ' for *target language*). A metaphysical semantics for \mathcal{L}_t will then consist of truth-conditions of sentences ϕ of \mathcal{L}_t of the following form:

' ϕ ' is true iff ψ

³Of course, not *totally* indifferent: metaphysical truth-conditions are still required to be at least co-intentional with paradigmatic utterances of (sentences of) the language.

where ψ is some sentence that describes what the world is really like such that ϕ is true.

There are two candidate metaphysical semantics that will occupy us here: the realist's and the nihilist's—respectively, \mathcal{L}_r and \mathcal{L}_n . The language that the nihilist couches her truth-conditions in will occupy us in the next section. Here, then, let me just say a little about the realist's chosen fundamental language. Following orthodoxy, I take it that the realist's language of choice is that of the name-free fragment of first-order logic.⁴ The sense in which the realist takes such a language to be perspicuous with respect to categorial structure is the fact that the *objects* of such a language are 'read off' from the existentially bound variables of the language's true sentences. And this commitment to particular objects betrays a more general commitment to the existence of the category to which such entities belong. Such a language thus wears its categorial commitment on its sleeve.

To sum up: the crux of the debate between the realist and the nihilist is an ambiguity of the proper metaphysical semantics, and so proper metaphysical content, of \mathcal{L}_t . The realist takes it that \mathcal{L}_r tells us what the world is really like such that the sentences of \mathcal{L}_t are true/false; the nihilist thinks such a role is properly reserved for \mathcal{L}_n .

3.1.2 The language of ontological nihilism

Let us turn now to the mechanics of \mathcal{L}_n . The nihilist's language of choice is taken by many to be *predicate functorese*, a language developed from the combinatory logics of amongst others Schönfinkel and Curry, and refined by Quine (1960, 1971, 1981). Here I will focus on a slightly modified version of that language set out by Dasgupta (2009) called *term functorese*. The basic picture is lifted from predicate functorese, except, instead of predicates, we have *terms* P_i^n (where a term with an associated integer n is known as an n -placed term), with six *term-functors* operating on them. The six term-functors are:

$\&$: that takes any two terms F^n, G^m and gives the $\max(n, m)$ -placed term $(F\&G)$,

p : takes an n -placed term and gives back an $n+1$ -placed term,

c : takes an n -placed term and gives back an $n-1$ -placed term,

\neg, i, σ : each take an n -placed term and give back an n -placed term.

⁴Why 'name-free'? Going back to at least Russell it is commonly acknowledged that names are no sure guide to ontological commitment. For our purposes, the inclusion of names marks no difference in commitments to certain categories (this was the upshot of chapter 2); we can, then, exclude them without consequence.

The language of term functorese, \mathcal{L}_n , is just the set of primitive terms P_i^n closed under these operations with an additional primitive predicate ‘ x obtains’. A sentence of \mathcal{L}_n is of the form ‘ P_i^0 obtains’.

Of course, as it stands \mathcal{L}_n is opaque to us. Its *intuitive* content is given by its first-order semantics, of which we are presumed more familiar. Providing such a semantics for \mathcal{L}_n consists in providing a Tarski-style model for \mathcal{L}_n ’s close cousin, *predicate functorese* (\mathbf{Q}) (where instead of *terms* we now have *predicates* of various arity). The identity predicate I^2 is defined as expected ($\{x, y | x = y\}$). Given a predicate P^n of \mathbf{Q} , a model $M = (D, v)$ and an (infinite) sequence $d = (d_1, d_2, \dots)$ of elements of D , we say that d satisfies P^n in M , written $d \models_M P^n$, if and only if:

1. If P^n is atomic then $(d_1, \dots, d_n) \in P^n$
2. If $P^n = \neg Q^n$ then it is not the case that $d \models_M Q^n$,
3. If $P^n = Q^m \& R^r$ then $d \models_M Q^m$ and $d \models_M R^r$,
4. If $P^n = c(Q^{n+1})$ then there is an $x \in D$ such that $(x, d_1, d_2, \dots) \models_M Q^{n+1}$,
5. If $P^n = p(Q^{n-1})$ then $(d_2, d_3, \dots) \models_M Q^{n-1}$,
6. If $P^n = i(Q^n)$ then $(d_2, d_1, d_3, d_4, \dots) \models_M Q^n$, and finally
7. If $P^n = \sigma(Q^n)$ then $(d_n, d_1, d_2, \dots, d^{n-1}, d^{n+1}, \dots) \models_M Q^n$.⁵

From these semantics we can easily conjure up some substitution rules that allow us to easily translate back and forth between term-functorese and the name-free fragment of first-order logic. Some example translations are as follows:

$$\frac{\exists x P x \Rightarrow c P}{}$$

⁵One might have a very general worry about how the semantics are introduced model-theoretically, in terms of sequences of individuals. Dasgupta wonders whether such a move is legitimate. His response:

‘The key is to distinguish between metaphysical and conceptual priority. Metaphysically, the generalist claims that the fundamental facts of the world are those expressed by G . But conceptually, I have explained the view to you in terms that you are familiar with, namely in terms of individuals. Once you are competent with G you can then, if you so wish, become a generalist by giving up your understanding of G in terms of a domain of individuals and simply taking the term-functorese and predicate of \mathbf{G} as undefined primitives’ (2009, 66). As Tim Button has pointed out (p.c.) if one were to give a formal *metaphysical* semantics for \mathbf{G} one would presumably do so in terms of a term-functorese construal of set theory. Whilst this would, for the nihilist, be *metaphysically* perspicuous, it would of course remain intuitively opaque for us. Note also, that predicate functorese (and so, also for our term-functorese equivalent) has its own Fitch and Hilbert-style calculi (Bacon 1985; Kuhn 1983).

$$\neg\exists x(Zx \wedge \neg\exists ySxy) \Rightarrow \neg c\&Z\neg cS$$

$$\exists x\exists y(Lxy \wedge \neg Lyx) \Rightarrow cc(L\&\neg\sigma L).$$

Indeed, given any formula of first-order logic there is a fairly obvious recursive procedure that generates an equivalent formula of term functorese (and vice versa).

Now, as it stands term functorese is nothing but a formal language with a formal semantics. This leaves two issues to address. First is whether term functorese has, just as the vocabulary of first-order logic does, something of a natural language equivalent. The consensus is that feature-placing language (going back to Strawson (2002)) suffices for such a role. The basic idea is to construe the terms P_i^n as feature-phrases. So, where an English speaker might say ‘someone loves’ for ‘ $\exists xLxy$ ’, the feature language speaker would say for the term functorese equivalent ‘ $c(L^2)$ ’, ‘it is loving’ or ‘loving is going on’, where the ‘it’ in the former phrase is construed pleonastically (such as to be semantically redundant, much like the ‘it’ in ‘it is raining’). A slightly more complex natural language translation has also been proposed by Burgess and Rosen (1999, 186). The various functors are translated as follows: ‘ \neg ’ is read as ‘doesn’t’, ‘ σ ’ and ‘ i ’ become ‘suffers’ or ‘undergoes’, ‘ $\&$ ’ becomes ‘respectively... and’, reflection is ‘self-’, ‘ c ’ is ‘just’, and when the term is 0-placed (i.e., a sentence) we begin with ‘doth’. Unsurprisingly, the sentences do not translate to perfect grammatical English, precisely because the syntax of term functorese is alien from our natural language perspective. Instead, the proposal is best seen, I think, as a useful heuristic for us to read the formulas of the language, and at most a hint that the syntax of term-functorese is exemplifiable in the spoken language of some hypothetical community, even if not ours.⁶

The second question to address is what exactly the metaphysical content of the sentences of term functorese is supposed to be—what we might otherwise call the sentences’ metaphysical ‘commitments’. Dasgupta (2009) has it that the terms P_i^n stand for *universals*. These universals, however, are of a novel kind: first, they themselves instantiate a complex algebraic structure (given by the functors that act on the terms that stand for them).⁷ Second, the universals should not be understood

⁶Burgess (1998) reminds us of Borges’s brilliant ‘Tlön, Uqbar, Orbis Tertius’ where we find the people of Tlön inhabiting a language without nouns: ‘For the people of Tlön, the world is not an amalgam of objects in space; it is a heterogeneous series of independent acts—the world is successive, temporal, but not spatial. There are no nouns in the conjectural Ursprache of Tlön, from which its “present-day” languages and dialects derive: there are impersonal verbs qualified by monosyllabic suffixes (or prefixes) functioning as adverbs. For example, there is no noun that corresponds to our word “moon”, but there is a verb which in English would be “to moonate” or “to enmoon”. “The moon rose above the river” would be written “hlör u fang axaxaxas mlö”, or, as Xul Solar succinctly translates: Upward, behind the onstreaming it mooned’ (Borges 1998, 23).

⁷In fact, given that the fundamental facts are general and so also holistic, really we ought to

as instantiated by any object. Do not be misled, then, into thinking that the universals are instantiated by something as bare as spacetime points, or as grand as The Absolute. The former would give us something like supersubstantialism and the latter some kind of monism in the spirit of Spinoza: both coherent metaphysics of their kind, but neither properly nihilistic. It is also worth noting that some nihilists prefer a more metaphorical gloss on the metaphysical content of term functorese, talking of a *mosaic* or *spread* of *qualities*: property- and relational-like phenomena; whilst others still take the feature-placing language to be ideally perspicuous, and take the term functorese commitments to be *features*: *sui generis* entities that are neither objects nor properties (e.g., Azzouni 2017, 178).

Here then is the picture so far. The nihilist's task was to provide truth-conditions for our everyday utterances involving objects, \mathcal{L}_t , in terms of a language whose metaphysical content does not consist of objects, or the category of object in general, \mathcal{L}_n .⁸ Such truth-conditions thus tell us what we get *right* when we employ such language. What we get 'wrong', on the other hand, is simply the tendency to take the metaphysical semantics of \mathcal{L}_t to be given by \mathcal{L}_r . The sense in which we are misled *metaphysically*, then, is not by our use or acceptance of the sentences of \mathcal{L}_t , but rather in taking a common understanding of the semantic structure of such sentences (given, for instance, by the standard natural language semantics formally identical to \mathcal{L}_r) to provide for the *metaphysical content* of such sentences.

3.1.3 An aside: Alston's worry

One way of construing the project of metaphysical semantics is as a particular kind of paraphrase strategy. On this account, the nihilist is attempting to take a set of sentences with a certain set of metaphysical commitments and to translate them into a distinct set of sentences that do not carry such commitments.

Such a construal, however, risks confusion. Take for instance William Alston's (1958) complaint that two sentences that are sufficiently *similar* (such that one might serve as a paraphrase of the other) cannot possibly be taken to have *distinct* commitments (see also (Russell 2018, 563)). This point however is entirely consistent with the nihilist's project: to take the world to be a *single* complex universal, which we finite beings can only distort into locally isolated and related regions.

⁸There is one possible point of confusion here. The translation guide given above goes by way of translating, not the natural language sentences of \mathcal{L}_t , but rather their first-order logic equivalents. It might seem then that really we are providing metaphysical semantics for \mathcal{L}_r , instead of \mathcal{L}_t . It is important to note that can/should *not* be the nihilist's intention. If she were to propose that the metaphysical content of \mathcal{L}_r is given by \mathcal{L}_n we would be hard pressed to frame the debate between the realist and the nihilist as proposing distinct metaphysical semantics. So long as we don't slip up on this however, the nihilist's project is entirely coherent.

tent with the project of metaphysical semantics. After all, what the metaphysical truth-conditions show is that the metaphysical content of \mathcal{L}_t is that given by the fundamental language: the two sentences, then, in contrast to Alston’s worry, are shown by the project of metaphysical semantics to in fact have the *same* metaphysical commitments. The only sense in which differential commitments come into the picture is in the *ambiguity* of \mathcal{L}_t between two forms of metaphysical semantics—or, more precisely, in our case, the fact that the natural language semantics we give for our sentences are construed as their metaphysical semantics. Of course Alston’s worry might instead be construed as the fact that \mathcal{L}_r and \mathcal{L}_n can only be suitable paraphrases for \mathcal{L}_t if the proposed metaphysical content of \mathcal{L}_r and \mathcal{L}_n are identical. We will in fact look in depth at such a worry in the following section. For now let us just say that if \mathcal{L}_r and \mathcal{L}_n are to serve as suitable ‘paraphrases’ of \mathcal{L}_t , the sentences of each must be at least co-intensional. If any difference is to be had between them, this can only arise hyperintensionally. (The significance of this point will be become much clearer in the following section.)

Just before moving on, it is worth just briefly noting another kind of moral one might draw from the possibility of two kinds of ‘paraphrase’ for \mathcal{L}_t . Instead of thinking that one kind of paraphrase captures how things really are, we take the possibility of either paraphrase to show that both are *dispensable* ways of talking. This is the classic deflationary move in such metaphysical debates: by identifying the adequacy of both in capturing and providing for some range of non-metaphysical truths, we stipulate that the choice between them is insubstantive. Just as we *could* talk like the nihilist, so too we *could* talk like the realist. It just so happens that we happen to talk like the realist—at least so far as we take our standard semantics at face value—but this fact, so the thought goes, reflects something closer to convention rather than betraying some deep metaphysical fact about the world.⁹ Again, I flag up this issue because recognising this option, and how precisely it differs from choosing a particular language that *does* reflect how the world really is, will be important in understanding the dialectic in the following section.

3.2 Is \mathcal{L}_n merely a notational variant of \mathcal{L}_r ?

Let us now turn to an argument that claims to show that the paraphrase project in fact fails to provide for ontological nihilism. Mostly this worry has focussed on whether or not term functorese successfully paraphrases the quantifiers from the fundamental language. Jason Turner (2011) has argued that it in fact fails to

⁹At times, it seems as though Burgess (2005) is putting forward this kind of argument. (Collins 2020), however, takes the moral of that paper to be that the standard mark of ontological guilt in the bound variable is defective, precisely because it can be so easily dispensed with.

do so. The argument goes roughly as follows. Take any sentence formulated in the realist’s language. For example: $\exists x \exists y (Rabbit(x) \wedge Brown(y) \wedge x \neq y)$. Now, as we have just seen, every such sentence has a one-to-one translation from the name-free fragment of first-order logic to the language of term functorese. The present example would translate to: $cc((p(Rabbit) \& Brown) \& \neg =)$. The nihilist contends that by paraphrasing away first-order quantifiers from our language we also thereby side-step ontological commitment. What Turner notes, however, is that the functor ‘*c*’—as can probably already be glimpsed from our example—seems just as worthy a candidate for ontological commitment as is ‘ \exists ’ in first-order logic. To make this point explicit Turner sets out a sequence of intermediate languages of lambda-abstraction and existential quantification. Take the present example: ‘ $\exists x \exists y (Rabbit(x) \wedge Brown(y) \wedge x \neq y)$ ’. Were we to translate such a sentence into an intermediate language of first-order logic supplemented with ‘ λ ’ we would get $\exists_p \exists_p \lambda x \lambda y (Rabbit(x) \wedge Brown(y) \wedge x \neq y)$, where ‘ \exists_p ’ is the quantifier *proper* (marking ontological commitment) and ‘ λ ’ takes over the job of variable binding. The point of such an exercise is to make syntactically explicit the logical vocabulary’s division of labour, between variable binding on the one hand and ontological commitment on the other. Turner then notes that another intermediate language is possible, this time taking term functorese and supplementing *it* with ‘ λ ’ (whilst also swapping out the functors with their standard FOL counterparts, excluding ‘*c*’). Translating our sentence into this language we get $cc(\lambda x \lambda y (Rabbit(x) \wedge Brown(y) \wedge x \neq y))$. But now the problem is explicit. For if we were willing to take ‘ \exists_p ’ to carry ontological commitment then it is unclear that we can also deny such a role to ‘*c*’ in the case of term functorese.

To make this point precise Turner adopts a meta-semantic principle of translation. Turner asks us to imagine a language whose speakers deny that there is anything that is *blue*. Instead, whenever they are presented with something that we would call blue, they say that ‘that thing is eulb’. Turner continues:

Trying to figure out what’s going on, you ask further: ‘Is eulb a color?’ He says, ‘Yes’. He tells you that eulb is a cool color, the color of the sky, and that it lies on the spectrum between red and green. When you ask what color complements eulb, he replies, ‘yellow’. He even insists, ‘Contrary to what most people think, purple is not a combination of red and blue. It’s a combination of red and eulb.’ He denies any sentence that you are willing to assert using the word ‘blue’, but will happily assert the sentence that results from it by a systematic replacement of ‘blue’ for ‘eulb’.

Reflection on this state of affairs motivates the following meta-semantic principle

Turner calls ‘(*)’:

Suppose L1 and L2 are languages that are exactly alike except that, where L1 has an expression α , L2 has a different expression, β . If ϕ is a sentence in L1 that uses α , we write it as $\phi\alpha$, and $\phi\beta$ will be the expression of L2 that is just like $\phi\alpha$ except that β is replaced everywhere for α . The line of thought just sketched [concerning ‘eulb’] relies on the following principle:

(*) If every term (other than α and β) is interpreted the same way in L1 as it is in L2, and if the speakers of L1 utter $\phi\alpha$ in all and only the circumstances in which speakers of L2 utter $\phi\beta$, then α and β have the same interpretation also.

So, given that we can build a sequence of languages that differ from each other in at most one term from our term-functor language to the ontologically committing language of first order logic, then, beginning with our familiar language of first-order logic, we are forced to conclude from successive applications of (*) that ‘ c ’ is simply a notional variant of ‘ \exists ’. Some theory of term functors, then, is no more ontologically innocent, so the thought goes, than one of first-order logic.¹⁰

3.2.1 Two problems for the argument against nihilism

Turner’s argument, if it goes through, would be devastating to the nihilist project. I, however, am not so convinced. There are two problems with the basic structure of the argument. The first problem has already been aired in the literature, and concerns whether (*) can in fact effectively establish the identity of the vocabulary at issue. The second problem is that, even if (*) could establish the identity of the \mathcal{L}_r and \mathcal{L}_n , merely establishing that the two languages have identical metaphysical content is not sufficient for Turner’s conclusion. More than this it has to be established that the content of both languages is given by \mathcal{L}_r . But short of simply presupposing such a claim, there is nothing in Turner’s argument that establishes this fact.

¹⁰That the equivalence is proved with respect to sub-sentential structure appears important to Turner (see: section 4.1.4 of 2011). The point appears to be that we are not merely showing that there is a sentence to sentence mapping that preserves the meaning of each expression—as is the case, for example, in (Hirsch (2011)—*that*, after all, is guaranteed by the paraphrase. Instead, Turner thinks that such sub-sentential mapping induced by (*) proves the equivalence to run much deeper. Whilst this is no doubt a substantial difference it is unclear to me that it locates the crux of the issue: after all, the fact that the recursive translation between the two languages is itself specified sub-sententially makes this fact less surprising.

Let us begin with our first worry. The worry, in short, is that the linguistic behaviour of the realist and the nihilist will in fact be distinct. The nihilist, for example, will want to assent to the claim that the metaphysical content of ‘there are...’ (and similar expressions) is given by the nihilist’s metaphysical semantics, the realist will want to deny it (and vice versa). In so far as these linguistic dispositions are allowed to count then the two languages cannot be identified after all, for the antecedent of (*) will not be satisfied.¹¹

Now Turner explicitly rules out linguistic behaviour which involves how the speakers themselves understand their terms. The scope of (*) is, thus, not supposed to range over the meta-semantic claims of either community. As he says:

‘We should not be concerned with the speakers’ dispositions to utter sentences containing both of the disputed words in question. For instance, we shouldn’t demand that (*)’s antecedent not be satisfied in the above ‘blue’/‘eulb’ case simply because the ‘eulb’-speaker is disposed to assert ‘eulb things are not blue’ and you, at least after serious reflection, are not disposed to assert ‘eulb things are not blue’. The question is whether, setting aside the way the speakers think these terms interact, we should interpret them the same way; (*) is supposed to give us a guide for determining whether speakers’ assertions of this sort are plausible, and as such it should not be overly sensitive to the mere fact that they make these assertions.’ (16)

Given, however, that (*) is supposed to be not merely a pragmatic guide on how we ought best interpret alien communities’ language (how best to provide a translation scheme), but rather a guide to the *meaning* of a contested term, it is not entirely clear what the justification for precluding the meta-semantics of the users of those terms could be.

Neil Dewar (2021) has recently defended (*) against those seeking to undermine it by allowing the meta-semantic claims of either party within the scope of the principle. ‘The problem,’ he says,

¹¹Catherine Diehl makes a very similar complaint by proposing a community who utters ‘God has decreed it that...’ in place of our ‘there is’. For Diehl, either we allow the background ideology within the scope of the antecedent of (*), in which case the antecedent is not satisfied and the principle fails to tell us to identify the relevant vocabulary. Or we take the communities ideology only to be specifiable in some meta-language which the antecedent of (*) doesn’t range over, in which case, she holds, we have a counterexample to (*). The dialectical force of this last horn is a little weak, however, for it relies on the intuition that the two communities really do mean different things when uttering their vocabularies, which is exactly the point that (*) is supposed to decide on!

is that even if we do grant the predicate-functor theorist licence to make metasemantic claims, they are unable to provide such claims which distinguish them from the predicate-logic theorist. To see this, all we have to do is look again at the semantics above: the whole problem, recall, is that the PF [predicate/term functorese] semantics we have been given is the same as the PL [first-order logic] semantics! (Not just in the sense that both semantics use the same models, but that those models contribute to the truth of the language-items in exactly parallel fashion.) Of course, the PF theorist can, and presumably will, say things like “if there were no objects, [x] could still be true” [where x is some term functorese translation of some ordinary claim about objects]... But if the only semantics they can offer is that given above, then this just seems to be a reason to suppose them inconsistent, rather than as advocating a distinct theory. (369)

Dewar’s point about inconsistency is that semantics of the nihilist given in terms of individuals will not corroborate the meta-semantics she offers for the contested term. But such a point is, in this context, a little shallow. The whole point of giving a formal semantics for term-functorese in terms of model-theory is to relate it to the standard understanding we have of the target language. As I have been at pains to stress, however, this is entirely different from the main aim of the nihilist which is to provide a metaphysical semantics for such sentences. Nothing in Dewar’s argument questions the possibility of doing this.

So much for the first worry, let us turn to the second. The problem, again in short, is that even if some principle could *identify* the content of the two languages, it would still be an open question as to whether that content is realistic or nihilistic. Even worse, by precluding the meta-semantics of either party from impinging on the interpretation of the term, we preclude ourselves from even *attempting* to establish the content as that of the realist. The problem first comes to light by noting that whilst (*) is couched in terms of interpretation, it remains unclear from what perspective to apply the principle. From the ‘you’ in the passage quoted above it seems we ought to identify ourselves with one of the parties to the dispute (with whichever community uses ‘blue’, rather than ‘eulb’—I presume this is supposed to be the realist). If so, then the principle simply tells me to ignore the meta-semantics of the other party when judging the meaning of some contested term. In the next sentence, however, the ‘you’ changes to ‘we’ as though now our perspective is in fact one outside of either community, trying to make sense of a term whose meaning is contested between them. In this case, we are told not to include the meta-semantics of *either* party, we are told only that the term must have the *same* interpretation.

But what interpretation is that exactly? It seems the only way to answer that is to assume some meta-semantic theory about the contested term, and yet this is exactly what we are precluded from doing.¹²

Overall, then, Turner faces something of a dilemma: either we disallow the metaphysical content proposed by either party when interpreting the meaning of the target language, in which case we cannot establish the metaphysical conclusion in favour of the realist. Or if we allow such metaphysical content as *bona fide* distinguishing content between the two proposed metaphysical semantics then, no matter what kind of equivalence Turner proves, there will always be the chance for the nihilist to maintain that such equivalence is to be expected (given the possibility of paraphrase) *but that*, further to this, such equivalence also hides an ambiguity between the metaphysical content of the sentences, the realist's on the one hand and the nihilist's on the other.

My suspicion is that as Turner moves from the perspective of being a party to the debate to a perspective outside of it, he is equivocating between an endorsement of realism and a deflationism about the debate itself. If this latter is the intended conclusion of Turner's argument then (*) is the tool for the job: for it will turn out, against the beliefs of both parties, that there really is no dispute to be had here. But such a deflationism cannot be taken as support of realism. In so far as the realist is making substantive claims about the categorial structure of the world, she has to maintain that the dispute is substantive. I think what encourages Turner in this equivocation is the fact that the metaphysical semantics of the realist shares the form of our standard natural language semantics. Perhaps he has been led, then, to think that if we can show the debate to be insubstantive the realist wins by default. But this does not follow. Both the nihilist and the realist can agree that the natural language semantics are correct as far as an account of natural language goes, what they disagree on is whether this should be taken to represent the categorial structure of the world as well.

3.3 Realism regained

I have argued that Turner's argument lacks dialectical force against the nihilist. Nevertheless, I agree with Turner that there is something concerning about the

¹²One might interject that it was a shared meta-semantics of both parties to the debate that '∃' is ontologically committing. And therefore it would beg no questions against the nihilist to allow this to count in deciding in favour of the realist (by contrast, it was never conceded by the realist that any interpretation of 'c' was ontologically innocent). This is true but beside the point: the point is that once one allows the meta-semantics of both parties, (*) will not allow us to identify 'c' as '∃'.

expressive equivalence between \mathcal{L}_r and \mathcal{L}_n . In this final section I want to put forward an argument that I think has more bite. It is not entirely new: as we shall see, some of the aspects of the argument are present in Turner's paper, albeit used quite differently to the use they are put to here.

3.3.1 The argument in outline

I have argued that part of what makes Turner's argument dialectically weak is precluding the (meta)-semantics of the nihilist and the realist from the linchpin of the equivalence argument, (*). Instead of precluding such content from the debate I want to begin with a consideration of it. My strategy is to first settle on a criterion for our concept of an object that is not parochial to any particular piece of logical, or non-logical, vocabulary, but rather links it to the expressive capacities of the language considered as a whole. It is important that at this first stage of the argument I am concerned primarily with the *concept* of an object. The thought is that what characterises the concept as such (what characterises its content) is what it *does* for the language: what range of expressions the concept allows speakers of the language to express. The strategy is to force the nihilist to concede that speakers of \mathcal{L}_n are in possession of this concept. I then further argue that any such speaker ought also to be a realist with respect to such a concept: to hold, that is, that the concept reflects a categorial distinction in the world. Of course, the nihilist will no doubt want to resist this move. The crux of my argument, however, is that if the nihilist concedes speakers of her language are committed to the concept of an object but also denies its metaphysical import she induces a radical form of scepticism about the metaphysical structure of the world. By being realist with respect to the concept of object, we thereby avoid such radical scepticism.

Let me be clear about the limits of my argument. First, it relies on the nihilist accepting my account of the concept of an object as determined by its functional role within the language (the range of expressions it allows us to express). Though I think it is a plausible account, I don't offer much by way of argument—as such the nihilist may want resist the first move, and the argument from that stage on then becomes conditional.

Second, the nihilist may also want to bite the bullet with respect to the scepticism that I argue is induced from her position. That we suffer an inability to know some fundamental truths of the world may simply be a sorry consequence of human existence, rather than something to be blocked by choice of metaphysical theory. The real problem for the nihilist, however, is not so much the resulting scepticism, but rather that the *content* of the nihilist's claim is what induces it. In effect the nihilist is positing a substantive metaphysical truth only to say in the next breath

that one of its consequences is that we can never really know the full extent of the truth she has just uttered. Biting the bullet on this kind of scepticism is, it seems to me, something that *should* raise eyebrows.

3.3.2 The expressive function of our concept of object

Let us now turn to the argument proper. First we must ask what exactly it means to say that the content of our concept of object is given by the range of expressions it allows in the language. Turner, in fact, hints at something like this idea toward the end of his paper. The relevant passage is introduced by raising the worry that (*) might prove too much. Imagine a community who speak a very minimal feature-placing language with only one-place predicates such as ‘cat’ (that is, n -ary predicates of $n < 1$ are not allowed). Translating such a feature-placing language into our common vernacular is simple, whenever we are disposed to say ‘there is a cat’ such a community says ‘it is catting’. Turner wants to concede that such a language is, as it stands, ontologically nihilist: such a community have no conception of thing, only of a spread of features. If so, however, we should be worried if we can run the argument against this language to prove that it too shares the commitments with our ontological realist. Luckily for Turner this turns out not to be the case, and the reason why is enlightening: (Turner uses the symbol ‘ Δ ’ in place of ‘ c ’)

The other predicate functors let us make complex rubber bands out of simpler ones. But there is real conceptual difficulty understanding the Functorese Nihilist’s preferred extension of ‘ Δ ’ to relational predicates. What have we done when we say ‘ $\Delta(\text{orbits})$ ’? We have somehow thrown part of the ‘orbits’ rubber band down on the board while keeping the other part up. But what are we going to do with the part that we’ve kept off the board? Suppose we prefix it with ‘ $\neg\Delta\neg$ ’. Intuitively, this tells us that, for any other place where we could throw a rubber band down, we must make sure the other half of this (kind of) rubber band gets thrown there also. But now it no longer matters simply that thus-and-so a rubber band has been thrown on the board — it also matters where it’s been thrown, and where it could be thrown, too. In other words, certain locations of the board now matter. Certain locations on the board have to count as possible parking places for parts of polyadic rubber-bands, and it becomes significant when parts of two different rubber bands land on just one of these special locations.

Once we’ve gone this far, we’ve all but introduced pegs. The point of using pegs to represent things in a pegboard-and-rubber-band model of

reality is that they make certain locations of the board special. They make those locations potential landing sites for parts of rubber bands. (We use pegs to mark these locations for practical reasons: they keep the rubber bands from sliding around.) But since pegs represent objects, this is just so say that objects are special landing-sites for parts of features. Once it starts mattering where one part of a rubber band has been stuck, we've smuggled in an ontology.

In effect, it is only once we reach a certain level of expressive complexity—namely, that which allows us to deal with relational terms—that the language becomes, for Turner, ontological. It is only at this stage that we could effectively run the argument to show an equivalence between our realist language and its nihilistic counterpart. Turner's point, then, is that objects play a certain *expressive role*, allowing us to express *relational* claims—facts where it matters, as he puts it, where the other half of the rubber band is stuck down. Once we extend our language with relational terms, then, we have, he contends, all but introduced objects into our categorial framework.

Despite its insight, it is not in fact entirely clear how to square this passage with Turner's overall argument. First, we have already seen that Turner identifies the mark of ontological guilt solely with the existential quantifier. The problem, however, is that we can have languages containing the the existential quantifier, but lacking relational expressions. Now, Turner holds that the reason why the feature-placing tribe would not be ontologically committed when using the 'c' functor to place monadic features is because counterfactual uses of the term would depart from uses of ' \exists_p '. This is because the feature-placing tribe may choose to extend her language in ways in which the use of 'c' would not coincide. Putting aside this somewhat questionable assumption, the problem I am outlining is more direct: given that we can have a language which is explicit in its use of ' \exists_p ', the counterfactual uses of it must, of necessity, coincide with those of ' \exists_p '. But this means that a tribe who spoke the fragment of first-order logic that is expressively equivalent to the feature-placing tribe (essentially, first-order logic restricted to monadic predicates) *would* be ontologically committed after all. How to square this conclusion with Turner's previous claim is unclear.

Whilst I think these are genuine worries for Turner's argument, I will leave them to one side. Here we are concerned only to extract the idea, present in the passage above, that there is a deep link between a language's ability to express certain claims and its commitment to objectual structure.

Whilst the core idea is the same, however, there are a couple of idiosyncrasies I wish to introduce. First, let me restate that at the moment I am, unlike Turner,

concerned only with extracting a suitable *concept* of objecthood, only later will my argument shift to whether this concept is, as it were, realised in the world. The second way I want to depart from Turner is by questioning whether that-which-underpins-relational-expressions ought to be privileged over the many other functions that we usually ascribe to the concept of object. Underpinning *monadic* predication, or monadic terms, for example, is another such role. So too is the function of numerical individuation (especially in the context of qualitative symmetries, as we have seen previously in this thesis), but also with respect to spatial extension, temporal persistence and even modal identification. In short, there are seemingly a plethora of distinct functions that we usually take to be preformed by our concept of object beyond merely that of underpinning relational expressions.

There are I think two directions in which one could take this thought. The first would be to acknowledge the multiple functions that an object plays and yet still settle on a single expressive function that the language must satisfy which is *sufficient* for a language's commitment to the concept of object. We have already seen that Turner takes the penny to drop at relational expressions. And as Tim Button has pointed out (p.c.), further evidence for this claim could be sanctioned by the distinctive theoretical 'jump' one gets going from the Boolean monadic predicate calculus to the more familiar quantificational, polyadic predicate calculus. When we are dealing with only monadic predicates the familiar operations of forming complex predicates can be modelled by standard set-theoretic operations (intersection, complementation, etc.), where the variable (or, as we might say, the concept of object) drops out of view—a fact that facilitates a kind of venn-diagrammatic picture-thinking particularly amenable to the idea of a spread or mosaic of features or qualities. Once we move to polyadic predicates no such simple translation into only set-theoretic operations can be given. As Quine puts it in 'The Variable' (1976): 'quantification theory, which is so much more complex than the Boolean predicate calculus, has its serious motivation in polyadic predicates. When we move to polyadic logic, the bound variable quits the wings and gets into the act'; when we move to polyadic logic, it matters how the variables line up.

Whilst such a thought is tempting it is not entirely clear that the jump to relational terms really does constitute qualitative leap from non-objectual into objectual structure. For one, whilst it is true that the monadic predicate calculus can be given a variable-free formulation in the form of set-theoretic functors acting on predicates, so too can its polyadic extension, as we have seen, by defining functors that take care of what we ordinarily think of as permuting, cropping, padding and so on. It is not entirely clear, then, that relational expressions introduce materially different problems for the nihilist. As such she will, understandably I think, demand to know

why if her nihilism is granted in the former case, it is not also granted in the latter.¹³

Hawthorne and Cortens (1995) explicitly press this point. They think that another theoretical jump, this time by introducing a cardinality operator, doesn't justify the charge that we have gone from non-objectual to objectual structure:

In allowing number adverbs to modify 'It is catting' so as to give 'It is catting twice' and so on, are we smuggling in the concept of an object? It is worth recalling that when, in 'Identity and Predication', Gareth Evans rejected 'It catteth' as a fit vehicle for representing reality, it was primarily because he thought of 'It catteth' as insensitive to the number of cats present. Perhaps he thought that if one were to allow such adverbs as 'once', 'twice' to modify 'It catteth', then one would be allowing cats into one's ontology after all.

This sort of objection is not really open to the orthodox ontologist, we contend. For, after all, the contemporary ontologist will quite often want to deny that, strictly speaking, there are holes, or shadows or miles, even though we can (loosely speaking) count holes and shadows and miles. The appearance of number words next to some sortal in some true sentence hardly counts for her as decisive evidence that we should admit objects into our ontology over which that sortal ranges. Thus, the orthodox ontologist will admit that we can, loosely speaking, count holes or shadows or miles, without being ontologically committed to them. (152)

Hawthorne and Cortens contend that if we *are* to grant that a monadic feature-placing language is not committed to objecthood, then merely introducing cardinality claims does not undermine the original picture. An entirely analogous point can be made, I think, with respect to relational claims.

Instead, then, of settling on a single condition of expressive power that somehow constitutes the commitment to a concept of object, better, I think to identify commitment to the different kinds of concept associated with the different kinds of function that the concept of object plays. For example, a language that deals only in monadic predication would be committed only to an admittedly 'thin' concept

¹³It is also worth noting with respect to this that part of the problem of giving adequate functorese translations (in particular for claims with quantificational complexity, but also presumably for relational expressions too) stems from the attempt to do so *piecemeal* (Turner 2019). If we grant nihilism's admitted holism, such that she most accurately describes the world by a single complex term, the problem of placing relations dissipates. It would be entirely open, in light of this I think, for the nihilist to maintain that the jump to relational predicates doesn't constitute a material difference in ideology to warrant a jump from nihilism to ontological commitment.

of object: a concept whose only function is, as it were, to earmark such predicates as ‘topics of conversation’. And a language that deals in polyadic predication (or relational terms) would be committed to what we might think of as a more robust concept of object (and so on for other functions that the category is taken to play). It seems to me that this latter path has a certain advantage over the former in this respect. Better, I think, to deny that either the monadic or the polyadic cases escape commitment to a concept of object, and yet maintain that there is still an intelligible difference of the *kind* of concept that each is committed to, in virtue of the difference in kind of function the concept plays. As such, we can then not only make good on the intuition that a language impoverished so as to only allow monadic features is—at least relative to more expressive languages—committed to a correspondingly thin notion of an object, whilst also allowing that as the nihilist creeps up the expressive ladder—allowing herself more sophisticated expressions associated with objectual structure: relational expressions, cardinality expressions, non-trivial identity expressions, etc.—the kind of objectual structure she is committed to shifts.

3.3.3 Nihilism and placing categorial structure beyond our ken

So far I have talked only of a concept of object that a language may be committed to, but not of commitment to the metaphysical category itself. The nihilist might be happy to concede all this talk of commitment to concepts, but resist the realism with respect to metaphysical category. ‘Sure’, she might say, ‘my language deals in identity, relational qualities and so on, and so is committed to what you call a concept of object, but there is nothing to this commitment, as I see it, that ties me to the metaphysical category of object. The reason is obvious: by tying the notion of ontological structure so closely to the range of expressions that a language can make you have made something of a category error: you have mistaken a concept that speakers possess with the categorial structure of the world—mistaken *linguistic* categories for *metaphysical* ones. Indeed, everything you say about ontological structure makes me think that being an object is merely a figure of speech, an artefact of representation, rather than an aspect of how reality is in itself. I accept, then, that I am committed to this conception of an object as outlined by you, and yet still maintain my position as a nihilist as one who denies that there is a metaphysical category of object out there in the world.’¹⁴

¹⁴Identifying the concept of object as I have done (by looking primarily to its logical and, more broadly, expressive functions) has a certain deflationary flavour to (and tradition behind) it, one which the nihilist could no doubt appeal in justifying her nihilism. Parson (2004) summarises the thought I have in mind nicely: he notes that a certain kind of qualitativist view (more precisely,

In response to such a remark note, first, that such a move might be conceived as in tension with the orthodox nihilist, one who frames her position in the fundamentality of the language she proposes. For a presupposition of that debate is that the properties of the language are the best guides we have to the structure of the world. Nevertheless, a nihilist who was willing to relinquish this idea, or at least one who thinks that the notion of categorial structure has somehow been read off the wrong way from her language, may still hold to this line. If the nihilist *is* to persist, however, then she faces a challenge. The charge is simple: by holding that i) the concept of object is integral to the most basic framework through which we conceptualise the world (that is, \mathcal{L}_n) and ii) that such a concept finds no metaphysical counterpart in reality, the nihilist risks being unable to say anything intelligible about how the world really is independent of our description of it. For she will be unable to describe the world without recourse to that concept.

Now, things at this point get somewhat subtle. The nihilist may continue to protest: ‘No, no, no. When I accepted that the content of our concept of object is given by the expressive capacities of the language, I accepted just that: that any language committed to being able to express certain claims possessed a concept of object. But what I have shown through my fundamental language is how those expressive functions can be fulfilled by a language whose terms do not denote objects, (but instead only complex universals, features, and so on); that is, I showed how our concept of object can be fulfilled in an objectless world.’ It might appear, then, that the debate has failed to advance an inch: that we are simply back to square one. But in fact I think that the charge cuts deeper against the nihilist than her protestation assumes.

The problem is this: by accepting that the concept of object is bound to her most basic expressions, any metaphysical theory that she puts forward will, in this sense, be ultimately misleading: it will exhibit exactly the kind of structure that she denies exists in the world. It is a simple corollary to this fact that the nihilist will be constitutionally unable to express her ultimate vision of reality, without expressing it in a medium that she herself contends is distorting. It is in this sense then that, no matter what further metaphysical story the nihilist tells, she will never be able to tell us what the world is *really* like.

mathematical structuralism) holds that ‘the most general concept of object derives from formal logic, that we are speaking of objects when we use the apparatus of singular terms, identity and quantification. This *thin* conception has a tradition behind it whose principal representatives are Frege, Carnap and Quine. . . . It could be described as the view that the concept of object is a formal concept.’ (75, my italics) (Aside: if one is baffled by Quine’s appearance on the list one would do well to remember Quine’s own warning that: ‘The solemnity of my terms ‘ontological commitment’ and ‘ontological criterion’ has led my readers to suppose that there is more afoot than meets the eye, despite my protests’ (Quine 1981, 174-5).)

One such nihilist (Azounni 2017) is particularly acute to this worry. After claiming that there is no ontological structure in the world (no ‘ontological boundaries’ as he calls them), that such structure is merely a linguistic and cognitive imposition on the world by us, then, addressing the worry that we are therefore cut off from how the world really is independent of our impositions, he says the following: ‘If there are no ontological boundaries in the world—if object boundaries really are projections in the sense that I’ve argued for in this chapter—then nothing changes. Our theorizing and language practices, how we perceive the world, and so on already accommodate this metaphysical fact.’ (167) For Azzouni we can get at the world as it is prior to our conceptual impositions merely by *subtracting* all of the ontological structure imposed by us; something, he contends, which leaves us with only the qualitative feature-landscape. As such the sceptical challenge is answered in ‘two steps. First, erase *all* (and *only*) the ontological boundaries. [Then] [c]laim: everything out there, nevertheless, is still the same’ (xvii).

But the crux is this: If everything out there (read: independent of us) is still the same once we remove everything for which our linguistic practices and cognitive reflexes are responsible, this should only make us question whether such structure is really an imposition of *us*. Rather the overwhelming evidence would be that the structure ‘imposed’ by us was already there to begin with! Think of it like this: Picture two philosophers arguing over whether blueness really exists: one thinks that everything is blue because we impose it (perhaps we have those special blue ‘spectacles’ philosophers are always talking about), the other thinks blueness is something out there in the world. Imagine, now, looking at a blue wall. If the wall is still blue once we remove everything for which we are responsible—once we take off the proverbial spectacles—we ought, I contend, take this as evidence that blueness is not an imposition by us after all.

The nihilist then is, I suggest, stuck between a rock and a hard place: either embrace the radical Bradleyan scepticism that reality as it is independently of us is forever out of our grasp. Or contend that the thinness of our notion of ontological structure allows us to get at reality by simply subtracting our conceptual imposition and getting back what we began with, in which case we ought to reason that our imposition is no imposition at all: the world already comes with the categorial structure that we initially took to be imposed.

3.4 Coda: realism, nihilism and anti-realism

The realism-nihilism debate, as it is understood here, is a debate over the categorial structure of the world. There is another debate closely related to this one, however,

from which it ought to be distinguished. For many, the term ‘ontological realism’ denotes the thesis that facts concerning *which* objects exist are objective. This is sometimes put, somewhat metaphorically, as the view that there is an objectively correct way to *carve*, or *slice* the world into objects. The ‘realism’ in this sense pertains not so much to the existence of the category of object, but rather to the particular kinds of objects. Ontological anti-realists, in contrast to these kind of realists, think that the world doesn’t come, as it were, pre-carved. Instead, they hold that the answer to the question *what* exists? is determined just as much by us as it is by the world—foregrounding the importance of language, conceptual schemes, conventions or cognitive reflexes, etc., in determining the world’s populace.

Now, as stated, the relationship between such anti-realism and nihilism is a little opaque. *Prima facie*, it seems at least coherent, for example, to be a realist with respect to the category of individual—that is, to hold that the category of object is not in any way imposed by us—and yet still be an anti-realist with respect to which particular objects exist—to still hold, that is, that how exactly the world is carved into objects *is* determined, at least in part, by us. Conversely, just because one rejects that the category of the object as ‘really real’, does not mean that one must be an anti-realist with respect to particular objects. Indeed, it is perfectly possible to hold that there is a single unique way to carve the world into objects and that this privileged ontology is grounded in facts about purely qualitative state of affairs. (This appears to be the combined commitment of Dasgupta, for example.)

These questions are worthy of more attention than I can give them here. For what it is worth, my suspicion is that nothing I have said here settles whether, say, there is a unique joint-carving quantifier with respect to the special composition question, or the debate over whether objects are three-dimensional simples or four-dimensional complexes, etc. Of course if this is right then the upshot is that one needn’t deny the reality of the category of object in order to be an anti-realist about such debates. Indeed, if the argument against nihilism put forward here is in good standing, it follows that one in fact ought *not* to: that is, the path to finding the debates over ontology non-factual or otherwise defective should *not* go through ontological nihilism. Exactly how we ought (if we indeed ought) to underpin such anti-realist inclinations is a topic for another time.

Conclusion

In sum, this thesis has put the foundations of generalism under the spotlight. In chapter 1 I articulated in detail the main argument in favour of generalism and found it inconclusive. In chapter 2 I investigated two possible ways of understanding quantifier generalism, neither of which could live up to the generalists aims. In chapter 3 I set out a prevalent form of generalism that embraced ontological nihilism. Such nihilism, I argued, led to a pernicious form of scepticism. Whilst nothing, it seems, is conclusive in the play of metaphysical inquiry, the weakest conclusion of this thesis is that much more remains to be done if the position of generalism is to be tenable.

Bibliography

- Adams, Robert Merrihew (1979). “Primitive thisness and primitive identity”. In: *The journal of Philosophy* 76.1, pp. 5–26.
- Alston, William P. (1963). “Ontological Commitments”. In: *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 9.1/2, pp. 8–17.
- Arenhart, Jonas Rafael Becker and Décio Krause (2014). “Why non-individuality? A discussion on individuality, identity, and cardinality in the quantum context”. In: *Erkenntnis* 79.1, pp. 1–18.
- Azzouni, Jody (2017). *Ontology without borders*. Oxford University Press.
- Bacon, Andrew (2019). “Is reality fundamentally qualitative?” In: *Philosophical Studies* 176.1, pp. 259–295.
- Bacon, John (1985). “The completeness of a predicate-functor logic”. In: *The Journal of symbolic logic* 50.4, pp. 903–926.
- Baker, David John (2010). “Symmetry and the Metaphysics of Physics”. In: *Philosophy Compass* 5.12, pp. 1157–1166.
- Berto, Francesco (2017). “Counting the particles: Entity and identity in the philosophy of physics”. In: *Metaphysica* 18.1, pp. 69–89.
- Borges, Jorge Luis (1998). *Jorge Luis Borges: Collected Fictions*. Penguin Books.
- Brading, Katherine and Elena Castellani (2003). *Symmetries in physics: philosophical reflections*. Cambridge University Press.
- Bradley, Francis Herbert (2016). *Appearance and reality: a metaphysical essay*. Routledge.
- Burgess, Alexis (2012). “A puzzle about identity”. In: *Thought: A Journal of Philosophy* 1.2, pp. 90–99.
- Burgess, John P (2005). “Being explained away”. In: *The Harvard Review of Philosophy* 13.2, pp. 41–56.
- Button, Tim and Sean Walsh (2018). *Philosophy and model theory*. Oxford University Press.
- Chalmers, David, David Manley, and Ryan Wasserman (2009). *Metametaphysics: New essays on the foundations of ontology*. OUP Oxford.

- Clarke, Desmond M. (2009). *Berkeley: Philosophical Writings*. Cambridge University Press.
- Collins, John (2020). “Quine on ontological commitment in light of predicate-functor logic”. In: *Quine, Structure, and Ontology*, p. 56.
- Cowling, Sam (2015). “Non-qualitative properties”. In: *Erkenntnis* 80.2, pp. 275–301.
- Dasgupta, Shamik (2009). “Individuals: An essay in revisionary metaphysics”. In: *Philosophical Studies* 145.1, pp. 35–67.
- (2011). “The bare necessities”. In: *Philosophical Perspectives* 25, pp. 115–160.
- (2014). “On the plurality of grounds”. In: *Philosophers* 14.
- (2016a). “Can we do without fundamental individuals? Yes”. In: *Current controversies in metaphysics*. Routledge, pp. 7–23.
- (2016b). “Symmetry as an epistemic notion (twice over)”. In: *The British Journal for the Philosophy of Science* 67.3, pp. 837–878.
- Dewar, Neil (2016). “Symmetries in physics, metaphysics, and logic”. PhD thesis. University of Oxford.
- (2021). “Freeing Structural Realism from Model Theory”. In: *Hajnal Andreka and Istvan Nemeti on Unity of Science*. Springer, pp. 363–382.
- Diehl, Catharine (2018). “A language for ontological nihilism”. In: *Ergo: An Open Access Journal of Philosophy* 5.
- Dipert, Randall R (1997). “The mathematical structure of the world: The world as graph”. In: *The journal of philosophy* 94.7, pp. 329–358.
- Donaldson, Thomas (2015). “Reading the book of the world”. In: *Philosophical Studies* 172.4, pp. 1051–1077.
- Esfeld, Michael and Vincent Lam (2010). “Ontic structural realism as a metaphysics of objects”. In: *Scientific structuralism*. Springer, pp. 143–159.
- Fine, Kit (1994). “Essence and modality: The second philosophical perspectives lecture”. In: *Philosophical perspectives* 8, pp. 1–16.
- French, Steven (2000). “Identity and individuality in quantum theory”. In.
- (2014). *The structure of the world: Metaphysics and representation*. Oxford University Press.
- French, Steven, Decio Krause, et al. (2006). *Identity in physics: A historical, philosophical, and formal analysis*. Oxford University Press.
- Glick, David (2020). “Generalism and the Metaphysics of Ontic Structural Realism”. In: *The British Journal for the Philosophy of Science* 71.2, pp. 751–772.
- Greaves, Hilary and David Wallace (2020). “Empirical consequences of symmetries”. In: *The British Journal for the Philosophy of Science*.
- Hawley, Katherine (2006). “Weak discernibility”. In: *Analysis* 66.4, pp. 300–303.

- Heathcote, Adrian (2021). “Countability and self-identity”. In: *European Journal for Philosophy of Science* 11.4, pp. 1–23.
- Hempel, Carl G and Paul Oppenheim (1948). “Studies in the Logic of Explanation”. In: *Philosophy of science* 15.2, pp. 135–175.
- Hirsch, Eli (2011). *Quantifier Variance and Realism: Essays in Metaontology*. Oxford University Press.
- Hoffmann-Kolss, Vera (2019). “Defining qualitative properties”. In: *Erkenntnis* 84.5, pp. 995–1010.
- Huggett, Nick (1999). *Space from Zeno to Einstein: classic readings with a contemporary commentary*. MIT Press.
- Hume, David (1978). “A Treatise of Human Nature (1739-40)”. In.
- Jacobs, Caspar (2021). “Invariance or equivalence: a tale of two principles”. In: *Synthese*, pp. 1–21.
- Jantzen, Benjamin C (2019). “Entities without identity: a semantical dilemma”. In: *Erkenntnis* 84.2, pp. 283–308.
- Knox, Eleanor (2020). “Newtonian spacetime structure in light of the equivalence principle”. In: *The British Journal for the Philosophy of Science*.
- Kossak, Roman (2021). *Model theory for beginners: 15 lectures*. Springer series in logic. Springer.
- Kuhn, Steven T (1983). “An axiomatization of predicate functor logic.” In: *Notre Dame Journal of Formal Logic* 24.2, pp. 233–241.
- Ladyman, James (1998). “What is structural realism?” In: *Studies in History and Philosophy of Science Part A* 29.3, pp. 409–424.
- (2007). “Scientific structuralism: On the identity and diversity of objects in a structure”. In: *Aristotelian Society Supplementary Volume*. Vol. 81. 1. Wiley Online Library, pp. 23–43.
- Ladyman, James et al. (2007). *Every thing must go: Metaphysics naturalized*. OUP Oxford.
- Lewis, David (1983). “Extrinsic properties”. In: *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 44.2, pp. 197–200.
- Linnebo, Øystein (2008). “Structuralism and the Notion of Dependence”. In: *The Philosophical Quarterly* 58.230, pp. 59–79.
- Lowe, E Jonathan (2016). “Non-individuals”. In: *Individuals across the sciences*, pp. 49–60.
- Maudlin, Tim (1993). “Buckets of water and waves of space: Why spacetime is probably a substance”. In: *Philosophy of science* 60.2, pp. 183–203.
- McKenzie, Kerry (2014). “Priority and particle physics: Ontic structural realism as a fundamentality thesis”. In: *The British Journal for the Philosophy of Science* 65.2, pp. 353–380.

- Møller-Nielsen, Thomas (2017). “Invariance, interpretation, and motivation”. In: *Philosophy of Science* 84.5, pp. 1253–1264.
- O’Leary-Hawthorne, John (1995). “The bundle theory of substance and the identity of indiscernibles”. In: *Analysis* 55.3, pp. 191–196.
- O’Leary-Hawthorne, John and Andrew Cortens (1995). “Towards ontological nihilism”. In: *Philosophical Studies* 79.2, pp. 143–165.
- O’Leary-Hawthorne, John and Jan A Cover (1998). “A world of universals”. In: *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 91.3, pp. 205–219.
- Oderberg, David S (2011). “The world is not an asymmetric graph”. In: *Analysis* 71.1, pp. 3–10.
- Parsons, Charles (2004). “Structuralism and metaphysics”. In: *The Philosophical Quarterly* 54.214, pp. 56–77.
- Paul, LA (2010). “Mereological bundle theory”. In: *The Handbook of Mereology*.
- Paul, Laurie Ann (2017). “A one category ontology”. In.
- Pooley, Oliver (2006). “Points, particles, and structural realism”. In: *The structural foundations of quantum gravity*, pp. 83–120.
- Quine, Willard V (1960). “Variables explained away”. In: *Proceedings of the american philosophical society* 104.3, pp. 343–347.
- Quine, Willard V and Willard Van Orman Quine (1981). *Theories and things*. Harvard University Press.
- Quine, WV and J Fenstad (1971). *Predicate-functor logic*.
- Rayo, Agustin (2017). “The world is the totality of facts, not of things”. In.
- Rosen, Gideon (2010). “Metaphysical dependence: Grounding and reduction”. In: *Modality: Metaphysics, logic, and epistemology* 109, p. 109.
- Russell, Bertrand (2009). *Human knowledge: Its scope and limits*. Routledge.
- (2013). *An inquiry into meaning and truth*. Routledge.
- Russell, Jeffrey Sanford (2018). “Quality and quantifiers”. In: *Australasian Journal of Philosophy* 96.3, pp. 562–577.
- Saunders, Simon (2006). “Are quantum particles objects?” In: *Analysis* 66.1, pp. 52–63.
- Schönfinkel, Moses (1967). “On the building blocks of mathematical logic”. In: *From Frege to Gödel*, pp. 355–366.
- Shumener, Erica (2017). “The metaphysics of identity: Is identity fundamental?” In: *Philosophy Compass* 12.1, e12397.
- Sider, Theodore (2011). *Writing the Book of the World*. OUP Oxford.
- Skow, Bradford (2008). “Haeceitism, Anti-Haeceitism and Possible Worlds”. In: *The Philosophical Quarterly* 58.230, pp. 98–107.

- Stachel, John (2002). “‘The relations between things’ versus ‘the things between relations’: The deeper meaning of the hole argument”. In.
- (2005). “Structural realism and contextual individuality”. In: *Hilary Putnam*, pp. 203–219.
- Strawson, Peter Frederick (2002). *Individuals*. Routledge.
- Thomasson, Amie L (2020). *Norms and necessity*. Oxford University Press, USA.
- Turner, Jason (2011). “Ontological nihilism”. In: *Oxford studies in metaphysics* 6, pp. 3–54.
- (2016a). “Can we do without fundamental individuals? No”. In: *Current controversies in metaphysics*. Routledge, pp. 24–42.
- (2016b). *The facts in logical space: A tractarian ontology*. Oxford University Press.
- (forthcoming). “On doing without ontology: Feature-placing on a global scale”. In: *The Question of Ontology*.