

# Ontological Collectivism\*

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Given some things, what's prior: those things taken individually or those things taken collectively? Is *each* of them prior to *them*, or are *they* prior to every *one* of them? Is each *thing* prior to the *things*, or are the things *themselves* prior to each thing *itself*?

This is, at a very rough first pass, the general question at the heart of a neglected debate in foundational ontology, the debate over the relative ontological priority of individuality and collectivity. What's prior, each of some entities or those very entities? Are some objects taken separately prior to those objects taken together, or are the objects taken together prior to the objects taken separately? Using a common piece of jargon: given some things, what's prior, every *single* such thing or the *plurality* of them?<sup>1</sup>

The question ought not to be confused with others that have interested metaphysicians both across history and in more recent years. For instance, what's at issue is not the relative priority of some entities and a further *entity* that's somehow made out of those entities (a mereological fusion of them, a class or set of them, a fact or proposition about them, and so forth). That concerns the relative priority of some things (whether taken individually or collectively) and a somehow composite *thing* to which they bear some sort of intimate, constitutive relation (parthood, membership, etc.). The question is instead over the relative priority of *each* of some objects and *those very objects*—the focus is on individuality and collectivity proper, not on compositeness and componency. Similarly, the issue is not with the relative priority of some entities and a network of relations that those entities bear to one another. The concern there is with the relative priority of how some things are in *isolation* from each other and how they are in *relation* to each other. Our question is instead over how each of some objects *is* (whether in isolation from or in relation to others) and how those objects *are*—the focus is on singularity and plurality as such, not on isolation and relationality. Of

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<sup>1</sup>Jargon: a plurality of things isn't a further *thing*, which is somehow made out of those things. Rather, it's just those *things*, the things *themselves*—those very things taken together, *i.e.* taken collectively.

course, as we will later see, there may be all sorts of interesting connections between our question and others, such as the two just mentioned. But they are still different questions—the corresponding issues are in principle distinct.

My general goal here is to articulate and explore the opposition between two general views on this question, which I call *ontological individualism* and *ontological collectivism* (for short, *individualism* and *collectivism*). Roughly, individualism is the thesis that individuality is always prior to collectivity: for any entities, those entities taken individually are ontologically prior to those entities taken collectively. That is, for any things, each of those things is prior to those things. In terms of pluralities: for any plurality, each of that plurality is prior to that plurality. By contrast, collectivism is the thesis that collectivity is at least sometimes prior to individuality: for at least some entities, those entities taken collectively are prior to those entities taken individually. That is, for at least some things, those things are prior to each of those things. In plurality-speak: for at least some plurality, that plurality is prior to each of that plurality. Individualism and collectivism hence disagree on the relative priority of individuality and collectivity. According to the individualist, individuality is in all cases prior; according to the collectivist, collectivity is in at least some cases prior.

I have three more specific goals in this paper. First, to more fully articulate our question and give shape to the debate between individualism and collectivism, distinguishing both the question and the debate from distinct if related ones in the neighborhood. Second, to defend collectivism against forceful charges of incoherence, which merit attention not only because of their strong initial appeal and the important issues and clarifications that arise in the careful discussion required to dispel them, but also because they notably generalize—if sound, the objections at stake undermine the intelligibility of not only collectivism but also individualism and in fact the very question over the relative priority of individuality and collectivity. Third, to argue that collectivism is not only coherent but also of critical interest to metaphysics—the issue over the relative priority of individuality and collectivity has a significant bearing on a variety of central debates, where important collectivist alternatives have been entirely overlooked.

To clarify: here I will not argue in favor of collectivism—my aim is not to establish that it's true, plausible, or even just preferable to individualism in light of certain considerations. That'd presuppose the intelligibility of not only the view but the whole discussion, and as we will see there are important worries to address and key clarifications to make in that regard. Rather, my aim is precisely to address those worries and make those clarifications, thereby articulating the debate and highlighting collectivism as an in principle viable view that's of great interest to metaphysics, laying down the foundation for further arguments and discussions. A full, positive case for collectivism requires further argument. The point is precisely that whether it's true *is* a matter of substantive argument and of broad interest in metaphysics—the background issue is neither incoherent nor trivially settled in favor of individualism, and it has a bearing on a number of other debates.

Roadmap: in sections 1 and 2 I articulate two non-vacuous principles about individuality and collectivity, which haven't heretofore been identified in the literature and according to which there are very tight necessary connections between individual and collective phenomena. Given such principles, in section 3 I give shape to the debate between individualism and collectivism. In section 4, I clarify the connection between this debate and other debates in metaphysics and offer three examples of recent discussions in the literature where collectivism introduces neglected alternatives of critical interest. In section 5, I defend the in-principle viability of collectivism and the general debate between individualism and collectivism from two families of objections.

## 1 Individual and collective existence

In this section and the next one I identify two principles that together articulate what I call the *intimacy* between individuality and collectivity—there are very tight necessary connections between individuality and collectivity. In one case the nature of the connection is *existential*; in the other, it's *qualitative*. I'll discuss each of them in turn.

The first principle is this: for any things, those things exist just in case each of those things exists. Whenever some things exist, each of those things exist. And whenever each of some things exists, those things exist. Hence some things exist just in case each of those things exists. Thus, consider Abelard and Heloise. If Abelard and Heloise exist, Abelard exists and Heloise exists. And if Abelard exists and Heloise exists, Abelard and Heloise exist. So:

- (1) Abelard and Heloise exist iff Abelard exists and Heloise exists

This may sound vacuous. Thus, it's important to distinguish the intended principle (which is not meant to be vacuous) from two neighboring claims (which are indeed vacuous). A bit of regimentation will be useful for this. In the above example, the intended reading of (1) is not of the following form:

- (2) (Abelard exists  $\wedge$  Heloise exists)  $\leftrightarrow$  (Abelard exists  $\wedge$  Heloise exists)

Nor is it of the following form:

- (3) Abelard & Heloise exist  $\leftrightarrow$  Abelard & Heloise exist

Rather, it's of the following form:

- (4) Abelard & Heloise exist  $\leftrightarrow$  (Abelard exists  $\wedge$  Heloise exists)

Here ' $\wedge$ ' stands for truth-functional conjunction, ' $\leftrightarrow$ ' for the truth-functional biconditional, and '&' for a binary term-forming operator such that ' $\lceil \alpha \ \& \ \beta \rceil$ ' is a syntactically plural term formed from

singular or plural term  $\alpha$  and singular or plural term  $\beta$ . ‘ $\wedge$ ’ and ‘ $\&$ ’ hence correspond to different “ands”, which linguists often call *sentential* and *phrasal* conjunction (respectively) and which differ both syntactically and semantically.<sup>2</sup> Whereas ‘ $\wedge$ ’ takes in a pair of sentences and spits out a sentence, which is true just case the each of those sentences is true, ‘ $\&$ ’ takes in pairs of terms and spits out a term, which picks out the plurality of objects that those terms pick out on their own. Thus, ‘Abelard’ is a singular term (picking out Abelard alone) and so is ‘Heloise’ (picking out Heloise by herself) but ‘Abelard & Heloise’ is a plural term (picking out Abelard and Heloise together, *i.e.* collectively).<sup>3</sup> Accordingly, (4) and (2) differ in their left-hand-sides, and (4) and (3) differ in their right-hand-sides. So these claims differ in that the following two claims differ:

- (5) Abelard & Heloise exist
- (6) Abelard exists  $\wedge$  Heloise exists

And (5) and (6) differ in that the latter is a claim made out of two other claims, each of which is a singular claim. By contrast, the former is not made out of other claims—it’s just a plural claim. So they have different structure, namely:

- (7)  $\phi(\alpha\&\beta)$
- (8)  $\psi(\alpha) \wedge \chi(\beta)$

where  $\alpha$  and  $\beta$  are singular terms and  $\ulcorner \alpha\&\beta \urcorner$  is a plural one. More specifically, if one were to construe existential claims in terms of existential quantification rather than via an undefined predicate, then (5) and (6) would have the following form:<sup>4</sup>

- (9)  $\exists Xs(Xs = \alpha\&\beta)$
- (10)  $\exists x(x = \alpha) \wedge \exists x(x = \beta)$

where ‘ $x$ ’, ‘ $y$ ’, ‘ $z$ ’, etc. are first-order singular variables and ‘ $Xs$ ’, ‘ $Ys$ ’, ‘ $Zs$ ’, etc. are first-order plural variables.<sup>5</sup>

<sup>2</sup>Cf. Montague 1973, Lasersohn 2013, Partee and Rooth 2012.

<sup>3</sup>Nothing in what follows will depend on the mechanics of this or any other particular choice of regimentation for plural terms; for discussion, see Oliver and Smiley 2016, §10.4 and Florio and Linnebo 2021, §2. Nor will it matter if “compound” plural terms are altogether rejected in favor of the corresponding pluralities of singular terms, where such pluralities pick out the relevant pluralities of objects (so that *e.g.* ‘Abelard’ and ‘Heloise’ taken collectively pick out Abelard and Heloise taken collectively). You may thus rephrase the entire discussion in terms of your preferred account of plural terms and plural reference.

<sup>4</sup>If, alternatively, existence claims are to be construed in terms of an undefined existence predicate, (5) would be an atomic plural claim and (6) the conjunction of two atomic singular claims. Nothing in what follows will depend on whether one prefers the quantificational or the predicational approach. All that matters is that (5) is plural and (6) singular.

<sup>5</sup>Unlike the issue of plural terms and plural reference (see footnote 3 above), the issue of collective *predication* will be of some significance later on (in connection with collectivism’s bearing on the metaphysics of

So, unlike with (2) and (3), the left- and right-hand-sides of (4) differ. Not only that: (4) isn't even tautological. According to (2), Abelard exists and Heloise exists just in case Abelard exists and Heloise exists—each of them exists just in case each of them exists. And according to (3), Abelard and Heloise exist just in case Abelard and Heloise exist—they exist just in case each they exist. By contrast, according to (4), Abelard and Heloise *exist* just in case each of Abelard and Heloise *exists*—*they* exist just in case *each* of them exists.

Here's another, more explicitly metaphysical, way of getting at the content of our principle. Suppose we accept a view on which facts are abundant, fine-grained structured entities, *i.e.* hyperintensionally individuated complexes of arbitrary properties/relations and their bearers.<sup>6</sup> This picture of facts would allow one to introduce a distinction between *individual* and *collective* facts, *i.e.* facts whereby each of some things taken separately is so-and-so and facts whereby some things taken together are thus-and-such, even when those facts hold at exactly the same worlds. Such a distinction would hence be the worldly analogue of the distinction between singular and plural claims—the distinction would figure in reality itself rather than merely in talk thereof.<sup>7</sup> Thus, on this view, the fact that Abelard and Heloise exist would be a collective fact distinct from the individual facts that Abelard exists and that Heloise exists as well as from the conjunctive fact made out of those individual facts, should there be such things. To make this perfectly transparent, let  $\llbracket \phi \rrbracket =_{df}$  the fact

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relations, see §4.2 below). A general question in the background is whether collective predication is to be construed relationally or non-relationally, *i.e.* as variably-polyadic predication (whereby only one singular term may fill any one argument place but the number of argument places may change) or as monadic predication (so that the number of argument places remains constant but a single argument place may be filled by either a plural term or the corresponding plurality of singular terms). In our example, this is the question of whether the structure of (5) is to be construed as  $\phi^2(\alpha, \beta)$  or as  $\phi^1(\alpha \& \beta)$  as I'm assuming here (or as  $\phi^1(\alpha\beta)$  if we forgo plural terms in favor of mere pluralities of singular terms as per the discussion of the previous footnote), where—to be perfectly clear—superindices indicate adicity, parentheses house the relevant argument places, and commas separate distinct argument places. This makes no difference at this stage of the dialectic, although it will be significant later on. For now, all that matters is, again, that (5) is plural claim and (6) a singular one. Exactly how collective predication is to be regimented (and hence what's the precise structure of (5)) is a separate issue.

<sup>6</sup>For discussion of this sort of conception of facts see Chisholm 1976, Fine 1982, Pollock 1985, Armstrong 1997. For related discussions of propositions, see Russell 1903, Soames 1985 and 1987, King 2007, 2013. For our purposes here it doesn't matter whether *e.g.* we identify facts and true propositions.

<sup>7</sup>Another way to introduce a worldly individual vs. collective distinction would be at the level of properties and relations, without positing facts in which they're involved. Such a distinction between individual and collective properties and relations is at the basis of recent semantic accounts of plurals in the literature, which take plurals at face value; cf. Oliver and Smiley 2005 and 2016; Yi 2005, 2006; McKay 2006; and Rayo 2006. The view of facts I'm entertaining here would simply posit complex entities having properties and relations (on the one hand) and their bearers (on the other) as constituents (at least when such properties and relations are construed as universals; see Florio and Linnebo 2021 for related discussion on this point). I favor introducing the distinction at the level of facts because many properties may in principle be instantiated by a single thing or by a plurality of things (*e.g.*, carrying a piano, running a race), whereby a distinction between individual and collective properties would either effectively evaporate or needlessly multiply properties and relations. See [Omitted for blind review] further discussion.

that  $\phi$ , and let us avail ourselves of both singular and plural lambda abstracts to form arbitrary singular/plural predicates, *i.e.*  $n$ -place expressions of the form  $\ulcorner \lambda \alpha_1 \dots \alpha_n \phi \urcorner$  where each  $\alpha_i$  may be either a singular or plural term and  $\phi$  is any well-formed formula. Now for singular terms ‘ $a$ ’ and ‘ $b$ ’, consider the following:

- (11)  $\llbracket \lambda Ys \exists Xs (Xs = Ys) (a \& b) \rrbracket$   
 (12)  $\llbracket \lambda y \exists x (x = y) (a) \rrbracket \& \llbracket \lambda y \exists x (x = y) (b) \rrbracket$   
 (13)  $\llbracket \lambda y \exists x (x = y) (a) \wedge \lambda y \exists x (x = y) (b) \rrbracket$

The idea is that, on this view of facts, (11) is a collective existential fact, which is identical neither to (12) nor (13). For, on the one hand, (12) is not a fact; rather, it’s a plurality of two singular existential facts (at least provided  $a \neq b$ ). So (11) is one but (12) many. On the other, (13) is a fact made out of two individual existential facts. So while (13) is conjunctive, (11) isn’t.<sup>8,9</sup>

Given this view of facts, (1) would make far from vacuous worldly demands. It would require that the collective *fact* (on the one hand) and the individual *facts* (on the other) always go together: whenever we have the *one* collective fact we must have the *two* individual facts, and the other way around. So generally, the principle would require that whenever we have the fact that some things exist we have the facts that each of them exists, and conversely.<sup>10</sup>

Now none of the above is of course to deny that there is a very tight connection between (5) and (6): (4) really is a *truism*. At the very least, it is a metaphysical necessity. One might even insist that it is an analytic or conceptual necessity. As a matter of fact, there is good reason to believe

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<sup>8</sup>Exactly parallel considerations apply to the facts corresponding to the beta conversions of the above formulae, *i.e.*:

- (11\*)  $\llbracket \exists Xs (Xs = a \& b) \rrbracket$   
 (12\*)  $\llbracket \exists x (x = a) \rrbracket \& \llbracket \exists x (x = b) \rrbracket$   
 (13\*)  $\llbracket \exists x (x = a) \wedge \exists x (x = b) \rrbracket$

Whether or not this view individuates facts so finely that these facts are or aren’t identical to the facts above, on the picture of facts in question (11\*) would still be a collective fact, (12\*) a plurality of two individual facts, and (13) a conjunctive fact made out of those two individual facts. The use of lambda abstraction above is to place a very strong emphasis on the singular vs. plural and individual vs. collective distinction.

<sup>9</sup>How about facts such as  $\llbracket \lambda yz \exists x (x = y) \wedge \exists y (x = z) (a, b) \rrbracket$  and  $\llbracket \lambda yz \exists x \exists y ((x = y) \wedge (x = z)) (a, b) \rrbracket$ ? This has to do with the issues discussed in footnote 5 above. Notice that ‘ $\lambda yz \exists x (x = y) \wedge \exists y (x = z)$ ’ and ‘ $\lambda yz \exists x \exists y ((x = y) \wedge (x = z))$ ’ are polyadic, whereas ‘ $\lambda Ys \exists Xs (Xs = Ys)$ ’ is monadic. Thus, if plural predication (and its worldly correlate, collective instantiation) is to be construed monadically (as I’ve been assuming so far), the view in question would obviously distinguish between (11) and these facts, since the former would be collective and the latter individual. (It’d still be a further question whether the view in question would individuate these facts so finely that they’re not identical to (13) or to one another.) If, on the other hand, collective predication is to be construed as variably polyadic predication, one could in principle take such facts to be collective facts themselves. Nothing at this stage depends on one or another view here.

<sup>10</sup>Nothing in the discussion so far requires that we *accept* the view of facts just sketched. It’s simply another way to highlight that our intended truism is not vacuous.

that it is a logical necessity (albeit not a tautology per the above discussion). For the corresponding instances of (9) and (10) are equivalent on any satisfactory system plural logic.<sup>11</sup> Thus, even on a narrow understanding of logic (according to which not all conceptual truths are logical truths) given a quantificational (rather than predicational) regimentation of existence claims, (4) is a claim that any adequate plural extension of first-order ought to preserve.

Accordingly, if, for instance, (14) is an example of something metaphysically (even if not conceptually or logically) necessary, (15) an example of something conceptually (even if not logically) necessary, and (16) an example of something logically (if certainly not tautologically) necessary, then it's hard to deny that (4) has at the very least the same alethic status as (14), if not as (15) or even (4):

- (14) a exists iff the singleton of a exists
- (15) a is taller than b iff a's height is greater than b's height
- (16) a is triangular iff some object is both triangular and identical a

Thus, it's hard to deny that there is a very strong bond indeed between (6) and (5). The point is only that, unlike, for instance, (6) and (5), (4) is not vacuous despite being necessary in a very strong sense. And the point here is that it's (4), not (6) or (5), that I wish to bring up for discussion here. This is the intended reading of (1), the truism on which I wish to zero in here.<sup>12</sup>

Having gotten clear on the intended principle, we may simply state in general form as follows:

(Existential Principle)

For any Xs, the Xs exist iff each of the Xs exists

Making its form explicit for clarity's sake:<sup>13</sup>

- (17)  $\forall Xs \forall x_1 \forall x_2 \dots \forall y (y \prec Xs \leftrightarrow (y = x_1 \vee y = x_2 \vee \dots)) :$   
 $Xs \text{ exist} \leftrightarrow (x_1 \text{ exists} \wedge x_2 \text{ exists} \wedge \dots)$

And this allows to start getting a sense of the sort of issue that will be at stake in the debate I wish to give shape to here, between individualism and collectivism. Our principle encodes a very tight

<sup>11</sup>Cf. the semantic clauses for the quantifiers in Florio and Linnebo 2021, §§7.2 and 7.3.

<sup>12</sup>Thus, it is also worth noting that none of the above is to say anything about what sentences of English such as 'Abelard and Heloise exist' expresses in ordinary or philosophical contexts (*i.e.* something along the lines of (5) or (6)), or about what ordinary speakers or philosophers have in mind upon dealing with such sentences. Whatever one might think about those issues, the point so far is only to draw attention to (5), and to note that it's at least in principle distinct from both (6) and (5).

<sup>13</sup>For readability's sake, in stating regimented claims involving a long string of quantifiers I'll make use of restricted quantification, the colon symbol, and line breaks as I've done here. So this regimented claim is to be read as follows: for any Xs and any  $x_1$ , any  $x_2$ , ... such that for any  $y$ ,  $y$  is one of the Xs iff  $y$  is identical to either  $x_1$  or  $x_2$ , ..., the following holds: the Xs exist just in case  $x_1$  exists,  $x_2$  exists, ...

necessary connection between individual existence and collective existence: whenever some things exist each of them exists, and whenever each of some things exists those things exist. But what's *prior* from a metaphysical standpoint: do some things exist because each of them exists, or does each of some things exist because those things exist? In terms of facts: does the fact that some things exist ground the facts that each of them exists, or do those facts ground that fact? Given the very strong *modal* dependence between individual and collective existence, what's the direction of *ontological* dependence? This is one of the issues that will be at stake between individualism and collectivism—they are opposing views on the Eutypbro dilemma that arises from Existential Principle. Before we can fully articulate the debate, however, we need to flesh out a second principle linking individuality and collectivity—this time a qualitative rather than an existential one.

## 2 Individual and collective qualitativity

The intimacy between individuality and collectivity is not only existential, but also qualitative. Not only do some things exist just in case each of them exists, but some things are a certain way just in case each of them is a certain way and is related to every other one of them a certain way. This is a second truism linking individuality and collectivity, whereby there'll be are tight bidirectional necessities connecting, on the one hand, the way that some things taken collectively *are* and, on the other, the way each of those things taken individually *is* and is *related* to every other one of them.

To begin characterizing the sort of qualitative connection in question, it's important to distinguish it from a more familiar one, which is limited what is known in the literature as *distributive* and *cumulative* predicates (or their worldly analogues—properties/relations).<sup>14</sup> Distributive predicates are those that hold of each of some things whenever they hold of those things, *i.e.* satisfy the following schema:

(Distributivity)

$$\forall Xs \forall x_1 \forall x_2 \dots \forall y (y \prec Xs \leftrightarrow (y = x_1 \vee y = x_2 \vee \dots)) : \\ \phi(Xs) \rightarrow (\phi(x_1) \wedge \phi(x_2) \wedge \dots)$$

Cumulative predicates are those that hold of some things whenever they hold of each of those things, *i.e.* those that satisfy the following schema:

(Cumulativity)

$$\forall Xs \forall x_1 \forall x_2 \dots \forall y (y \prec Xs \leftrightarrow (y = x_1 \vee y = x_2 \vee \dots)) : \\ (\phi(x_1) \wedge \phi(x_2) \wedge \dots) \rightarrow \phi(Xs)$$

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<sup>14</sup>A better characterization of these two properties would apply to argument places rather than to predicates, as a predicate may have argument places that are cumulative or distributive as well as arguments places that aren't. Nothing of substance hangs on this.



Some predicates are distributive but not cumulative and some are cumulative but not distributive. For instance, if some things have mass of at most one gram each of them must have mass of at most one gram, but not the other way around. And if each of some things has mass of at least one gram, then those things must have mass of at least one gram, but not the other way around. On the other hand, some predicates are both distributive and cumulative, and some are neither. For instance, if some things have mass of exactly zero grams it is both sufficient and necessary that each of those things have mass of zero grams. And if some things having mass of exactly one gram is neither sufficient nor necessary for each of those things to have mass of exactly one gram.<sup>15</sup>

Notice that in cases involving predicates (properties) that are either distributive, cumulative, or both, we effectively have very tight qualitative necessary connections between individuality and collectivity. Such connections are one-directional in cases of predicates that are only distributive or only cumulative, and bidirectional in cases of predicates that are both. So these are cases in which only one or both directions of the following principle hold: some things are a certain way just in case each of them is that way.

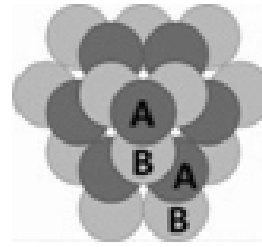
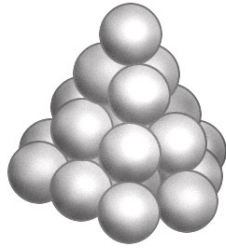
The qualitative link I have in mind is much broader—it's meant to hold in general, regardless of whether the predicates (properties) in question are or aren't distributive/cumulative. The idea is that whenever some things are a certain way, each of them must be a certain (not necessarily the same) way and be so-and-so related to every other one of them. And conversely: whenever each some things is such-and-thus and is so-and-so related to every other one of them, those things must be thus-and-such. For example, whenever some things taken collectively have certain spatial features, then each of those things taken individually must have certain spatial features and stand in certain spatial relations to every one of those things. And the other way around: if each of some things taken separately has certain spatial features and stands in certain spatial relations to every one of them, then those things taken together must have certain spatial features. Let me fill this in with two concrete example from geometry, where the intended sort of connection is perfectly manifest.

## 2.1 Packings

Consider a scenario a salient fragment of which looks as follows (where the picture on the right is a cross-cut of the one on the left as seen from above—directly overlaying layers are marked with the same letter and shading):

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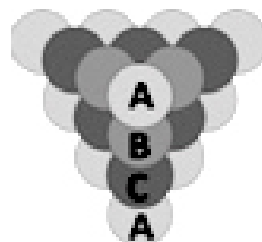
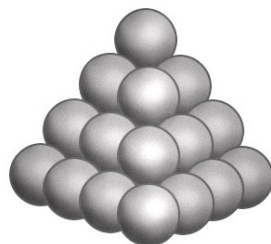
<sup>15</sup>Per the discussion of the previous session, one might think that predications of existence (whether via an undefined existence predicate or via a well-formed formulae involving existential quantification) are both distributive and cumulative—this is precisely what Existential Principle states.



This is a situation in which some things have a certain geometric profile—they are distributed in a three-dimensional regular array where every other layer directly overlays another and fill exactly  $\pi/(3\sqrt{2})$  of the available space. In geometry entities with this geometric profile are said to be *hexagonally close-packed*. It turns out that whenever some things are hexagonally close-packed, each of them must be spherical, any two of them must be the same size, no two of them may overlap, and each of them must touch each of exactly twelve others and directly overlay another whose center is exactly  $(2d\sqrt{6})/3$  away from its center (where  $d$  = each sphere's diameter). And conversely: geometry teaches us that whenever each of some things is spherical, any two of them are the same size, no two of them overlap, and each of them touches each of exactly twelve others and directly overlays another whose center is exactly  $(2d\sqrt{6})/3$  away from its center, those things must be hexagonally close-packed. That is, from geometry we know that the following biconditional holds:<sup>16</sup>

- (18)  $a_1$ , and  $a_2$ , and... are hexagonally close-packed iff each of  $a_1$ , and  $a_2$ , and... is spherical, any two of them are the same size, no two of them overlap, and each of them touches each of exactly twelve others and directly overlays another whose center is exactly  $(2d\sqrt{6})/3$  away from its center.

Now consider a similar but different scenario, a salient fragment of which looks as follows:



Here we have some things with a similar but different geometric profile—they are distributed in a three-dimensional regular array where every third (rather than every second) layer directly overlays

<sup>16</sup>For an informal introduction to the mathematics of packing and its applications, see Aste and Weaire 2008. For a more rigorous introduction, see Conway and Sloane 2013.

another but still fill exactly  $\pi/(3\sqrt{2})$  of the available space. In geometry, entities with this kind of geometric profile are said to be *cubically* (rather than hexagonally) close-packed. And from geometry we know that whenever some things are cubically close-packed, each of them must be spherical, any two of them must be the same size, no two of them may overlap, and each of them must touch each of exactly twelve others and directly overlay another whose center is exactly  $(3d\sqrt{6})/3$  (rather than  $(2d\sqrt{6})/3$ ) away from its center. And the other way around: whenever each of some things is spherical, any two of them are the same size, no two of them overlap, and each of them touches each of exactly twelve others and directly overlays another whose center is exactly  $(3d\sqrt{6})/3$  away from its center, those things must be cubically close-packed. That is, from geometry we know that the following biconditional also holds:

- (19)  $a_1, a_2, \text{ and } \dots$  are cubically close-packed iff each of  $a_1, a_2, \text{ and } \dots$  is spherical, any two of them are the same size, no two of them overlap, and each of them touches each of exactly twelve others and directly overlays another whose center is exactly  $(3d\sqrt{6})/3$  away from its center

In these packing cases we have very tight bidirectional links between certain collective qualitative phenomena and certain individual qualitative phenomena, *i.e.* between some things taken together being a certain way and each of those things taken separately being a certain way and bearing certain relations to every other one of them. In the examples, being hexagonally or cubically close-packed is a feature of some entities taken collectively, not of each of those things taken individually. What's packed in this or that particular way are those *things*, not *each* of those things—it's *them*, not every *one* of them, that are that way. On the other hand, being spherical is a feature of each of those things taken individually, not of those things taken collectively. What has that spatial feature is *each* of those things, not those *things*—it's every *one* of them, not *them*, that has that shape. Put in terms of the view of facts of the previous section, on which facts are finely-individuated complexes of arbitrary properties/relations and their bearers: the left-hand sides of (18) and (19) correspond to what collective facts, each of which involves a single property, whose only argument place is saturated not by a single entity but a plurality of entities. By contrast, the right-hand sides correspond to multiple individual facts, where a single thing (a different one in each case) fills the only argument place of the property of being spherical. And it's those things taken individually rather than collectively that stand in the same-size, no-overlap, touching, overlaying, and relevant distance relations. Each slot of each of these relations is filled by exactly *one* thing, not *many*—the relata of those relations are *individuals*, not *pluralities* thereof. And it's precisely these two types of qualitative phenomena—collective and individual—that are tightly bound to one another per (18)-(19). No *things* could be geometrically characterized in the relevant ways without *each* of them being geometrically characterized and related to every other *one* of them in the corresponding ways, and

the other way around. Whenever we have the one collective fact, we have the many individual facts, and the other way around.

Two important clarifications about our packing examples are in order. First, notice that in these cases the tight qualitative connection between individuality and collectivity has nothing to do with the predicates in question being distributive or cumulative. As a matter of fact, being hexagonally non-packed and being spherical are what one might call strongly *anti-distributive* and strongly *anti-cumulative*, respectively (whenever some things are hexagonally-closed packed none of those things could be hexagonally close-packed, and whenever each of some two more things is spherical those things couldn't be spherical).

Second, one might object that the left-to-right directions of (18)-(19) don't in fact hold, on the grounds that we may stack some things in the way the things in our situations are piled up without each of them having and standing in exactly the individual properties and relations in question. For instance, one might think that we can stack oranges, apples, lemons, pears, etc. in the relevant ways. But none of such things is really spherical. Nor do any two of them need to really be the same size. Nor does each of them need to really touch exactly twelve others. Nor do any two directly overlaying ones need to have centers that are exactly the relevant distance apart. Further, one might even think that we can stack in the relevant ways things none of which is really even close to spherical, or touch at all, etc. Imagine, for instance, that we carved out the wide variety of polyhedra that are inscribed in the spheres in our piles, and did nothing else to our situations. Wouldn't all such cubes, tetrahedra, octahedra, etc. be stacked in the ways our spheres are?

Yes and no. No in that the collective properties at issue in the left-hand-side of (18)-(19) are meant to be *maximally determinate* properties—they are maximally *specific*. No things could have exactly these properties unless, for instance, those things collectively occupied exactly  $\pi/(3\sqrt{2})$  of the available space. And no entities taken together could fill exactly  $\pi/(3\sqrt{2})$  of the available space unless each of them was perfectly spherical, unless any two of them really were exactly the same size, unless each of them really touched exactly twelve others, and unless the centers of any two of them directly overlaying ones really were exactly the relevant distances apart. On the other hand, there are nested levels of determinable collective properties of which these properties are maximal determinates. So yes in that there may be a determinable collective property in common between, for instance, the spheres in our situations and corresponding piles of oranges, apples, lemons, pears, etc. There may even be a less specific determinable shared between all these and the carved-out polyhedra. And so on. But none of this would threaten the left-to-right directions of (18)-(19). For each maximally determinate collective property, there will be corresponding maximally specific individual properties and relations. And for each less specific determinable of which that property is a maximal determinate, there will be correspondingly less specific individual properties and relations. Which of these collective properties we attach to the predicates e.g. 'are hexagonally close-packed'

and ‘are cubically close-packed’ is besides the point—we may call them whatever we want without threatening the intended reading of (18)-(19). As we will see in section (2.3) below, the existence of all these levels of determinate and determinable collective properties and corresponding determinate and determinable individual properties and relations is guaranteed by the picture of facts as finely-individuated complexes involving arbitrary properties/relations discussed in the previous section.

## 2.2 The form and status of the connection

By now it should be clear what’s the structure of the intended bidirectional connection between individual and collective qualitative phenomena. In our examples above, the intended readings (18)-(19) aren’t instances of any of the following schemas:

$$(20) \phi(\alpha_1 \& \alpha_2 \& \dots) \leftrightarrow \phi(\alpha_1 \& \alpha_2 \& \dots)$$

$$(21) (\psi_1(\alpha_1) \wedge \psi_2(\alpha_2) \wedge \dots \wedge \rho(\alpha_1, \alpha_2, \dots)) \leftrightarrow (\psi_1(\alpha_1) \wedge \psi_2(\alpha_2) \wedge \dots \wedge \rho(\alpha_1, \alpha_2, \dots))$$

$$(22) \phi(\alpha_1 \& \alpha_2 \& \dots) \leftrightarrow (\phi(\alpha_1) \wedge \phi(\alpha_2) \wedge \dots)$$

Rather, they’re instances of the following one:

$$(23) \phi(\alpha_1 \& \alpha_2 \& \dots) \leftrightarrow (\psi_1(\alpha_1) \wedge \psi_2(\alpha_2) \wedge \dots \wedge \rho(\alpha_1, \alpha_2, \dots))$$

Here each of  $\alpha_i$  is a referring term and  $\alpha_1 \& \alpha_2 \& \dots$  a plural referring term formed out of those terms.  $\phi$  is a well-formed formula that is not a sentence, every term of which is a plural term;  $\phi(\alpha_1 \& \alpha_2 \& \dots)$  is hence the result of replacing every free occurrence of a variable in  $\phi$  with exactly one occurrence of  $\alpha_1 \& \alpha_2 \& \dots$ . Similarly, each  $\psi_i$  is a well-formed formula that is not a sentence, every term of which is a singular term;  $\psi_i(\alpha_i)$  is hence the result of replacing every free occurrence of a variable in  $\psi_i$  with exactly one occurrence of  $\alpha_i$ . Finally,  $\rho$  is a well-formed formula every term of which is a singular term, such that for some variables  $v_1, v_2, \dots$  that stand in a one-to-one correspondence with  $\alpha_1, \alpha_2, \dots$ ,  $\rho$  contains at least one free occurrence of each  $v_i$ ;  $\rho(\alpha_1, \alpha_2, \dots)$  is hence the result of replacing every free occurrence of each  $v_i$  in  $\rho$  with exactly one occurrence of its corresponding  $\alpha_i$ . So here  $\phi(\alpha_1 \& \alpha_2 \& \dots)$  is a collective claim, whereas each  $\psi_i(\alpha_i)$  as well as  $\rho(\alpha_1, \alpha_2, \dots)$  is an individual claim: instances of  $\phi(\alpha_1 \& \alpha_2 \& \dots)$  concern how some things taken collectively are, instances of each  $\psi_i(\alpha_i)$  concern how each of those things is taken individually is, and instances of  $\rho(\alpha_1, \alpha_2, \dots)$  concern how those things taken individually are related to one another.<sup>17</sup> Hence, unlike with (21) and (20), the left- and right-hand-sides of (23) differ. And un-

<sup>17</sup> $\phi$ ,  $\psi_i$ , and  $\rho$  of course needn’t be atomic—each may have arbitrary Boolean and/or quantificational complexity. In the relevant instances of (23) in the stacking example above,  $\phi$  is atomic (it involves only one predicate for being hexagonally or cubically close-packed) and so is each  $\psi_i$  (each involves only one predicate for being spherical).  $\rho$  by contrast isn’t (it involves different predicates for all the different relations as well as

like (22), what's predicated on the left-hand-side and what's predicated on the right-hand-side may differ.

From this it's clear that the intended sort of qualitative connection between collectivity and individuality isn't tautological—no instance of (23) is a tautology. On the other hand, the connection is at least metaphysically necessary—as per our packing cases, every intended instance of (23) is a metaphysical necessity. And at least sometimes the connection is logically or conceptually necessary—at least some instances of (23) are logical or conceptual necessities. This should be already clear from the fact that some instances of (23) are trivial logical consequences of Existential Principle, and that others pertain predicates that are both distributive and cumulative. But there are other examples as well. For instance, both of the following are arguably logical necessities, but neither trivially follows from Existential Principle or involve predicates that are both distributive and cumulative:

- (24) Abelard and Heloise are two iff Abelard exists, Heloise exists, and Abelard is not identical to Heloise
- (25) Abelard and Heloise are all there is iff Abelard exists, Heloise exists, and everything is identical to Abelard or identical to Heloise

Thus, there are cases in which the qualitative link between individuality and collectivity is as strong as the existential one.

But as our packing cases themselves illustrate, in many cases the link is metaphysically but arguably not logically or conceptually necessary. As most fruit and vegetable sellers everywhere and everywhen illustrate, one might be quite adept at identifying when some things are (roughly) hexagonally or cubically close-packed (even if not using those words of course—one may altogether lack non-demonstrative expressions to pick out things arranged the relevant ways and simply refer to them as things stacked together *this* way, or as things arranged like *this* rather than like *that*, etc.) without having any idea of *e.g.* what's the (approximate) distance between any two directly overlapping things in the arrangement as a function of the diameter. This is the kind of thing that could take a perspicuous someone adept at logic and even with some exposure to solid geometry a few moments to work out. And similarly in the other direction: a perspicuous someone adept at logic with even some mathematical training might be unable to immediately tell whether *e.g.* some things are stacked together in a kind of array that repeats itself every second layer (as opposed to every *n*th, or at all, or that are even tightly and uniformly packed, etc.) on the assumption that any two of those things are non-overlapping spheres of the same size such that every one of them touches each of

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quantifiers, Boolean operators, and the identity symbol). Other cases may differ. Nothing of substance hangs on this. We may even pack the whole right-hand-side into single formulae. But the above makes it explicit that individual and properties as well as individual relations are involved.

exactly twelve others and directly overlays another whose center is exactly  $(2d\sqrt{6})/3$  away from its center. Thus, whereas rejecting either direction of Existential Principle or of (24)-(25) is incoherent, not so with (18)-(19) and similar instances of (23)—denying the latter merely involves ignorance, not confusion.

Put another way: while some instances of (23) have the alethic profile of claims such as (16) or (15), others such as (18)-(19) have the status of claims like (14). For an even closer parallel, the biconditionals in our packing cases have the status (26), which arguably is metaphysically but not conceptually or logically necessary:

(26)  $a$  is triangular iff  $a$  is polygonal and  $a$ 's area and  $a$ 's perimeter are connected by Heron's formula

Further, while (18)-(19) are arguably a priori (just like (26)), arguably some intended instances of (23) are a posteriori metaphysical necessities. For instance, consider (27), whose status is arguably similar to that of (28):

(27)  $a_1$ , and  $a_2$ , and ... are covalently bonded iff each of  $a_1, a_2, \dots$  is an atom and every one of them shares an electron pair with some other one of them

(28)  $a$  is an atom of gold iff  $a$  is an atom with exactly 79 protons in its nucleus

Thus, unlike in the existential case, the intended sort of qualitative connection between individuality and collectivity is sometimes but not always conceptually or logically necessary; in some cases, it's not even a priori. But, as our packing cases and examples such as (27), it is metaphysically necessary nonetheless.

### 2.3 Precising the principle

We can now get clear about the general principle capturing the intended qualitative link between individuality and collectivity. We may informally state this principle thus:

(Qualitative Principle)

For any  $Xs$ , the  $Xs$  are thus-and-such iff each of the  $Xs$  is so-and-so and is such-and-thusly related to every other one of the  $Xs$

However this might be taken to simply say that certain instances of the following hold:

(29)  $\forall Xs \forall x_1 \forall x_2 \dots \forall y (y \prec Xs \leftrightarrow (y = x_1 \vee y = x_2 \vee \dots)) :$   
 $\phi(Xs) \leftrightarrow (\psi_1(x_1) \wedge \psi_2(x_2) \wedge \dots \wedge \rho(x_1, x_2, \dots))$

And don't yet have a general way to identify the intended instances of (29), such as our packing cases. Accordingly, we have to sharpen things a bit further to arrive to the intended reading of Qualitative Principle.

It'll again be helpful to return to our picture of facts as finely-individuated complexes of arbitrary properties/relations and their bearers. In taking for granted arbitrary properties and relations, this picture assumes a strong form of fine-grained qualitative abundance—there'll be at least one property or relation relation for any expressible condition on objects. But since we're to have both collective and individual facts, this means that we'll have arbitrary properties and relations that both objects taken together and objects taken individually may have and stand in. So the view in question assumes a version of what's known as second-order comprehension, albeit generalized for both the singular and the plural case. We may express this principle as follows:

(Generalized Second-Order Comprehension)

$$\exists F \forall \alpha_1 \dots \forall \alpha_n (F(\alpha_1, \dots, \alpha_n) \leftrightarrow \phi)$$

where 'F' is an n-place second-order variable, each  $\alpha_i$  is any a singular or plural first-order variable, and  $\phi$  any formula with no free occurrences of 'F'.

This principle requires that for *any* properties and relations that some things taken individually may have and stand in, there'll be *some* property that those things taken collectively must have. And conversely: for *every* property that some things taken collectively may have, there'll be *some* properties and relations that those things taken individually must have and stand in. For the following two principles logically follow from our our principles:<sup>18</sup>

(Individual-to-Collective Comprehension)

$$\begin{aligned} \exists F \forall Xs \forall x_1 \dots \forall x_n \forall y (y \prec Xs \leftrightarrow (y = x_1 \vee \dots \vee y = x_n)) : \\ F(Xs) \leftrightarrow (\psi_1(x_1) \wedge \dots \wedge \psi_n(x_n) \wedge \rho(x_1, \dots, x_n)) \end{aligned}$$

(Collective-to-Individual Comprehension)

$$\begin{aligned} \exists F_1 \dots \exists F_n \exists R \forall Xs \forall x_1 \dots \forall x_n \forall y (y \prec Xs \leftrightarrow (y = x_1 \vee \dots \vee y = x_n)) : \\ \phi(Xs) \leftrightarrow (F_1(x_1) \wedge \dots \wedge F_n(x_n) \wedge R(x_1, \dots, x_n)) \end{aligned}$$

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<sup>18</sup>This requires two standard assumptions about plurals, *i.e.* that pluralities themselves are arbitrary and that they're individuated extensionally. These are what are known in the literature as the Plural Comprehension and Plural Extensionality principles:

(Plural Comprehension)

$$\exists x \phi(x) \rightarrow \exists Xs \forall y (y \prec Xs \leftrightarrow \phi)$$

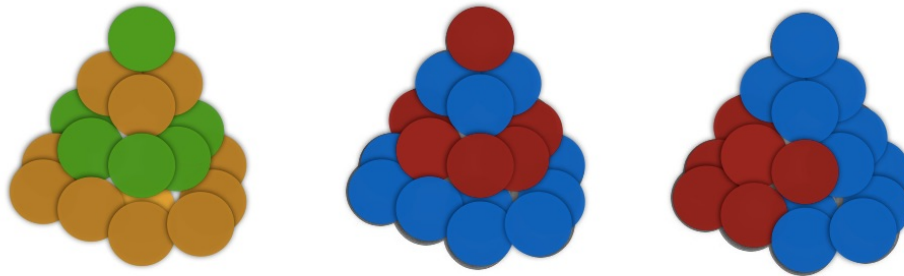
(Plural Extensionality)

$$\forall Xs \forall Ys (\forall z (z \prec Xs \leftrightarrow z \prec Ys) \rightarrow Xs = Ys)$$



where 'F' and each  $\lceil F_i \rceil$  are monadic second-order variables, 'R' is an n-place second-order variable,  $\phi$  and each  $\psi_i$  are well-formed formulae with free occurrences of only 'Xs' and  $\lceil x_i \rceil$  (respectively), and  $\rho$  is a well-formed formula with free occurrences of only ' $x_1$ ' ... ' $x_n$ '. Once one understands what these principles say, it's not hard to see why they must hold. For example, our packing examples are instances of something more general: for *any* geometric properties and relations some things taken individually must have and stand in, there'll be a certain geometric property those things taken collectively must have. And the other way around: for *any* geometric property some entities taken collectively may have (e.g. being scattered in this or that specific way), there'll be certain geometric properties and relations those things taken individually must have and stand in (e.g. having these and those specific shapes and standing in these or those specific relations). And this will happen at all levels of the determinate-determinable hierarchy, both at the collective and individual level. As our packing cases themselves illustrate, natural languages may not have predicates for all such collective properties or for all such individual properties and relations. Nor may we think about them unless they are explicitly brought into our attention. Nor will they be gruesome or simply a matter of stipulation. Some may be of greater or lesser interest for science or any other systematic form of inquiry. But, given the fine-grained qualitative abundance in question, they will all be there and they will stand in necessary connections to one another.

The same holds if we entertain greater qualitative complexity. If, for instance, we take color into account in our packing examples, we may consider situations such as the following:



Clearly, there are qualitative differences between the situation to the left, the situation in the center, and the situation to the right. While they're exactly alike geometrically (in each case we have some entities that satisfy both sides of (18)), they differ chromatically. The first two situations are alike in that each involves two colors distributed the same way, but they differ in what colors are at issue. The second and third situations are alike in what colors are at issue, but differ in how those colors are distributed. And the first and third situations differ in both what colors are at issue and how they are distributed. Given fine-grained qualitative abundance, these differences will be manifest at both the individual level and the collective level, where there are necessary connections between the two.

For each situation will “qualitatively decompose” into two families of properties and relations and associated facts: properties and relations that the relevant things have and stand in taken individually (on the one hand) and properties that those things have taken collectively (on the other), where some entities taken individually have and stand in the former exactly when those entities taken together have the latter. We have some individual facts (on the one hand) and a collective fact (on the other), and we cannot have the former without the latter or the latter without the former.

Specifically, at the collective level, there’ll be three properties, where the first one is had by some things taken together exactly when we have a situation that’s qualitatively indiscernible from our first situation, the second one is had by some things taken together exactly when we have a situation that’s qualitatively indiscernible from our second situation, and the third one is had by some things taken together exactly when we have a situation that’s qualitatively indiscernible from our third situation. These three properties will hence correspond to three different instances of  $\phi$  in (29), and hence to three facts where the only argument place of a single property is saturated by a plurality of entities. On the other hand, at the individual level there’ll be three different classes of properties and relations, where some things taken individually have and stand in the properties and relations in the first class exactly when we have a situation that’s qualitatively indiscernible from our first situation, the second one when we have a situation that’s qualitatively indiscernible from our second situation, and the third one exactly when we have a situation that’s qualitatively indiscernible from our third situation. So each of these classes of individual properties and relations will correspond to different instances of  $\psi_1, \psi_2, \dots$  and/or  $\rho$  in (29), and to three sets of facts each consisting of relational and non-relational individual facts. And there’ll hence be tight necessary connections in both directions between the properties at the collective level (on the one hand) and the corresponding properties and relations at the individual level (on the other), and so between the collective facts (on the one hand) and the individual facts (on the other).<sup>19</sup>

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<sup>19</sup>More fully and precisely: given fine-grained abundance, each situation will have multiple qualitative decompositions into collective properties and associated facts as well as multiple qualitative decompositions into individual properties and relations and associated facts. For given fine-grained abundance, there will be different *sets* of properties that some things taken collectively must have exactly when they are qualitatively indiscernible from the things in *e.g.* our first situation taken collectively. For notice that fine-grained abundance posits not the property of being some hexagonally close-packed things and the property of being some thusly-colored things, but also the property of being some hexagonally close-packed and thusly-colored things (and it may further distinguish between that seeming complex property and a putatively non-complex property of being some hexagonally close-packed thusly-colored things). This is exactly parallel to more familiar cases, *e.g.* fine-grained abundance posits not only the property of being a red thing and the property of being a round thing, but also the property of being a red and round thing (and it may in principle further distinguish this seemingly complex property from an allegedly non-complex property of being a red round thing). So there are different sets of properties and associated facts into which our situation qualitatively decomposes at the collective level, *e.g.* the pair set of the properties of being some hexagonally close-packed things and thusly-colored things and the singleton of the property being some hexagonally close-packed and thusly-colored things (and should we have the further non-complex property of being some hexagonally close-packed thusly-colored

This is again independent of whether any language has predicates for all these properties and relations. English, for instance, doesn't have a predicate expressing the property that some things taken together have exactly when they are chromatically exactly like the things in our first situation taken together, much less a predicate expressing the property that some things taken together have exactly when they are geometrically and chromatically exactly like those things taken together (not to mention a predicate expressing the property that some things taken together have exactly when they are in all respects qualitatively indiscernible from those things taken together, whatever other kinds of features may be in place in the situation—mass, size, etc). Nonetheless, given the qualitative abundance at issue here, there'll be all such properties. And as suggested earlier (and as I've been doing here), we clearly have at least demonstrative ways in which we can talk and think about them—we may speak of the property that some things taken together have exactly when they are *geometrically just like these*, the property that some things taken together have exactly when they are *chromatically just like those*, the property that some things have exactly when they are *both geometrically and chromatically just like those*, and so forth.

In general, then, given fine-grained qualitative abundance, for any situation involving certain entities, there'll be a property that some things taken together have exactly when they are qualitatively indiscernible from the entities in that situation taken collectively. There'll also be some properties and relations some things taken individually have and stand in exactly when they are qualitatively indiscernible from the entities in that situation taken individually. And there'll be necessary connections between the two: some things taken together have that property exactly when those things taken separately have and stand in those properties and relations. There'll also be corresponding facts at both the collective and individual levels, which will bear necessary connections to one another.

It is precisely these general necessary connections between collective and individual qualitative phenomena that Qualitative Principle is meant to encode. Thus, in the background of fine-grained qualitative abundance, the intended reading of Qualitative Principle is the one that's equivalent to the conjunction the following two claims:

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things, the singleton of that). Similarly at the individual level: there will be different *sets* of properties and relations that some things taken individually must have and stand in exactly when they are qualitatively indiscernible from the things in that situation taken individually. From this it follows that there will be different *pairs* of sets of collective properties (on the hand) and individual properties and relations (on the other) into which each of our situations qualitatively decomposes, and hence different pairs of sets of corresponding collective facts (on the one hand) and corresponding individual facts (on the other). And the members of each of these pairs will bear necessary connections to one another.

(Collective-to-Individual Qualitative Link)

For any property  $F$ , any  $X$ s, and any  $x_1$ , any  $x_2$ , such that something is one of the  $X$ s just in case it is identical to either  $x_1$ , or  $x_2$ , or ..., there is a property  $G_1$ , a property  $G_2$ , ... and a relation  $R$  such that the  $X$ s are  $F$  iff  $x_1$  is  $G_1$ ,  $x_2$  is  $G_2$ , ... and  $x_1, x_2, \dots$  stand in  $R$

$$\forall F \forall Xs \forall x_1 \forall x_2 \dots \forall y (y \prec Xs \leftrightarrow (y = x_1 \vee y = x_2 \vee \dots)) : \\ \exists G_1 \exists G_2 \dots \exists R (F(Xs) \leftrightarrow (G_1(x_1) \wedge G_2(x_2)] \wedge \dots \wedge R(x_1, x_2, \dots)))$$

(Individual-to-Collective Qualitative Link)

For any property  $G_1$ , any property  $G_2$ , ..., any relation  $R$ , any  $X$ s, and any  $x_1$ , any  $x_2$ , such that something is one of the  $X$ s just in case it is identical to either  $x_1$ , or  $x_2$ , or ..., there is a property  $F$  such that the  $X$ s are  $F$  iff  $x_1$  is  $G_1$ ,  $x_2$  is  $G_2$ , ... and  $x_1, x_2, \dots$  stand in  $R$

$$\forall G_1 \forall G_2 \dots \forall R \forall Xs \forall x_1 \forall x_2 \dots \forall y (y \prec Xs \leftrightarrow (y = x_1 \vee y = x_2 \vee \dots)) : \\ \exists F (F(Xs) \leftrightarrow (G_1(x_1) \wedge G_2(x_2) \wedge \dots \wedge R(x_1, x_2, \dots)))$$

This is, then, the second aspect of the intimacy between individuality and collectivity that I want to draw attention to here—individual and collective phenomena are bound to one another only are individuality and collectivity bound to one another existentially but also qualitatively. With this, we're finally in a position to give full shape to the debate between individualism and collectivism.

### 3 The direction of priority: individualism vs. collectivism

We've seen that individuality and collectively are intimately bound to each other: per our two principles, there are tight bidirectional necessities linking individuality and collectivity. But which is ontologically prior—is individuality prior collectivity, or is collectivity prior to individuality? A bit more explicitly: per Existential Principle, some things exist just in case each of them exists. But do some things exist because each of them exists, or does each of them exist because they exist? Similarly, per Qualitative Principle, some things are a certain way just in case each of them is a certain way and is related to every other one of them a certain way. But are some things a certain way in virtue of each of them being a certain way and related to others a certain way, or is each of those things a certain way and related to others a certain way in virtue of those things being a certain way? This is what will be at issue in the debate between individualism and collectivism—as I said earlier, they're are opposing views on the Eutyphro dilemmas that arise from the necessary connections between them.

The debate over the relative priority between individuality and collectivity will hence be parallel to debates about relative ontological priority of phenomena between which there exist very strong necessary connections, such as sets and their members, wholes and their parts, conjunctions and

their conjuncts, determinates and determinables, and so on. All these debates involve strong modal dependencies of one sort of another and of one strength or another between different phenomena. Sets and their members, for instance, are bound to one another both existentially and qualitatively in an exactly parallel way as things and pluralities thereof are. In all these cases, the question of ontological priority concerns a further sort of dependence, which, unlike the modal correlations, is meant to be *metaphysically explanatory* and hence *asymmetric*. In the case of sets and their members, like in the case of things and pluralities thereof, the question is whether sets exist *because* their members exist or the other way around and whether sets are thus-and-such *in virtue of* their members being such-and-thus and the other way around.<sup>20</sup>

Ontological priority and related notions (such as ontological dependence, grounding, relative fundamentality, etc.) have been the subject of much discussion in the recent literature.<sup>21</sup> There are substantive disagreements as to whether such notions are at all intelligible, as to their centrality to metaphysical theorizing and philosophical inquiry more generally, as to how they are related to one another, as to how they are connected to other notions (modal ones included), as to how exactly they are to be regimented and systematized, and so forth. Such questions are beyond my purposes here. Like much of the recent literature, I will simply take for granted the intelligibility of this general family of notions; for my purposes here, it won't be necessary to take a stance on most other substantive issues. It'll suffice to fix on certain uses of the expressions 'because' and 'in virtue of'. We may then think of this family of notions in association with such idioms, however all the details may be worked out.

Following Fine, the salient uses of these idioms invoke "a distinctive kind of metaphysical explanation, in which explanans and explanandum are connected, not through some sort of causal mechanism, but through some constitutive form of determination" (2012, p. 37). To say, for instance, that Central Park is polygonal *because* it's rectangular, or that the Manhattan Bridge is longer than the Brooklyn Bridge *in virtue of* their being 1.3 and 1.1 miles long (respectively), is to offer a distinctive explanation of *why* Central Park is polygonal, of *what makes* the Manhattan Bridge longer than the Brooklyn Bridge.

The kind of explanation in question is *metaphysical* or *ontological* (rather than, say, epistemic or pragmatic) in that it concerns a constitutive connection between the phenomena in question (rather than, say, how enlightening or useful we may find it to understand some of them in terms of others). Sometimes the constitutive determination in question is of little or even no epistemic or pragmatic explanatory value (consider: Central Park is either polygonal or hexagonal because it's rectangular). And the other way around: sometimes enlightening or useful explanations have

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<sup>20</sup>For an interesting general argument that any necessary connections give rise questions about ground, see Ismael and Schaffer 2020.

<sup>21</sup>Cf. Schaffer 2009, Rosen 2010, Sider 2011, Bennett 2011, Fine 2012, Audi 2012, Wilson 2014.

little or nothing to do with the relevant form of constitutive determination (consider: Central Park is polygonal because if you look at it on a map you'll see it has four sides).

The sort of constitutive determination in question is *non-causal* in that the causal histories (actual or possible) of some given phenomena are orthogonal to whether one explains another in the relevant way. For instance, Olmsted and Vaux's having submitted an entry to the 1858 architecture competition to expand on an existing park is not what makes Central Park polygonal. However Central Park may have come to have its shape (say, by sheer coincidence or careful design, by finishing carving this ditch or moving that pile of dirt, etc.), that it's rectangular is what's makes it polygonal in the intended sense.

Notably, the existence of necessary connections between certain phenomena is not by itself sufficient for the existence of an explanatory, constitutive form of determination between them. On the one hand, necessities may hold between phenomena that bear no explanatory, constitutive determination to one another. For instance, it's necessary that Central Park is polygonal only if all red things are red. But neither is Central Park polygonal because all red things are red, nor are all red things red because Central Park is polygonal. On the other hand, a necessity may hold in the opposite direction of the direction of determination. For instance, necessarily Central Park is polygonal only if something identical to Central Park is polygonal. But something identical to Central Park is polygonal because Central Park is polygonal, not the other way around. To be sure, there's also a necessity in this other direction (*i.e.* it's also necessary that something be identical to Central Park is polygonal only if Central Park is polygonal). But it's still true that we can't read from a mere necessity the direction of explanatory, constitutive determination.

It this notion of explanation and constitutive determination that I'll have in mind when using the idioms of because and in virtue of. It is in this minimal sense that I'll continue to speak of that certain phenomena being ontologically prior to, ontologically dependent on, grounded in, more fundamental than, etc. others. As I mentioned, there are many ways in which one may further characterize, precisely regiment, and fully systematize this family of notions and their connection to other families of notions. The level at which I'd like to articulate the debate I'm interested in, however, is very general, so it won't be necessary to go into more depth or to be more discerning here. Nothing substantive will depend on the details of any particular theory about these notions.

The general question over the relative ontological priority of individuality and collectivity hence concerns the direction of metaphysical explanation and constitutive determination between individual and collective phenomena. And I'm interested in the opposition between two general views on this question: the view that individuality is always prior, *i.e.* that in all cases collective phenomena are metaphysically explained by individual phenomena; and the view that collectivity is at least sometimes prior, *i.e.* that in at least some cases collective phenomena metaphysically explain individual phenomena. These are the views I'm calling *individualism* and *collectivism* here.

As should be apparent already, we may distinguish between two more specific versions of each of these views, one concerning existential and the other qualitative phenomena as per our two principles. Let *existential individualism* be the view that for any things, those things exist because each of those things exists. On the other hand, let *existential collectivism* be the view that for at least some things, each of those things exists because those things exist. Officially:

(Existential Individualism)

For any Xs, the Xs exist because each of the Xs exists

(Existential Collectivism)

For some Xs, each of the Xs exists because the Xs exist

Regimenting for clarity's sake:

$$(30) \forall Xs \forall x_1 \forall x_2 \dots \forall y (y < Xs \leftrightarrow (y = x_1 \vee y = x_2 \vee \dots)) : \\ (x_1 \text{ exists} \wedge x_2 \text{ exists} \wedge \dots) < Xs \text{ exist}$$

$$(31) \exists Xs \forall x_1 \forall x_2 \dots \forall y (y < Xs \leftrightarrow (y = x_1 \vee y = x_2 \vee \dots)) : \\ Xs \text{ exist} < (x_1 \text{ exists} \wedge x_2 \text{ exists} \wedge \dots)$$

where, following Fine *ibid*, ‘<’ is a two-place sentential operator capturing the intended uses of ‘because’ and ‘in virtue of’. Thus, according to existential individualism, individual existence is always prior: what metaphysically explains and makes it the case that any things exist is that each of those things exist. So individual existence grounds collective existence generally. According to existential collectivism, collective existence is at least sometimes prior. In at least some cases, what metaphysically explains and makes it the case that each of some things exist is that those things exist. So collective existence grounds individual existence in at least some cases. Put in terms of facts: according to the existential individualist, the collective fact that some things exist is always grounded in the individual facts that each of those things exist. By contrast, for the existential collectivist, the collective fact that some things exist grounds the individual facts that each of those things exist in at least some cases.

Similarly, let *qualitative individualism* be the view that individual qualitativity is always prior to collective qualitativity: for any things, those things are a certain way because each of those things is a certain way and is related to every other one of them a certain way. On the other hand, let *qualitative collectivism* be the view that collective qualitativity is at least sometimes prior to individual qualitativity: for at least some things, each of those things is a certain way and is related to every other one of them a certain way because those things are a certain way. Officially:

(Qualitative Individualism)

For any Xs, the Xs are a certain way because each of the Xs is a certain way and is related to every other one of the Xs a certain way

(Qualitative Collectivism)

For some Xs, each of the Xs is that way and is related to every other one of the Xs that way because the Xs are a certain way

Regimenting:

$$(32) \quad \forall Xs \forall x_1 \forall x_2 \dots \forall y (y \prec Xs \leftrightarrow (y = x_1 \vee y = x_2 \vee \dots)) \forall F : \\ F(Xs) \rightarrow \exists G_1 \exists G_2 \dots \exists R ((G_1(x_1) \wedge G_2(x_2) \wedge \dots \wedge R(x_1, x_2, \dots)) \prec F(Xs))$$

$$(33) \quad \exists Xs \forall x_1 \forall x_2 \dots \forall y (y \prec Xs \leftrightarrow (y = x_1 \vee y = x_2 \vee \dots)) \forall G_1 \forall G_2 \dots \forall R : \\ (G_1(x_1) \wedge G_2(x_2) \wedge \dots \wedge R(x_1, x_2, \dots)) \rightarrow \exists F (F(Xs) \prec (G_1(x_1) \wedge G_2(x_2) \wedge \dots \wedge R(x_1, x_2, \dots)))$$

Thus, according to qualitative individualism, individual qualitativity is always prior: what metaphysically explains and makes it the case that some things are a certain way is that each of those things is a certain way and is related to every other one a certain way. So how each of some things are and each is related to every other one of them grounds how those things are. According to qualitative collectivism, collective qualitativity is at least sometimes prior. In at least some cases, what metaphysically explains and makes it the case that each of some things is a certain way and is related to every other one of them a certain way is that those things taken together are a certain way. So collective qualitative phenomena ground individual qualitative phenomena in at least some cases. In terms of facts: according to the qualitative individualist, any collective fact about some entities is grounded in individual facts about those entities. According to the qualitative collectivist, any individual facts about at least some entities are grounded in a collective fact about those entities.

Given this, we may now characterize *ontological individualism* and *ontological collectivism* generally as the conjunction of the corresponding existential and qualitative views:

(Ontological Individualism)

For any Xs, the Xs exist and are a certain way because each of the Xs exists, is a certain way, and is related to every other one of the Xs a certain way

(Ontological Collectivism)

For some Xs, each of the Xs exists, is a certain way, and is related to every other one a certain way because the Xs exist and are a certain way

In terms of facts, then, the ontological individualist holds that for any entities, any collective facts about those entities is grounded in some individual facts about those entities. By contrast, the ontological collectivist holds that for at least some entities, every individual fact about those entities is grounded in some collective facts about those entities.



These are the opposing (sets of) views that give shape to the debate about the relative priority between individuality and collectivity. Three points about them are worth highlighting. First, notice that one might in principle hold a hybrid view. For instance, one might think that any plurality of things exists because those individual things exist, but that all individual qualitative facts about at least some objects are grounded in collective qualitative facts about the plurality of them; this would be to be an existential individualist but a qualitative collectivist. Similarly, one could in principle be an existential collectivist and a qualitative individualist. What combinations of views are not only viable but also of lesser or greater philosophical interest will of course depend on the bearing they might have on different issues in the literature; we'll touch on that in next section. The point so far is only that we need to deploy our tools and unearth those views before we can begin studying them.

Second, we may draw many more distinctions than the above with the tools we have in hand now. For example, notice that there are weaker forms of existential and qualitative individualism, according to which some but not all pluralities of things are grounded in the corresponding individual things both existentially and qualitatively. In the same vein, there are stronger forms of existential and qualitative collectivism, according to which not only some but all pluralities of things are prior existentially and qualitatively to the corresponding individual things. Once again, which motivations are worth taking seriously will be a matter of seeing what bearing they have on different issues in metaphysics.

Third, we can now appreciate how, despite salient structural parallels, the opposition between individualism and collectivism is distinct from others that have been explored in the literature. Most notably, there's a family of debates over the relative priority of some entities and a further entity that is somehow made out of them, *e.g.* a mereological fusion of them, a class or set of them, a fact or proposition about them, etc. These are hence cases where we have a single thing, on the one hand, and some things, on the other, where the latter bear some sort of intimate relation to the former (parthood, membership, non-mereological constituency, etc). And the question is whether the single entity in question is prior to the many entities in question, or the other way around. So all these debates are concerned with the relative priority between some sort of composite entity and the entities it has as some sort of components.<sup>22</sup>

There are three salient structural parallels between these debates and ours. First, in all these cases there's an opposition between "bottom-up" and a "top-down" views on the direction of priority.

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<sup>22</sup>The double "some sort" qualification here is important because we may in principle have two different sorts of composites having the same entities as different sorts of components. One might think *e.g.* that the fact that Socrates is wise is a composite entity made out of two entities, *i.e.* Socrates and the property of being wise. But one might also think that these two entities have a mereological fusion, so that this is also a composite entity made of Socrates and the property of being wise. There is independent motivation in this case to think that we have two different sorts of composite entities, which have the same two entities as different sorts of components. *e.g.* one might think that a fusion of some entities exists whenever those entities exist, but not so with facts. For discussion, see Lewis 1986 and McDaniel 2009.

Views on which the composite entity in question is prior to its components is top-down in a similar way that collectivism is; and views on which the components in question are prior to their composite are bottom-up in the way individualism is. Second, and relatedly, some things taken individually bear an intimate, constitutive relation to those things taken collectively—each of them is *one of* them. So like in those debates, in our debate the top-down vs. bottom-up approaches concern a constitutive relation between top and bottom. Third, in those debates one might like in our case distinguish between two more specific debates, an existential and a qualitative one. What's prior, that the components exist or that the composite exists? And what's prior, the composite being a certain way or the components being a certain way?

The main difference between these debates and ours is that the latter doesn't involve a further entity made out of some entities. What's at issue between individualists and collectivists is the relative priority between some things taken individually or those taken collectively, *i.e.* between *each of some things* and *those very things*. This is what is precisely what distinguishes our much neglected question from these others that do have been discussed to varying degrees in both the historical and contemporary literature.

Similarly, the debate between individualism and collectivism is different from debates concerning the relative priority between relationality and non-relationality. For instance, in the recent literature there's a family of loosely related views associated with the label *structuralism*, according to which, roughly, an entity exists and/or has certain characteristic features in virtue of occupying a certain position in a "network of relations".<sup>23</sup> What's at issue in these discussions is the relative priority between relational and non-relational phenomena, *i.e.* whether certain relational facts ground certain non-relational facts. But all facts at issue here are individual facts—according to the structuralists views in question, what grounds that each of some things exist or is a certain way is that it is related to every other one of them in certain ways. So the dispute is concerned with the relative priority between (on the one hand) facts involving properties each argument place of which is saturated by only one entity (*i.e.* facts such as those corresponding to the  $\psi_i$  in (29)) and (on the other) facts involving relations each argument place of which is also saturated by only one entity (*i.e.* facts such as those corresponding to  $\rho$  in (29)). By contrast, the dispute between individualism and collectivism concerns the relative priority between individual facts and collective facts, where the former may be both relational and non-relational and the latter have a very different structure, *i.e.* involve properties each argument place of which is saturated by more than one entity. Thus, collectivism is completely neutral on the debate between structuralists and their opponents—whether or not certain individual relational facts about some entities are prior to certain non-relational individual facts about those entities, all such facts are grounded in certain collective facts about those entities.

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<sup>23</sup>Cf. Esfeld 2004, Esfeld and Lam 2010, Ladyman and Ross 2007.

This is of course not to say that the debate between individualism and collectivism is independent from these other more familiar debates in metaphysics. As I've noted, the question over the relative priority between individuality and collectivity has in fact a central bearing on these other questions and further ones, where collectivist alternatives of critical importance have been overlooked. Let me give three examples of this, starting with the debate between monism and pluralism the way Jonathan Schaffer has recently revived it.

## 4 Elsewhere in Foundational Ontology

### 4.1 A collectivist alternative to pluralism and monism

Consider the realm of concrete objects.<sup>24</sup> Assume that they stand in priority relations to one another, *i.e.* that there's a fact of the matter as to whether some of them exist and are thus-and-so because others exist and are such-and-thus. Now suppose we ask: which of these things, if any, are *ultimately prior*? In terms of facts: which of these entities are such that certain facts about them ground all other facts about any concrete entities? According to an argument going back to Leibniz, there could be no such things given two independently plausible theses about concrete particulars. First, that all of them have parts all the way down—every concrete particular is composed of others. Second, that composite concrete particulars depend on their parts—if concrete particular is composed of others, they are prior to it. In terms of facts: every fact about a composite concrete particular is grounded in facts about its parts.<sup>25</sup> We may put these two claims as follows:

(Gunk)

Every concrete object has other concrete objects as parts

(Pluralism)

If a concrete object has other concrete objects as parts, then every fact about it is grounded in certain facts about them

So the Leibnizian argument is that Gunk and Pluralism are incompatible with the following:

(Foundations)

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<sup>24</sup>On a not-overly-restricted picture of which such things there actually are these would include things such as superclusters, galaxies, stars, and planets; mountains, trees, rivers, and foxes; skyscrapers, cars, shoes, and lightbulbs; feet, bones, molecules, and atoms; quarks, leptons, and bosons; regions of spacetime; etc. The question of which such entities exist, however, is going to be tied in more or less subtle ways to the debates at issue here. Relatedly, I should make explicit that in speaking of concrete *objects* to be setting aside concrete universals should there be any such things—I'm restricting myself to concrete *particulars*. It may be that every such thing is a "bundle" (however that is to be understood) of concrete universals. But that's a substantive view, which makes a connection between the different notions. Similarly, in speaking of objects (particulars) I mean to be entirely neutral on issues about haecceitism vs anti-haecceitism.

<sup>25</sup>The notions of parthood and composition at play here are those of classical mereology.

There are some concrete objects certain facts about which ground all other facts about any concrete objects<sup>26</sup>

Given Gunk and Pluralism, either concrete objects have no ultimate foundation (and hence arguably no foundation at all), or their ultimate foundation does not involve concrete objects.

Leibniz (and others after him, *e.g.* McTaggart) famously opts for the latter horn of this dilemma—concrete reality is grounded in mental reality. Clearly, however, the choice is not forced upon us if we reject either Gunk or Pluralism. Foundations isn't threatened if every concrete composite decomposes into simple (*i.e.* non-composite) concreta—if there are smallest parts, they could in principle be ultimately prior (and would be, given Pluralism). Nor is it threatened if some concrete composites do not depend on their parts—some such objects could in principle be ultimately prior, even given Gunk.

Schaffer effectively pursues a version of the latter approach. On his view, what's ultimately prior is the composite of all concrete objects, *i.e.* the concrete object that's composed of all concrete objects. That is, he advances the following:

(Monism)

Certain facts about the composite of all concrete objects ground all other facts about any concrete objects<sup>27</sup>

A key feature of Monism is hence that it can accommodate Gunk while preserving Foundations. Given Monism, something will be ultimately prior even if nothing has ultimate parts, *i.e.* the composite of all concrete objects. As a matter of fact, Schaffer puts forward Gunk and Foundations as an *argument* in favor of Monism over Pluralism. (There are other motivations Schaffer adduces in favor of Monism, *e.g.* that it can easily accommodate reality having certain global features, which arguably aren't grounded in (or even supervenient on) any local features. But this is a key one.)

Notably, however, Monism cannot accommodate another Leibnizian thesis, which is the mirror image of Gunk:

(Junk)

Every concrete object is part of other concrete objects

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<sup>26</sup>As stated, Foundations is compatible with there being derivative facts about the ultimately prior entities. Similarly, foundations only posits a “bottom level” *within* the realm concrete objects. It is perfectly compatible with the ultimately prior concrete objects having a further foundation, *i.e.* with there being certain facts which ground *all* facts about *any* concrete objects whatsoever. It's just that that further ground can't be comprised of concrete objects. Similarly, as stated, Foundations is neutral on issues about a “bottom level” for all of reality, *i.e.* with there being certain facts that ground *all* other facts whatsoever.

<sup>27</sup>Schaffer 2010. Schaffer formulates Monism in terms of an entity-grounding rather than fact-grounding ideology. Nothing of substance in what follows hangs on this.

Whereas Gunk claims that concrete objects have parts all the way down, Junk claims that they have composites all the way up—the former rules out ultimate parts, the latter ultimate wholes. So Junk requires that there be no composite of all concrete objects, in the same way that Gunk rules out that there be non-composite parts of all concrete objects. Accordingly, given Junk, the monistic route for preserving Foundations isn't be available—there will be no largest whole, and so no facts about any such a thing that could in principle ground all other facts about concreta. Thus, given both Junk and Gunk, neither Monism nor Pluralism is viable.

Given both Junk and Gunk, Foundations is under significant pressure. There will be neither a mereological top nor a mereological bottom—the mereological hierarchy will be unbounded on both ends. So how could any concrete objects be ultimately prior?<sup>28</sup> As Leibniz notes, there is as much independent motivation for Junk as there is for Gunk. If so, neither Monism nor Pluralism would have a clear advantage over the other—Monism can push back on Junk, Pluralism on Gunk.

There is, however, a much overlooked alternative to Monism and Pluralism that can save Foundations from the Leibnizian threat without having to push back on either Gunk or Junk. On this view, what's foundational is neither the largest whole nor the smallest parts, but all parts and wholes taken together—all concrete objects taken collectively. In plurality-speak: what's foundational is the plurality of all concrete objects. We may put this view thus:

(Collective Allism)

Certain collective facts about the plurality of all concrete objects ground all other facts about any concrete objects

On this view, Foundations is compatible with both Gunk and Junk because there'll be a plurality of all concrete objects even if there are no smallest and no largest such things. That is, even if there are no smallest parts and no largest wholes, there'll be a plurality of all parts and wholes. So the key difference between Monism and Pluralism, on the one hand, and Collective Allism, on the other, is that the former but not the latter tie what's ultimately prior to the structure of the mereological hierarchy—they require that it have either a top or a bottom. By contrast, Collective Allism allows for what's ultimately prior to be independent of the structure of mereological hierarchy—whether or not it bottoms out, and whether or not it tops out, we'll have all the entities in the hierarchy. It's all those entities taken collectively that according to the collective allist are foundational. So Foundations will be preserved whether Gunk and Junk hold or not.<sup>29</sup> Furthermore, like Monism,

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<sup>28</sup>A “middle-ground” approach on which certain composites are ultimately prior (say, the ones identified by common sense, whatever that means) is of course an in-principle alternative (see *e.g.* Bernstein (2021)). But such an approach, even if in principle viable, is riddled with challenges from the get-go. How to single out such objects in principle way, and what makes such things metaphysically privileged? Further, how can it accommodate in a non-ad hoc way the global features of reality that Schaffer adduces as a further argument for Monism?

<sup>29</sup>Once we're discerning about individuality vs. collectively, there'll be many other alternatives to Monism

the Collective Allist can easily accommodate reality having certain global features, which arguably aren't supervenient on any local features (Schaffer 2010, Ismael and Schaffer 2020). It's just that such features will be features of the plurality of all concrete entities, rather than of the largest composite of such entities. )

Collective Allism is not only a neglected alternative in the debate between Pluralism and Monism as articulated above, but also in other debates in recent discussions in metaphysics. Let me give a second example, this time concerning Humeanism and the Best Systems Account of laws of nature.

#### 4.2 A collectivist foundation for Humean laws

A recent objection to Humeanism about laws of nature is that it is viciously circular (see, inter alia, Armstrong 1993, Maudlin 2007, Lower 2012). Humeans contend that all regularities about concrete reality are explained by the Humean mosaic, *i.e.* by the given distribution of fundamental properties and relations across regions of spacetime. But according to the best account of laws given Humeanism—*i.e.* David Lewis's Best Systems Account—laws are certain such regularities (Lewis 1973, 1999). Laws, however, are meant to explain why certain regularities in the mosaic hold, *i.e.* why we have certain aspects of the given distribution of fundamental properties and relations across spacetime given others. But if so, then assuming the same notion of explanation is at issue, we have a violation of the asymmetry of explanation. So we end up in a circle if the notion is also transitive.

Given Collective Allism, the Humean can get out of the circle without having to deny that the same notion of explanation is indeed at issue or to quibble with the properties of that notion. For she may insist that what explains laws are collective facts about the mosaic—*i.e.* facts about all concrete entities taken collectively—and that what laws explain are individual facts about the mosaic—*i.e.* facts about any concrete entities taken individually. So she may insist that the explanation from the mosaic to the laws is indeed metaphysical, *i.e.* that the laws are grounded in the mosaic. And she may grant that nomic explanation of certain aspects of the mosaic given others is also metaphysical—*e.g.* the fact that a thing is G is grounded in the fact that it is F and that it's a law that all Fs are Gs. But since the laws will be grounded by collective facts and ground individual facts, we have nothing remotely close to a violation of the asymmetry of ground.

#### 4.3 A collectivist foundation for relations

A third and final example of a debate where Collective Allism has a significant bearing is the metaphysics of relations. According to a much disputed broad sort of reductionism about relations, there and Pluralism that are compatible with both Gunk and Junk. For instance, take the view that what's ultimately prior is each taken individually, *i.e.* that certain facts about all concrete objects taken individually ground all other facts about any concrete objects. See [Reference omitted for blind review] for a systematization of all these alternatives and a sustained defense that Collective Allism is preferable to Monism and Pluralism as well as these other alternatives.

are relational phenomena—there are relational facts (or at least truths). But they’re not foundational—all relational facts (truths) are grounded in non-relational facts about the relata. Relationality is hence real but derivative; the relational is grounded in the non-relational. Thus, if there’s a metaphysical groundfloor, it is devoid of relationality—it underlies the relational but is not itself relational.

Discussions over this broad sort of reductionism about relations have a long and rich history. As a matter of fact, it is far from an overstatement to say that reductionism about relations is one of the central research programs in the history of metaphysics.<sup>30</sup> According to a familiar story, however, the foundations of the program were fatally undermined in the early 20th century. The story is that Moore and Russell’s intense criticism of the so-called doctrine of “internal” relations showed the program to be at best highly implausible: in order for it to be in-principle viable for “external” relations (such as *e.g.* spatiotemporal relations) obscure metaphysical commitments would be required. This impression hasn’t changed all that much. As a matter of fact, defenders of structuralist views of the sort I mentioned at the beginning of this section seem largely unpreoccupied with positing relations in the ontological groundfloor, effectively endorsing reductionism in the opposite direction. That said, recent interest in the metaphysics of relations has begun to revive mainstream interest in the question of relational reduction.<sup>31</sup>

One of the key points under dispute concerns order, especially in connection with spatiotemporal relations among concrete objects. Many spatiotemporal relations are non-symmetric; many of those are asymmetric. An object’s being to the left of another precludes the second one’s being to the left of the first; an object’s coming to be before another precludes the second one’s coming to

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<sup>30</sup>From Plato’s theory of forms to Aristotle’s substance-accident ontology, from the medieval doctrine that no accident inheres in more than one substance to Leibniz’s interactionless monadism, from Kant’s conception of the noumena and Spinoza’s, Hegel’s, and Bradley’s varieties of monism to McTaggart’s idealistic pluralism, from Kant’s conception of the noumena to Royce’s take on pragmatism, some the most significant attempts at drawing a systematic picture of reality from a metaphysical standpoint over the past two and a half millennia jettison relationality at the fundamental level, and offer a more or less explicit and detailed strategy for accounting for the relational in terms of the non-relational. A bit more specifically, Plato famously echews relational forms and provides an explicit but notoriously unclear strategy for reduction in terms of non-relational ones (for two very different elucidations, see Castañeda (1972) and Scaltsas (2013)). Aristotle defends an individual substance-accident ontology, where the proposed ground for relations are “relative-making” or “directive” properties, which are meant to be monadic and non-relational (for discussion, see Brower (1998) and Marmodoro (2014)). Abelard, Ockham, Avicenna, and Aquinas all explicitly defend weaker or stronger forms of relational reductionism (see Brower (2018) for an overview). Leibniz takes the bottom level to comprise a plurality of interactionless monads; his version of reductionism is one of the richest and most widely discussed ones in both the historical and contemporary literature (for discussion, see *e.g.* Jauernig (2010), Della Rocca (2012), McDonough (2015)). McTaggart followed closely in Leibniz’s footsteps in both regards, whereas Spinoza, Hegel, Bradley, and Royce all defend monistic ontologies, where the reduction strategy is, roughly, a monistic flavor of (one thread of) Leibniz’s strategy (for discussion of Spinoza and Bradley, see Della Rocca (2012); for discussion of Hegel, see Taylor (1977) and Rosen (1984)).

<sup>31</sup>For example, Fine’s seminal 2000 and the ensuing literature (expertly reviewed in MacBride (2020)) as well as the contributions in Marmodoro and Yates (2016).

be before the first. According to the reductionist program, all facts about any such relations must be grounded. The argument is roughly as follows. Every non-symmetric relation has a converse. An object's being to the left of another requires the second one's being to the right of the first; an object's coming to be before another requires the second one coming to be after the first. But by Leibniz's law, converses are arguably distinct. If *e.g.* being to the left of is identical to being to the right of, then if an object is to the left of another, then the first must also be to the right of the second, which as just noted can't be. It seems, however, that no relation is metaphysically privileged over its converse—*e.g.* being to the left of has as much a claim to figure in the bottom level as being to the right of. But if both a relation and its converse figure in the bottom level, the bottom level will be redundant, violating a plausible minimality constraint on the bottom level. It follows that no asymmetric relation may figure at the bottom level. So the argument is that Non-Symmetric Reductionism follows from Converses, Parity, and Non-redundancy:

(Converses)

Every non-symmetric relation has a distinct converse

(Parity)

A relation has as much a claim as its converse to figure in the facts that ground all facts

(Non-Redundancy)

The facts that ground all other facts don't include both a relation and its converse

(Non-Symmetric Reductionism)

There are no ungrounded facts about non-symmetric relations

There are two historically prominent strategies for grounding facts about relations, including non-symmetric ones. These are what Russell calls the *monistic* approach and what he calls the *monadistic* approach. According to the former, all such facts are grounded in non-relational facts about the composite of all entities. According to the latter, all such facts are grounded in non-relational facts about each of some entities taken individually, where none of such entities is the composite of all entities (should there be any such thing). A bit more explicitly:

(Monistic Grounds of Relations)

Certain non-relational facts about the composite of all entities ground all relational facts about any entities

(Monadistic Grounds of Relations)

Certain non-relational facts about each of some entities taken individually ground all relational facts about any entities

Thus, take all relational facts concerning any entities. According to the monistic approach, what grounds all such facts is that the composite of such entities has a certain non-relational property.



According to the monadistic approach, what grounds all such facts is that each of some objects has a certain non-relational property. Different monadistic approaches may differ over exactly which are such objects, so long as none of them is composed of all entities—it may be those that aren't composite, or certain somehow privileged composites, perhaps even all entities.<sup>32</sup>

A particularly compelling version of Russell's objection to the monadistic approach is that it posits obscure differences where none seem called for. Consider the following independently plausible claim linking grounding and modality: a distribution of properties and relations grounds another only if the former necessitates the latter. Then, according to the monadistic approach, it will be impossible for there to be situations the same distribution of non-relational individual properties but with different distributions of relations. But, that's hard to swallow. For instance, consider a situation with only two objects, *a* and *b*, where *a* is to the left of *b*. It seems that we could also have a situation where each of *a* and *b* is non-relationally exactly like it is in the first situation, but where *b* is to the left of *a*. But given the grounding-modality link above, the monadistic approach forbids this—it requires that there be individual non-relational differences wherever there are relational differences. Not only does this seem implausible, but it's hard to see what the non-relational differences it predicts could be. To see the force of this, imagine, for instance, that *a* and *b* are spacetime points.<sup>33</sup>

The core of Russell's objection to the monistic approach is similar. Consider a situation where only two non-composite objects (*a* and *b*) and their composite exist, and where *a* is to the left of *b*. It seems that we could also have a situation where *a* and *b* taken individually are non-relationally exactly like they are in the first situation, but where *b* is to the left of *a*. Given the grounding-modality link above, the monistic approach in principle allows for this. But it requires that the composite of *a* and *b* have different non-relational properties in the two situations. What could such differences be, however? After all, each of *a* and *b* is non-relationally exactly alike in both situations. So how could their composite differ? To see the force of this, imagine again that *a* and *b* are spacetime points.<sup>34</sup>

Per the above line of argument, situations that differ with respect to how relations are distributed

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<sup>32</sup>Unlike Russell, I'm considering the "global" versions of these views, where we take all relational facts and consider what grounds all of them rather than asking about the ground of each given relational fact. This is only for simplicity's sake—it allows us to bypass details that are irrelevant for my purposes here. I should make it explicit, however, that both views are entirely neutral as to whether there are further facts grounding some or all of the facts that ground all relational facts (so long of course as any such grounds don't involve relational facts about the entities in question). That is, the grounds they posit needn't be ultimate grounds.

<sup>33</sup>Leibniz's view here is that the individual *natures* or *essences* of each of *a* and *b*, which are non-relational, necessitate that *a* and *b* stand in certain relations. This sort of view is precisely of the sort that Russell (a careful student of Leibniz) was trying to undermine.

<sup>34</sup>A monistic analogue to Leibniz's view here (which Russell seems to have taken Bradley to defend) would claim the individual nature or essence of the composite of *a* and *b*, which is non-relational, necessitate that *a* and *b* stand in certain relations. This is also precisely the kind of view that Russell was trying to argue against.

must differ in their grounds. The monadistic and the monistic strategies for reduction, however, both posit obscure differences where none seem called for. It is because of this that since Russell positing ungrounded non-symmetric relations while tackling the argument for reductionism in a different way (*e.g.* giving up on Converse or Non-Redundancy) has seemed overall a preferable approach to the metaphysics of relations.

Collectivism, however, provides a neglected strategy for reduction, which arguably bypasses the above line of objection. The collectivist view on the ground of relations is as follows, which is a straightforward consequence of Collective Allism:

(Collectivist Grounds of Relations)

Certain non-relational collective facts about the plurality of all entities ground any relational facts about any entities

Thus, consider again a situation with only two objects, *a* and *b*, where *a* is to the left of *b*, and a situation where *a* and *b* taken individually are non-relationally exactly like they are in the first situation but where *b* is to the left of *a*. Given our grounding-modality link, the collectivist approach is in principle compatible with this. But it requires that *a* and *b* taken collectively have different non-relational features in the two situations. This is unproblematic, however—there is plenty of independent motivation to think that there are clear such differences. For in the first situation, *a* and *b* taken collectively are arranged a certain way; but in the second situation, *a* and *b* taken collectively are arranged a different way. These are differences at the collective level because it is *them* rather than *each* of the that are arranged those different ways. So while each of *a* and *b* taken separately are exactly alike in our two situations, taken together they are not exactly alike—there are differences in how *they* are in one and the other situation. And according to the collectivist, it is because of these collective differences that we have different relations in the two situations: it is because of how *a* and *b* are arranged in the first situation that *a* is to the left of *b* in that situation. And it is because of how *a* and *b* are arranged in the second situation that *b* is to the left of *a* in that situation.

This should be reminiscent of our packing examples and our discussion of Qualitative Principle in Section 2. In our two situations above (like in our two packing cases) we effectively have two different instances of (29), where we have the same instances of each  $\psi_i$  but different instances of  $\rho$ . These same instances of each  $\psi_i$  correspond to the individual non-relational properties that *a* and *b* have in both our situations, and the different instances of  $\rho$  correspond to the different ways in which *a* and *b* are related in the two situations. Since these instances of  $\rho$  differ with respect to the order of an asymmetric relation, they will clearly preclude each other. As such, the right-hand-sides of these two instances of (29) preclude each other. But then the left-hand-sides of these two instances of (29) will also preclude each other. So the left-hand-sides of these two instances

of (29) will involve different instances of  $\phi$ , which preclude each other. These two instances of  $\phi$  correspond to the different properties a and b taken collectively have in our two situations, *i.e.* to the two different ways in which they are arranged.

Accordingly, the differences posited by the collectivist approach are clear differences of a sort we have independent motivation for. The existence of these properties, and their necessary connections to certain relations, follow from the fine-grained qualitative abundance we've been entertaining. And it is important to stress that the differences the collectivist posit are not relational. Collective properties may be necessarily linked to individual relations, but they are not individual relations. When some things taken collectively are a certain way, we have a property with a single argument place, which is saturated by those things taken together, *i.e.* by the plurality of them. By contrast, when some things taken individually are related a certain way, we have a relation with multiple argument places, each of which is saturated by exactly one of those things. Accordingly, when the collectivist takes the differences in our two situations to be grounded in the way a and b are arranged, this is not to be understood as saying that they stand in different relations. Rather, they have different collective properties, in virtue of which they stand in the different relations.<sup>35</sup> Put another way: the relational facts at issue here are individual—they involve each of some things being related to each other in a certain way. By contrast, the facts the collectivist is taking to do the grounding work are collective: they involve how some things *themselves* are. As noted in our discussion of Qualitative Principle, we may not have natural language predicates for the collective properties at issue, nor may they be salient to us unless explicitly brought to our attention. Perhaps the only non-demonstrative way to talk or think about them is via the relations they are necessarily connected to. But from that alone it doesn't follow that those properties are not there, or that they just those relations, or that they must be grounded in such relations.<sup>36</sup>

Collective Allism hence has a significant bearing on various central debates in metaphysics. According to Collective Allism, however, all concrete objects taken collectively will be prior to each concrete object taken individually—every fact about those objects taken individually will be

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<sup>35</sup>Hence why collective predication ought to be understood non-relationally—otherwise little progress would be made here. See footnote 5 above.

<sup>36</sup>Notice that the monist may piggy-back on the collectivist approach and posit corresponding differences of composites. That is, the monist could just say about composites what the collectivist says about pluralities: in our first situation, the composite of a and b is arranged a certain way, whereby a is to the left of b, and in our second situation a and b are arranged a different way, whereby a is to the left of b. As a matter of fact, given our theory of fine-grained qualitative abundance at both the individual and collective level, there will be correspondence between certain features of the composite of some entities and certain features of the plurality of some entities. However, the monist can only go so far with this. For there'll be relations among entities even if there's no largest composite of all entities. So the collectivist can posit a ground of relations given Junk, but the Monist can't—there'll be a plurality of all entities even if there isn't a largest whole, certain facts about which could in principle ground all relational facts. Thus, to the extent that compatibility with Junk gives Collective Allism an edge over Monism in the general debate over what's ultimately prior, it will give it an edge in this particular debate over the grounds of relations.

grounded by some fact about those entities taken collectively. Accordingly, Collective Allism is a form of Ontological Collectivism, since there'll be at least one plurality of entities (*i.e.* the plurality of all concrete entities) that is prior to each of those entities. Accordingly, Collective Allism is principle viable only if so is Ontological Collectivism. As we will see, however, there are important concerns in this regard. This takes us to our next (and final) section.

## 5 Making sense of collectivism

We've seen that individualism and collectivism are opposing views on a much neglected question in foundational ontology, *i.e.* the question over the relative ontological priority between individuality and collectivity. We've also seen the question has a significant bearing on other central discussions in metaphysics, where collectivist alternatives have been overlooked. There are, however, concerns about the very coherence of such collectivist alternatives and the general debate between individualism and collectivism; perhaps there's good reason why all this has been missing from the discussion. The concerns come in two sorts: those that have to do with the connection between plurals and priority and those that have to do with the methodology and epistemology of foundational metaphysics. I'll articulate and respond to each of these in turn.

### 5.1 Asymmetry and innocence

The first family of has to do in one way or another with the asymmetry and irreflexivity of priority and the innocence of plurals. As we've seen, what's at issue between individualism and collectivism is the relative priority between each of some things and those very things. However, if priority is asymmetric and hence irreflexive and some things taken collectively *just are* those things taken individually, how could we in principle make sense of the latter being prior the former or the former being prior to the latter? Put another way: collectivity is supposed to be ontologically innocent in the sense that a plurality of some things is meant to be just those things, the very things taken collectively, not a further thing that's somehow made out of those things. Further, as we've seen, this understanding of collectivity is precisely what makes our debate distinctive as well as what makes neglected collectivist alternatives of significant interest in a variety of domains. But it seems that on pain of violating the irreflexivity and hence asymmetry of priority, we couldn't take a plurality of some things to be prior or posterior to each of those things unless the we took the plurality to be something other than those very things. Thus, we couldn't make sense of individualism, collectivism, and the general question over the relative priority of individuality and collectivity unless we violate the innocence of plurals.

Let's begin by getting clear of exactly what the irreflexivity of priority says. Per the discussion of section 3, priority is to be understood as a metaphysically explanatory, constitutive form of de-

termination between certain phenomena, invoked by the relevant uses of ‘because’ and ‘in virtue of’. As such we’ll have a violation of irreflexivity of priority when we the very same phenomena on both sides of this metaphysically explanatory, constitutive form of determination, *i.e.* when we have something for the following form: so-and-so because so-and-so. In terms of facts: we have a violation of irreflexivity when we have that a fact grounds itself or that some facts ground themselves.

As we have articulated the general question over the relative priority between individuality and collectivity, what’s at issue is the relative priority between individual and collective phenomena, both existential and qualitative. But per the discussion of section 1, individual and collective existential phenomena are meant to be distinct—recall, for instance, that (3) is not the same as (2). In terms of facts: (3) and (2) correspond to different facts. This difference is transparent in the regimentation of our official formulations of Existential Individualism and Collectivism: in (30) and (31), what’s on the left of ‘<’ is not what’s on the right. Similarly for individual and collective qualitative phenomena. In *e.g.* the intended instances of (23), the left- and right-hand-sides differ—they correspond to different facts. This is again clear in the regimentation of our official formulations of Qualitative Individualism and Collectivism: in (32)-(33), what’s on the left of ‘<’ is not what’s on the right. In fact speak: the facts in question are distinct. It is hence hard to see how individualism and collectivism could be charged with violating the irreflexivity and asymmetry of priority. Both claim something of the following form: so-and-so because such-and-thus.

Someone might question whether the phenomena in question really are distinct. They may reject, for instance, the picture of facts in terms of which we’ve illuminated a lot of our discussion, along with the theory of fine-grained qualitative abundance underlying it. However, even if individualism and collectivism could avoid violations of irreflexivity of priority only given this background (something I reject but won’t into here), that wouldn’t be a challenge to the *coherence* of individualism and collectivism. For surely such a theory of properties and facts is coherent; whether it is to be rejected is a matter of substantive philosophical argument. And as I mentioned at the outset, my focus here is only on the in-principle viability of the debate and collectivism in particular.<sup>37</sup>

Another response would be that while it may be that neither individualism nor collectivism require that a given fact be prior to itself, they entail that some entities are prior to themselves. For consider a principle connecting fact-priority and entity-priority according to which if some some facts are prior to other facts then the entities that figure in the former facts are prior to the entities that figure in the latter facts. Two points about this. First, this would again not be an objection to the coherence of the debate between individualism and collectivism in and of itself. Second, it’s

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<sup>37</sup>Further, notice that any grounds one might have for rejecting that there is a distinction between individual and collective phenomena would arguably generalize to the phenomena at issue in other debates. For instance, for the debate between monism and pluralism to get off the ground we need to have phenomena concerning a whole and phenomena concerning its parts, where these are distinct phenomena. It’s hard to see any principled reasons that would collapse the distinction in one debate but not in the other.

hard to think how such a principle could be formulated in a way that does justice to paradigmatic cases of priority and where entity priority is still irreflexive. For arguably *e.g.* the fact that Central Park is rectangular is prior to the fact that Central Park is polygonal.

Further, we need to be careful: from anything like a link principle of this sort, it would at most follow that each of some things is prior to those things (assuming individualism) or that some things are prior to each of those things (assuming collectivism). But neither of these consequences would threaten the irreflexivity of entity-priority—a violation of this would have same entity or entities on both sides. That is, it would have the following form: so-and-so is prior to so-and-so. But the individualist's and the collectivist's claims would be of the following forms (respectively), neither of which involves a claim of the offending form:

(34)  $\alpha_1$  is prior to  $\alpha_1 \& \alpha_2 \& \dots \wedge \alpha_2$  is prior to  $\alpha_1 \& \alpha_2 \& \dots \wedge \dots$

(35)  $\alpha_1 \& \alpha_2 \& \dots$  are prior to  $\alpha_1 \wedge \alpha_1 \& \alpha_2 \& \dots$  are prior to  $\alpha_2 \wedge \dots$

Of course, (34) would entail an offending claim if either the first argument place of this priority predicate is cumulative or the second argument place distributive. Similarly, (35) would entail an offending claim if either the first argument place of priority is distributive or the second argument place cumulative. But, these cumulations and distributions are precisely what would individualists and collectivists would reject, and what they would claim are a matter of substantive philosophical argument.

Now, a different sort of response would be that while neither individualism nor collectivism violates the *letter* of the irreflexivity of priority, both do violate it in *spirit*. This is perhaps best seen when we look at the form that the conjuncts of both (34) and (35) have. In, for instance, the first conjuncts of both, doesn't  $\alpha_1$  figure in both slots of priority? Sure, it's alone in one slot and together with other things in the other. But it still appears in both—in the case of (34),  $\alpha_1$  is included in what it grounds, in the case of (35)  $\alpha_1$  is included in its grounds. Isn't this problematic for the very reasons why straightforward violations of irreflexivity of priority are supposed to be problematic?

No. Consider an analogy with *e.g.* the debate between pluralism and monism. In terms of entity priority, they would have consequences of the following form (respectively):

(36)  $\alpha_1$  is prior to  $\alpha_1 + \alpha_2 + \dots \wedge \alpha_2$  is prior to  $\alpha_1 + \alpha_2 + \dots \wedge \dots$

(37)  $\alpha_1 + \alpha_2 + \dots$  is prior to  $\alpha_1 \wedge \alpha_1 + \alpha_2 + \dots$  is prior to  $\alpha_2 \wedge \dots$

where  $\lceil \alpha_1 + \alpha_2 + \dots \rceil$  is the mereological fusion of  $\alpha_1$  and  $\alpha_2$  and  $\dots$ . In the first conjuncts of these  $\alpha_1$  would seem to figure in both slots of the priority relation—in the first case, it would seem to be included in what it grounds, in the second it would seem to be included in its grounds. Does this

mean that the debate between pluralism and monism can't get off the ground because they violate the spirit of irreflexivity of priority?

Well, it's true a composite of some things must have those things as parts. For the pluralist, however, the composite is derived from the parts—the composite is metaphysically generated from the parts. For the monist, by contrast, the parts are derived from the composite—the parts are metaphysically generated from the composite. Thus according to the pluralist, in (36)  $\alpha_1$  isn't itself (despite appearances otherwise) in any important sense included in what it grounds, as what it grounds is the result of some sort of metaphysically significant *putting together*—composition is productive. Similarly, according to the monist, in (37)  $\alpha_1$  isn't itself (despite appearances otherwise) in any important sense “already” included in its grounds, as it itself is the result of some sort of metaphysically significant *breaking apart*—partition is productive.

The situation is exactly parallel with individualism and collectivism. It's true we have some things exactly when we have each of those things. But according to the individualist, the things are derived from each of the things—the plurality of them is metaphysically generated from every single one of them. For the collectivist, by contrast, each of the things is metaphysically derived from the things—each of them is metaphysically generated from the plurality of them. Thus according to the individualist, in (34)  $\alpha_1$  isn't itself (despite appearances otherwise) in any important sense included in what it grounds, as what it grounds is the result of some sort of metaphysically significant *coming together*—union is productive. Similarly, according to the collectivist, in (35)  $\alpha_1$  isn't itself (despite appearances otherwise) in any important sense “already” included in its grounds, as it itself is the result of some sort of metaphysically significant *teasing apart*—separation is productive.

One might object that a key disanalogy here is that in the case of pluralism and monism a composite is something *other* than its parts, whereas a plurality *just is* the things in question. So in the first case but not in the second it's in principle possible to think about metaphysical generation in one or the other direction. This brings us back to the point about the innocence of plurals. So let's get clear on exactly what that amounts to.

The idea is that for there to be some things it is not required that there be a thing that is not identical to one of those things, and that for some things to be a certain way it is not required that there be a thing not identical to one of those things that is that way. This is often put as follows: neither plural (*i.e.* collective) quantification nor plural predication puts constraints on what entities we have in the domain of our singular (*i.e.* individual) quantifiers. Thus, we may take the domain of our singular quantifiers to be exhausted by Abelard and Heloise, whereby the cardinality of that domain is two. And the idea is that plurally quantifying over Abelard and Heloise and plurally predicating something of Abelard and Heloise does not require expanding that domain—it is just to quantify over and to predicate something of the two entities in that domain, albeit taken collectively rather than individually. In this sense, some things taken together *just are* those things taken individually.

Clearly, however, this is perfectly compatible with some things not being identical to any of those things. Surely Abelard is not identical to Abelard and Heloise, nor is Heloise identical to Abelard and Heloise. Thus, there is a sense in which clearly some things taken together are *not* just those things taken individually, where this doesn't require violating innocence as just stated—we needn't have a third element in the domain of our singular quantifiers in order for it to be the case that a plurality of some things isn't identical to any one of those things. And this is all that's required for the analogy between pluralism and monism to be available.

Further, it is also now clear why the innocence of plurals as just stated is perfectly compatible with facts about a plurality of entities being prior to facts about each of those entities—we needn't have additional elements in our domain of quantification for that to be so. This follows from something more general we touched on above: a fact about an entity may be prior that another fact about that very entity. So surely taking some facts to be prior to others doesn't require that prior ones add to our domain of singular quantification. Thus, the coherence of the disagreement between individualism and collectivism isn't threatened by the innocence of plurals properly understood. Put in terms of quantification and predication rather than existential and qualitative facts, we may simply construe the disagreement between individualism and collectivism as a disagreement about the relative ontological priority between singular and plural quantification and between singular and plural predication. Using Sider 2011's illuminating notion of structural ideology, the issue is: which carves closer to reality's joints, the singular or the plural quantifiers, singular or plural predication? And singular and plural quantification are indeed different, and so are singular and plural predication. So framed this way, the opposition between individualism and collectivism is clearly not threatened by the irreflexivity of priority.

## 5.2 The space of Eutyphro dilemmas

A different (if, as we'll see, ultimately not unrelated) line of objection to the coherence of the opposition between individualism and collectivism has to do with the epistemology and methodology of foundational metaphysics.<sup>38</sup> More specifically, it has to do with the following question: under what conditions on does a necessary connection between certain phenomena give rise to a genuine Eutyphro dilemma? The idea is that not for all modal correlations does it make sense to ask about the direction of priority, and that the necessary connections between individuality and collectivity are an example of this.

Consider bidirectional necessities for which it clearly makes sense to ask about the direction of priority, such as:

(38) The set of Abelard and Heloise exists iff Abelard exists and Heloise exists

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<sup>38</sup>This objection is due to [omitted for blind review].



(39) Socrates exists iff it's true that Socrates exists

The idea is that not all bidirectional necessities are like these—in some cases, the question of priority doesn't seem to make sense. For example:

(40) The empty set exists iff the area of a square one of whose sides is the hypotenuse of a right-angle-triangle is identical to the sum of the areas of the two squares on the other sides of the triangle

(41)  $a$  is parallel to  $b$  iff  $b$  is parallel to  $a$

How are (38)-(39) and (40)-(41) relevantly different? On the one hand, a case like (40) involves *disconnected* phenomena—unlike the phenomena at issue in (38)-(39), these phenomena bear no *constitutive* relation to one another. Accordingly, the question of which of those phenomena *constitutively determines* the other doesn't arise—each just happens to be necessary independently, and so are modally correlated with one another only fortuitously. On the other hand, although this is not transparent from the form of the biconditional, in a case like (41) we have the *same* phenomenon on both sides—unlike the what's at issue in (38)-(39), we don't have a connection between *distinct* phenomena. Accordingly, the question of which *explains* the other doesn't arise—the modal correlation is simply given by identity.

The suggestion is then that modal correlations from which Eutyphro dilemmas arise involve distinct phenomena that bear some sort of constitutive relation to one another. And the suggestion is that, like in the case of (41), although not clear from the form of the biconditional, the existential and qualitative modal correlations between individuality and collectivity don't involve distinct phenomena.

We have already seen that given a view facts as finely-individuated complexes of arbitrary properties and relations and their bearers, the individual and collective facts among which there'd be necessary connections would be both distinct and bear constitutive connections among one another, satisfying the necessary conditions given above for a necessity to give rise to a Eutyphro dilemma. Such a view is in principle compatible with the fact that  $a$  is parallel to  $b$  being identical to the fact that  $b$  is parallel to  $a$  (it is also compatible with these facts being distinct). Thus, given this view, we may accept the assumptions behind the objection but reject its conclusion. It may be replied that this view then needs to be established on independent grounds before appealing to it in defense of there being genuine Eutyphro dilemmas between individuality and collectivity. But for all that's been said one might insist that this gets the situation backwards: one way in which a given view may earn its keep is by seeing what work it can do in metaphysical theorizing, *e.g.* whether it affords resources to articulate new interesting views that have a significant bearing on a variety of discussions in metaphysics. And as we've seen that's exactly the case in the debate over the priority between individuality and collectivity.

Our objector might at this point insist that even if we put aside questions about whether we have the same facts on either side of (41), the question of priority still clearly doesn't arise. They might note that in (41) is an analytic or conceptual truth, something that holds in virtue of the meaning of 'parallel' or the concept of parallelism. For clearly it'd be blatantly *incoherent* or *unintelligible* to think that one side holds but not the other. By contrast, it wouldn't be incoherent or unintelligible to entertain the falsity of (38) or (39). At least not in the same way—*e.g.* arguably it doesn't require conceptual confusion or changing the subject to think about the non-existence of sets or truths. And the idea is that at the very least Existential Principle is more like (41) than (38) or (39) in this regard—surely it's *incoherent* or *unintelligible* to think that one side holds but not the other. After all, as I've insisted myself, Existential Principle is a truism.

The problem with this version of the objection is that it's a very hard sell that just because it's incoherent or unintelligible to deny a necessary biconditional the question about the direction of priority doesn't arise. Consider the following for instance:

- (42) a is an uncle iff one of a's siblings has a child
- (43) a is a sibling of b iff a and b have the same parents
- (44) a is longer than b iff a's length is greater than b's length
- (45)  $P \wedge Q$  is true iff P is true and Q is true
- (46) A thing identical to a exists iff a exists

In all of these cases it's arguably incoherent to think that one side holds but not the other. But they're cases in which many think that the direction of priority clearly goes in one direction (arguably the left-hand-sides hold in virtue of the right-hand-sides), and so for which the question of priority does arise.

There is another problem with this line of objection. My goal here has been a very modest one: to defend the *intelligibility* of debate over the relative ontological priority between individuality and collectivity. For the present objection to count against this, one would have to think that the question about the direction of priority in necessities such as (41) is unintelligible. But arguably that's not the case. Suppose we were to ask: is a is parallel to b because b is parallel to a, or is b parallel to a because a is parallel to b? At worst, the problem with this is that it's a *false* dilemma, not an unintelligible one—anyone sympathetic to the idea that we have one rather than two facts here or that they're tied as a matter of meaning would think that neither horn obtains. It may be that in the end the correct answer to the question of whether individuality is prior to collectivity or the other way around is "neither". But that'd be compatible, and in fact *presuppose*, the intelligibility of the question.

Our objector might at this point note that it's *obvious* the answer the question of priority in the case of (41) is *obviously* neither. And so even if the question of priority is intelligible, both horns of the dilemma are dead on arrival—the debate over which side is prior would be coherent but hollow. But even if this is true about (41), the fact that, as we have seen, the question about the priority between individuality and collectivity has a significant bearing on a variety of metaphysical issues should make it obvious that it's not obvious that it is hollow. It's hence hard to see the force behind the objection.

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