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Contributed Paper

# Another Sense of the Ontological Innocence of Mereology: From a Neo-Aristotelian Point of View

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## Abstract

The problem of the ontological commitment of mereology has provoked a great deal of controversy. One aspect of the problem emerges as the conflict between mereology and familiar ways of counting. In recent years, a novel proposal labeled the *Minimalist View* has been advanced to solve the conflict. It separates quantifying and counting on the basis of a double notion of existence. The proposal, however, involves a crucial ambiguity concerning the notion of existence, and has been criticized for that fault. In this paper, we first point out that an existing objection to the *Minimalist View* is not to the point and does not work well. Then, it is argued that the *Minimalist View* can be recast to be a more plausible and attractive thesis from a neo-Aristotelian point of view, which rests on the concept of grounding. The discussion reveals a neo-Aristotelian conception of the ontological innocence of mereology.

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## Introduction

Classical mereology<sup>1</sup> (from now on just “mereology” for short), whose expressive power is so strong that various concepts concerning part-whole relations can be defined with formal rigor, has often been criticized for the fault of being committed to enormous numbers of bizarre wholes. Such alleged fault, however, is only one aspect of the problem of the ontological commitment of mereology. Another aspect of the problem emerges as the conflict between mereology and familiar ways of counting; We often don’t want to count the parts of maximally connected objects as full-fledged objects themselves, and we don’t want to count the sums of discontinuous objects as further, full-fledged objects, whereas mereology commit us to the existence of both of parts and wholes. A. C. Varzi calls this conflict the “tension between countenancing and counting”, and makes an attempt to clarify a way of dealing with it, under the label of the *Minimalist View*.<sup>2</sup> Against Varzi’s proposal, F. Berto and M. Carrara makes an objection based on the inseparability of quantifying and counting. In our opinion, the Varzi’s proposal includes a crucial ambiguity in its notion of existence, but the objection by Berto and Carrara is not to the point and fails to appreciate the significance of the *Minimalist View*. This paper tries to present a favorable disambiguation of Varzi’s proposal and to refine the *Minimalist View*, in light of a neo-Aristotelian conception of metaphysics. The discussion proceeds as follows. First, we characterize the conflict between mereology and counting as one aspect of the problem of the ontological

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<sup>1</sup> By “classical mereology”, we mean one including (i) some version of the Extensionality Principle, to the effect that for any (non-atomic)  $x$  and  $y$ , if  $x$  and  $y$  have the same (proper) parts, then  $x = y$ , and (ii) some version of Unrestricted Composition, to the effect that given any  $x$  and  $y$ , there is a (unique) mereological sum  $z = x+y$ .

<sup>2</sup> Varzi (2000).

commitment of mereology (§ 1). Second, the crucial feature of Varzi's proposal is presented, and then, it is pointed out that the objection against the *Minimalist View* by Berto and Carrara misses the point of Varzi's proposal and does not work well (§2). Finally, we try to solve the ambiguity in Varzi's proposal from a neo-Aristotelian point of view, and argue that, in that light, the *Minimalist View* can be recast as a more plausible and attractive thesis that suggests a neo-Aristotelian conception of the ontological innocence of mereology (§3).

## **1. Two Aspects of the Problem of the Ontological Commitment of Mereology**

### **1.1 The First Aspect: The Implausibility of Unrestricted Composition**

Mereology has often been criticized for the fault of committing to the existence of enormous numbers of bizarre wholes. For instance, let us consider the top of some table  $a$  and its four legs  $b, c, d, e$ . Given Unrestricted Composition, we have to countenance  $a + b, a + b + c, a + b + c + d$  and so on, as well as the whole table  $a + b + c + d + e$ . Generally speaking, given  $n$  atomic objects, the number of objects to whose existence mereology commits is  $(2^n - 1)$ . If we consider the top of another table  $a'$  and its four legs  $b', c', d', e'$ , the total number of objects that mereology countenance exceeds 1000. Furthermore, mereology has to commit to the existence of sums of objects that is spatially so detached that they cannot be in any usual causal connection (such as Tokyo Tower + Eiffel Tower), and also the existence of sums of different sorts of properties (such as redness + roundness). It has often been said that these examples shows a crucial fault of mereology. In this light, the problem of ontological commitment of mereology can be encapsulated in the following form:

(POM<sub>1</sub>) Mereology, with its Unrestricted Composition, commits to the existence of enormous numbers of bizarre wholes.<sup>3</sup>

## 1.2 The Second Aspect: The Conflict between Countenancing and Counting

The problem of the ontological commitment of mereology has usually been taken as (POM<sub>1</sub>) (or its variant that corresponds to some restricted version of composition principle). However, it is only one aspect of the problem. Another aspect emerges when we call into question not only the existence of wholes but also that of parts included in the domain of the quantification of mereology. The most remarkable cases can be found when we consider (i) the parts of maximally connected objects and (ii) the sums of discontinuous objects.

To see the first case, let us consider again a table and its parts  $a$ ,  $b$ ,  $c$ ,  $d$ , and  $e$ . Given these objects, mereology has to countenance (quantify over) all of the proper parts of the table such as  $a + b$  and  $c + d + e$  on a par with the whole table,  $a + b + c + d + e$ . On the other hand, when we count the number of objects in a room, we usually count only the table as a whole, ignoring the undetached parts of the table. Next, to see the second case, let us consider a table  $A$  and a chair  $B$ . Given these objects, mereology has to countenance  $A + B$  on a par with  $A$  and  $B$ . On the other hand, we usually count only  $A$  and  $B$  separately, ignoring the scattered whole  $A + B$ .

In general, mereology distinguishes a whole from its parts and countenances (quantifies over) them all on a par, but they “*embrace the same amount of reality*”,<sup>4</sup> and we want to avoid counting both of them. In this light, the problem of the ontological commitment of mereology can be encapsulated in the following form:

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<sup>3</sup> “POM” stands for the Problem of the Ontological commitment of Mereology.

<sup>4</sup> Varzi (2000), p. 285.

(POM<sub>2</sub>) The domain of quantification of mereology is redundant; We must choose either of wholes or their parts as reality.

Whereas (POM<sub>1</sub>) is concerned with the implausibility of Unrestricted Composition, (POM<sub>2</sub>) is concerned with the conflict between countenancing (i.e., the quantification of mereology) and counting. Nevertheless, in spite of this difference, they have the issue in common: the ontological status of some of the entities included in the domain of quantification of mereology. The difference merely reflects the availability of a certain domain given in advance; The former form of the problem arises when we have in advance some domain the reality of whose members is guaranteed in some way or other. On the other hand, the latter form of the problem arises when we don't have such domain but have only some domain of quantification of mereology none of whose members is guaranteed for its reality in advance. This is why we think of (POM<sub>1</sub>) and (POM<sub>2</sub>) as two *aspects* of the same problem, the one of the ontological commitment of mereology.

## 2. The *Minimalist View*, Double Existence, and Counting

### 2.1 The *Minimalist View*

Varzi responds to the conflict as follows:

... [W]e should not include entities that overlap, i.e., share common parts. If we include the table we should not include its top and legs. If we include its top and legs, we ought to disregard the whole table as well as every other table part. For instance, we ought to disregard the right half of the table, consisting of the two right legs and the right half of the top.

Call this the *Minimalist View*. The Minimalist View says nothing specific about mereology, about what entities are part of what. But, given a mereological theory and a corresponding domain of quantification, the view tells us how to weigh our ontological commitments.<sup>5</sup>

Then, the *Minimalist View* is formulated as the following thesis:

- (M) An inventory of the world is to include an entity  $x$  if and only if  $x$  does not overlap any other entity  $y$  that is itself included in that inventory.<sup>6</sup>

According to (M), when we count real objects and make the “inventory of the world”, the restriction is imposed on us, to the effect that we must disregard any object that overlaps some object in order not to include redundant objects in the inventory.

The most striking feature of the *Minimalist View* is that it introduces a double notion of existence. After formulating *Minimalist View* in the above way, Varzi continues:

. . . [T]he Minimalist View draws a distinction between two senses in which a thing can be object of reference or quantification—two notions of individual existence. In one sense, those items exist that are included in the domain of quantification of our part-whole theory, whatever it is (call this the *Quinean* notion of existence). . . . On the other hand, there is a sense in which just those items exist that are listed in the relevant inventory of the world, depending on how this is drawn up. These items will all be included

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<sup>5</sup> Varzi (2000), pp. 285–286, emphasis in original. What is taken into account here is not classical mereology in particular but mereology in general, but this does not affect the following discussion.

<sup>6</sup> Varzi (2000), p. 287.

among those things that enjoy Quinean existence, since they will have to be recognized as objects of reference and quantification by the part–whole theory; but not everything that exists in the Quinean sense must exist in this restricted sense (the *selective* notion of existence). . . . [T]he Minimalist View says that the Quinean notion of existence sets the background for the selective notion, but does not exhaust it; the rest must be done in compliance with (M).<sup>7</sup>

In short, the “*Quinean notion of existence*” corresponds to the meaning of “everything” in its strongest sense, which is given by unrestricted quantification. On the other hand, the extension of the “*selective notion of existence*” consists in the objects that have the status of *reality* among the objects that belong to the extension of the “Quinean notion of existence”.

## 2.2 An Objection Based on the Inseparability of Counting from Quantifying

It is for this feature that Berto and Carrara makes an objection against the *Minimalist View*. They state:

We have a problem with its (ambiguously) parting quantifying and counting, *if both* are given strict *metaphysical* import. One cannot part quantifying and counting, i.e. existence and numbers: to be is to be the value of a variable, that is, to be is to be in the domain of quantification, *and* to be is to exist, *and* to exist is to count as one.<sup>8</sup>

Then they argue that we cannot make sense of the distinction between *Quinean existence* and *selective existence* in a way both of

<sup>7</sup> Varzi (2000), p. 287, emphasis in original.

<sup>8</sup> Berto and Carrara (2009), p. 353.



them are given metaphysical import.<sup>9</sup>

The core of the objection by Berto and Carrara is the second sentence of the above quotation, which notes the (alleged) inseparability of counting from quantifying. In order to vindicate this observation, they rest on van Inwagen's remark concerning the univocality of existence<sup>10</sup> and Frege's theory of counting.<sup>11</sup> However, whatever argument or theory they rest on, claiming simply the inseparability of counting from quantifying cannot establish their conclusion that the double notion of existence in the *Minimalist View* can get no justification that has full metaphysical import. This is because such alleged inseparability is the very *starting point* of Varzi's discussion. That is, the alleged inseparability of counting from quantifying is, as it were, just another name of the tension between countenancing and counting pointed out by Varzi. He (implicitly) starts the former familiar idea, and then, make the latter problem clear and proposes his own strategy, namely the *Minimalist View*. Of course it may be found difficult to understand what is the difference in senses and the relation between "Quinean notion of existence" and "selective notion of existence", but to merely point out such ambiguity is hardly sufficient to undermining the proposal for the duplication of existence as a strategy for solving the tension in question.

For these reasons, the objection by Berto and Carrara, which is based on the alleged inseparability of counting from quantifying, fails. However, it remains the fact that the *Minimalist View* includes the crucial ambiguity in the double notion of existence; We have to say it is unclear how both of the two notions of existence can be given metaphysical import and how they can solve the conflict between mereology and familiar ways of counting. In the next section, with the view to disambiguating the double notion of exist-

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<sup>9</sup> Berto and Carrara (2009), p. 353

<sup>10</sup> van Inwagen (1998).

<sup>11</sup> Frege (1884).

ence, we will make an attempt to discuss these questions from a neo-Aristotelian point of view.

### 3. A Neo-Aristotelian Conception of Ontological Innocence of Mereology

#### 3.1 The Triviality of Existence Questions and the Grounding Problem

Recently, J. Schaffer conspicuously defended the neo-Aristotelian view of metaphysics,<sup>12</sup> which characterizes metaphysics as centered on *what grounds what*, as opposed to the Quinean view, on which the task of metaphysics is to say *what exist*.<sup>13</sup> In particular, he endorses the former coupled with a permissive stance on existence, according to which Quinean existence questions are trivial. For example, as to the question of whether numbers exist, Schaffer claims that the affirmative answer that they do exist can be trivially vindicated by such an inference as:

- (1) There are prime numbers.
- (2) Therefore there are numbers.

Through this inference, we can be trivially justified to claim the existence of numbers. Similarly, as to the question of whether properties exist, the affirmative answer that they do exist can be trivially vindicated by such an inference as

- (3) There are properties that I and my father have in common.
- (4) Therefore there are properties.

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<sup>12</sup> For a variety of recent discussions concerned with neo-Aristotelian metaphysics, see Tahko (2012).

<sup>13</sup> Schaffer (2009).

Through this inference, we can be trivially justified to claim the existence of properties. In the same vein, (almost) every existence question can be affirmatively answered with this type of inference. Thus it follows that these existence questions are trivial, and that (almost) everything exists (*permissivism*).<sup>14</sup> Accordingly metaphysics should not be troubled about *what exists*, but instead tackle with the genuinely substantial question of *how* entities exist, or rather *what grounds what*.

This conception of metaphysics is plausibly rooted in Aristotle. When he presents a catalogue of types of entities such as substance, quantity and quality, he simply assumes that all such types of entities exist without any further discussion (1984: 4; *Cat.*1b257). And also, Aristotle characterizes his investigation as centered on substance (1984; 1688; *Meta.*1069a1820). As Schaffer states, the core notion of substance is that of “*basic ultimate, fundamental unit of being*”.<sup>15</sup> Thus, on Aristotle’s view, the task of metaphysics is to study substances and their modes and kinds, and its method is to deploy diagnosis for what entities are fundamental and what depends on them.

Schaffer reinterprets many central metaphysical debates from these points of view. For instance, the controversy of realism and constructivism about the existence of numbers is taken to be one over whether numbers are independent of the minds, or based on our concepts, rather than whether we can accept the existence of numbers. In general, there is no dispute about what exists. It is the metaphysical status of entities, such as mind-independence, fundamentality and priority, that metaphysical debates concern.

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<sup>14</sup> For a remark on the exceptions of Schaffer’s permissive stance on existence, see Schaffer (2009), p. 359.

<sup>15</sup> Schaffer (2009), p. 351.

### 3.2 The Quantifier and the Fundamental Commitment

From this point of view, we can present a way to solve the problem of the ontological commitment of mereology and how to disambiguate the *Minimalist View* in a favorable way.

Given *permissivism*, whether the objects included in the domain of the quantification of mereology really exist is trivial, because it can be admitted that we can talk about (refer to, quantify over) any of those objects in various ways in certain contexts. For example, the existence of some undetached parts of a whole can be proved by such an inference as:

- (5) This top and these four legs are all parts of a table.
- (6) Therefore there are the top and the four legs of a table.

Metaphysics, under the neo-Aristotelian conception of it, tries to answer the question of which objects countenanced by mereology are *fundamental*, that is, of which are included in the “inventory of the world”, not of which objects *exist*.

Here the significance of (M) can be construed. It can be seen as offering a plausible constraint that guides metaphysical investigation on what grounds what; We can reformulate (M) as the following requirement, to the effect that no two basic entities have a common part:

**(No Overlap)**  $\forall x \forall y ((Bx \wedge By \wedge x \neq y) \rightarrow \neg \exists z (Pzx \wedge Pzy))$ ,

where “B” express the basicness or fundamentality and “P” express the relation of pathood.<sup>16</sup> This constraint can be justified by the following two plausible intuitions: (i) the fundamental objects *qua* independent units of being should be freely recombinable<sup>17</sup> (“entirely loose and separate”, in Hume’s words), and (ii) any two overlapping objects are not freely recombinable, because it is not possible that one of the overlapping objects exists *and* the other doesn’t exist since

<sup>16</sup> See Schaffer (2010), p. 39.

<sup>17</sup> Cf. Lewis (1986).

they have some common part.<sup>18</sup>

On the basis of this reinterpretation of (M), the disambiguation of the *Minimalist View* can be accomplished as follows. The two notions of *existence*, the *Quinean existence* and the *selective existence*, can be recast to be the two notions of *commitment* of a theory, the *quantifier commitment* and the *fundamental commitment*: The former are what a theory says exists, while the latter are what says is fundamental.<sup>19</sup> This way of disambiguation embraces the single notion of existence and the double notion of commitment, and both of the two notions of commitment are given metaphysical import, although the latter is taken as much more important in metaphysical inquiry.

Now, from this neo-Aristotelian point of view, the sense of the ontological innocence of mereology is renewed; it is usually construed under *Composition as Identity*, to the effect that wholes and its parts are (in some sense) identical.<sup>20</sup> In this light, the ontological innocence of mereology consists in that mereology is not committed to further objects in addition to objects included in some domain given in advance. However, given *permissivism* and the grounding structure of reality, the ontological innocence of mereology consists in that mereology is neutral about the question of which objects countenanced are basic while keeping wholes and its parts numerically distinct. We are allowed to freely refer to, or quantify over, the objects included in the domain of mereology as far as it is not committed to the question of what grounds what. Here we get a neo-Aristotelian conception of the ontological innocence of mereology.

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<sup>18</sup> For a more detailed discussion about (No Overlap), see Schaffer (2010), pp. 38–42.

<sup>19</sup> We owe these terminologies to Schaffer (2008), although Schaffer discusses the problem of the ontological commitment of a theory in general, in connection with truthmaker theory.

<sup>20</sup> Lewis (1991).

### A Concluding Remark

We have been tried to present a favorable disambiguation of Varzi's proposal and to refine the Minimalist View, in light of a neo-Aristotelian conception of metaphysics, and revealed a neo-Aristotelian conception of the ontological innocence of mereology. However, there remains a lot of important issues concerning the neo-Aristotelian conception of metaphysics, especially ones concerning the concept of *grounding*: Is there a distinctive form of dependence marked by our use of "ground"? What is the logic of grounding and what are the structural principles that govern grounding? How do the notions of grounding, modality, and reduction interact? What is the connection between grounding and explanation?<sup>21</sup> Since the "grounding" is one of the core concepts in the neo-Aristotelian metaphysics, the clarification and the discussion of these issues must be given thorough elaborate consideration. They have to be done on another occasion.

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<sup>21</sup> For some recent discussion about these issues, see for example Rosen (2010), Bennett (2011), and Correia and Schnieder (forthcoming).

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