

James Porter Moreland\*

# Why Mereological Essentialism Applies to Mereological Aggregates

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**Abstract:** This article's purpose is to defend the depiction of ordinary-sized physical objects as mereological aggregates (MAs), to clarify what the ontology of an MA is, and to show why mereological essentialism (ME) applies to MAs that seem to be ubiquitous if we are to adopt what Frank Jackson calls "Serious Metaphysics" and refuse to broaden our ontology beyond what is (allegedly) bequeathed to us by physics and chemistry. To accomplish this goal, first, I clarify certain background issues that inform what follows and I identify certain constraints that relate to the contemporary ambivalence towards ME. Second, I present a primer on Husserlian mereology that provides a superior account of parts and wholes than the inadequate approach identified in the previous section. Third, I will offer a defense of ME as the correct approach to providing an ontological account of MAs. Finally, I will evaluate two defeaters against my thesis.

**Keywords:** endurance; mereological aggregate; mereological essentialism; parts, separable and inseparable; Standard Mereological Hierarchy

In the contemporary debates about diachronic personal identity, regardless of their considered judgments, most philosophers agree that our basic intuitions seem to support the claim that we are genuine, enduring continuants (see Gasser and Stefan 2012: 1–17). Moreover, granting that these intuitions are veridical, some have argued that the fact of our own endurance is best, if not only, explained by substance dualism. Call this The Mereological Argument. Here is a standard form of the argument:

- (1) If something is a physical object composed of separable parts (an MA), it does not endure over time as the same object if it comes to have different parts.<sup>1</sup>

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<sup>1</sup> (1) can also be stated modally: If  $x$  is a physical object composed of separable parts (an MA), it is not the case that, possibly,  $x$  exists and is composed of different separable parts.

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\*Corresponding author: James Porter Moreland, Distinguished Professor of Philosophy, Biola University, La Mirada, CA 90639, USA, E-mail: [jp.moreland@biola.edu](mailto:jp.moreland@biola.edu)

- (2) My (a human person's) body and brain are physical objects composed of separable parts.
- (3) Therefore, my body and brain do not endure over time as the same object if they come to have different separable parts.
- (4) I (a human person) do endure over time as the same object.
- (5) Therefore, I am not my body or brain.
- (6) I am either an enduring soul or a body or a brain.

Therefore, I am an enduring soul.

While several premises can be criticized, the most contentious one in the contemporary literature is (1) which rests on the assumption that mereological essentialism (ME) applies to MAs. And this assumption is hotly contested.

To cite an example of this, while Charles Taliaferro—a longtime defender of substance dualism—takes The Mereological Argument to be sound; nevertheless, he believes the argument rests on a controversial account of diachronic identity (ME) that takes us into murky philosophical waters that are best to avoid (Taliaferro 2018: 53). I think that Taliaferro's assessment of the contemporary status of ME is correct. Especially when applied to mereological aggregates (MAs), many philosophers reject ME and, accordingly, do not take its employment to establish conclusions about diachronic personal identity to be successful (Cf. Merricks 1994: 81–85; Bailey 2021).

In what follows, my purpose is not to defend The Mereological Argument or any view of personal identity. Nor am I concerned to defend substance dualism. I mention these topics to illustrate an important debate in which ME's role is taken to be controversial. Rather, my purpose is to defend the depiction of ordinary-sized physical objects as MAs, to clarify what the ontology of an MA is, and to show why ME applies to MAs that seem to be ubiquitous if we are to adopt what Frank Jackson calls "Serious Metaphysics" and refuse to broaden our ontology beyond what is (allegedly) bequeathed to us by physics and chemistry (Jackson 1998).

To accomplish this goal, first, I clarify certain background issues that inform what follows and I will identify certain constraints that relate to the contemporary ambivalence towards ME. Second, I present a primer on Husserlian mereology that provides a superior account of parts and wholes than the inadequate approach identified in the previous section. Third, I will offer a defense of ME as the correct approach to providing an ontological account of MAs. Finally, I will evaluate two defeaters against my thesis.

# 1 Important Background Issues

Consider the following canonical pronouncement by the late Jaegwon Kim:

Today, any proposed general ontology of the world... is defined by its relation to materialism, the position that the world consists exclusively of bits of matter and structures made up of bits of matter, all behaving in accordance with physical law. Everything is an arrangement of matter and living organisms and minded creatures are no exceptions (Kim 2018: 152–167).

The assertion is interesting for its own sake, but two additional features stand out to me. First, uncharacteristically, Kim asserts this claim without so much as a single argument for it. Why? I think it is because he takes to claim to be so obvious and so well justified that no one can take its denial seriously. Second, Kim's confidence in the claim can also be seen in his idea that it sets the conditions for *anyone* who proposes an ontology of the world worthy of consideration.

Even if Kim is guilty of an overstatement, one thing seems certain: Contemporary philosophy and science are heavily influenced by some form of naturalism, and many thinkers agree with Kim's assertion. Thus, the impact of his statement is ubiquitous. Of special importance to this paper is (1) when analyzed, the way this statement helps to clarify precisely what an MA is and provides support for seeing most—if not all—macro-objects as MAs; (2) the way his statement gains support from and, in turn, lends support to at least three issues to follow: staunch naturalism, serious metaphysics, and the Standard Mereological Hierarchy with microphysical fundamentality.

If I am correct about this second point, it will become evident just how deeply ingressed in our contemporary noetic structure is the ubiquitous depiction of a wide range of wholes as MAs, along with the work this depiction does in doing ontology. A commitment to macro-objects as MAs has broad ripple effects into other important philosophical topics, e.g., philosophical methodology. So, MAs play a large role in contemporary philosophy. As a result, if ME applies to MAs in a problematic way, ME will also play a similarly large role. The purpose of this section is to identify the important aspects of my claims to show how important the issue of ME as applied to MAs really is.

## 1.1 Staunch versus Faint-Hearted Naturalism

In 1993, David Papineau (1993: 1) observed that "...nearly everybody nowadays wants to be a 'naturalist'..." To be sure, in recent decades, Papineau's claim has been mitigated. Nevertheless, some form of naturalism is the default position for much of the work done in philosophical methodology, ontology, and epistemology

(Stoljar 2010: 13–27). Whether one is promoting or dissenting from naturalism, its presence looms large.

Setting aside debates about abstract objects and focusing solely on an inventory of the entities that populate the universe, if we construe them as worldviews, then the ontological commitments of the two most significant naturalist rivals are as follows:

*Staunch Naturalism:* All entities are and only are physical.

*Faint-Hearted Naturalism:* All particulars are and only are physical, but *sui generis* emergent properties and relations exist and are ontologically dependent on strictly physical subvenient bases.

In light of the role the Standard Mereological Hierarchy (see below) plays in doing ontology, especially in light of the (alleged) deliverances of the hard sciences, both forms of naturalism depict macro-objects (including living organisms) as MAs.

## 1.2 Serious versus Shopping-List Metaphysics

According to Jackson (1998: 1–5), there are two different ways to do metaphysics:

**Serious Metaphysics:** When doing metaphysics, one starts with the fewest entities possible, namely, those established by physics, and reduces to physics entities or eliminates purported additional entities.

Jackson is a prime example of serious metaphysics.

**Shopping-list Metaphysics:** When doing metaphysics, one accepts First Philosophy and the autonomy of metaphysics, and includes in one's ontology those entities and metaphysical categories that best account for reality and solve distinctively philosophical problems.

Roderick Chisholm was a paradigm-case shopping-listener (Chisholm 1996).

Staunch naturalism either entails or is most naturally associated with serious metaphysics.

If one practices serious metaphysics as Jackson describes it, then philosophical methodology will be practiced in light of the ontology of (especially) physics and chemistry. Among other things the adoption of serious metaphysical methodology will seek to locate all entities in the Standard Mereological Hierarchy. In the category of individual, this entails that macro-objects (including living organisms) are MAs. If one adopts a shopping-list methodology, then one embraces First Philosophy with the result that philosophy is largely autonomous from science. The result will be a different approach to macro-objects according to which some will be taken to be MAs, others to be Aristotelean substances, and so one.

## 1.3 Naturalism and the Standard Mereological Hierarchy

With rare exceptions, advocates of both forms of naturalism are committed to what is called the Standard Mereological Hierarchy with micro-physical part-priority

(MH) (*sans atomless gunk*).<sup>2</sup> Two features of MH are important for what follows. The first is the category of individual. Assuming that level  $n$  is fundamental and basic, individuals at that level are uncomposed units, usually taken to be atomic simples (having no proper separable parts). All entities at higher levels are mereological aggregates (MAs). An MA is exhaustively decomposable without remainder (except, perhaps, for the loss of an aggregate's surface boundary) into entities at the next lowest level: the parts of the aggregate, along with their properties and the relations between and among them. Given that this decomposition relation seems to be transitive, we end up with some version of microphysicalism. Base level entities are fundamental; higher level entities are derived. Thus, the Standard Mereological Hierarchy included priority microphysicalism. Andreas Hutteman (2004: 7–8) unpacks priority microphysicalism into three theses that taken together comprise it:

*Micro-Determinism:* The behavior or the properties of compound systems are determined by the behavior or the properties of their constituents and the relations among them but not vice versa.

*Micro-Government:* The laws of the micro-level govern the systems on the macro-levels.

*Micro-Causation:* All causation takes place in virtue of the causation on the level of the (ultimate parts)—or the microphysical level. Macro-causation is entirely derivative and piggy-backs on the causation of the micro-constituents.

The second important feature of the MH is the category of property. There are no genuinely emergent properties in the MH. Rather, there are structurally supervenient properties. And when structural supervenience is applied to the MH, it becomes a form of mereological supervenience.

*Mereological Supervenience:* If some property  $P$  at some higher level is mereologically supervenient on entities at the next lower level, then  $P$  is a new structural arrangement composed of the particulars and their properties at that next lower level.

For example, at the level of molecules,  $H_2O$  mereologically supervenes on two atoms of hydrogen and one atom of oxygen placed in the right relational structure.

## 1.4 Standard Mereology

As Kathrin Koslicki (2008: 9–44) had correctly observed, what she calls “Standard Mereology” (aka “Classical Extensional Mereology”) is the canonical view that is used to analyze parts, wholes, and the part-whole relation. In my opinion, the use

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<sup>2</sup> For good summaries of the standard mereological hierarchy, see Kim (1998: 15–19); Inman (2018: 75–113).

of Standard Mereology is most in keeping with both versions of naturalism as they depict wholes in the MH above the fundamental level.

As I see it, the MH combined with Standard Mereology is the fundamental reason for the so-called “murky philosophical waters” that cloud philosophical insight into various kinds of wholes, parts, and the precise way ME is appropriately used to analyze certain kinds of wholes. It is an expression of an ontology that is too barren to address the rich diversity of parts and wholes that present themselves to us preanalytically. One sign of this barrenness is the fact that MH and Standard Mereology have difficulty avoiding eliminativism regarding allegedly composed wholes, with the possible exception of living organisms. I think there is a better mereology that is often overlooked—Husserlian mereology. Consequently, in the following section, I will briefly describe central features of Husserlian mereology. In doing so, important metaphysical notions relevant to my main argument will be presented and made precise.

My primary audience is the large number of philosophers and scientists who approach macro-objects from within the ubiquitously adopted and highly influential scientific naturalism, the Standard Mereological Hierarchy, and serious metaphysics. Given these commitments, macro-objects turn out to be MAs subject to ME. Husserl’s approach violates all three of these commitments and, thus, is not available to those thinkers within my purview. If I am right about this, then if one wants to avoid ME for alleged MAs, it may be time to rethink the three commitments just mentioned, or so I will argue.

## 2 A Primer on Husserlian Mereology

### 2.1 Parts

Many consider Husserl’s third *Logical Investigation* as, in the words of Kit Fine (1995: 463), “perhaps the most significant treatise on the concept of part to be found in the philosophical literature.” Husserl (1970: 466–481) makes several part-whole distinctions, including kinds of dependency relations among an object’s parts, a hierarchy among parts involving a detailed conception of levels, and a theory involving various kinds of unity an object can possess. Like Aristotle and Franz Brentano, Husserl is a parthood pluralist (Chilsholm 1986; Moreland 2002: 199–216). For Husserl, “part” broadly refers to any distinguishable, particularized aspect of an object, a particular “in” a whole.

Husserl specifies two kinds of parts: “pieces” and “moments.” *Pieces* have a degree of metaphysical independence or separability from the wholes of which they are a part. Conversely, *moments* are “non-independent” or inseparable from the wholes of which they are a part. Husserl’s pieces and moments are sometimes

referred to as dependent or inseparable parts and independent or separable.<sup>3</sup> I will use “inseparable part” in place of “moment” and “separable part” in place of “piece.”<sup>4</sup>

Separable and inseparable parts differ concerning their ontological dependence and source of identity. *Separable parts* are independent in that they can retain their identity and exist without the whole of which they are a part. Such parts are accidental to other such parts and their wholes in that they require an external relation to bond together into their wholes (e.g., mereological aggregates of separable parts). Such bonding does not follow from the nature of the parts.

Conversely, *Inseparable parts* are dependent on the whole of which they are a part for both their identity and existence (metaphysically and conceptually). They are intrinsically partial in this sense: they require supplementation by something else to exist. That supplemental entity is the inseparable part’s foundation. Foundation can be one-sided (e.g., an instance of redness cannot exist without foundation in an instance of extension but not conversely) or mutual (an instance of size cannot exist without an instance of shape and conversely). It is the essence of the part that makes it separable, not the mere ability to conceive of it apart from its whole (Husserl 1970: 446–447).

Similarly, it is the essence of inseparable parts that grounds them as such. They cannot exist as an independent whole separate from the whole of which it is a part. Inseparable parts stand in the modal distinction to their wholes and, in this sense, may be properly understood as modes of their wholes. Husserl offers various examples of inseparable parts. An instance of color, for example, cannot be presented—exist or be conceived of—apart from an instance of extension (e.g., apart from the surface on which it is located), and are inseparable from the object of which they are a part (Husserl 1970: 440). Instances of extension, surface, color, and brightness are all inseparable parts of a material object taken as a whole. Inseparable parts are not, explains Husserl, “merely bound up with its associates, but blends with them.” The inseparable parts of a whole permeate each other and the whole of which they are parts (Husserl 1970: 449).

Separable parts, on the other hand, are separated from the other parts of the whole. Separable parts are “what they are no matter what goes on around them,” (Husserl 1970: 449) even if “everything outside it were annihilated” (Husserl 1970: 449). Separable parts are, as it were, scattered throughout the whole of which they

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<sup>3</sup> See, e.g., Willard (1994: 123–144). The same is true of the mereology of Husserl’s mentor, Franz Brentano. Cf., Salice (2017: 119–125); Mulligan and Smith (1985: 627–644).

<sup>4</sup> This section is heavily informed by the following. Rosiak (2017: 262–269); McCarthy (1992: 135–156); and Sokolowski (1968: 537–553).

are parts. I can now state necessary and sufficient conditions for separable and inseparable parts as follows.

*Separable Part:*  $x$  is a separable part of some whole  $W$ , iff, (i)  $x$  is a particular, (ii)  $x$  is a part of  $W$ , and (iii) it is possible for  $x$  to exist without being a part of  $W$ .

*Inseparable Part:*  $x$  is an inseparable part of some whole  $W$ , iff, (i)  $x$  is a particular, (ii)  $x$  is a part of  $W$ , and (iii) it is not possible for  $x$  to exist without being a part of  $W$ .

The paradigm case of an inseparable part in this tradition of Brentano and Husserl is a monadic property-instance. If substance  $s$  has property  $P$ , <the-having-of- $P$ -by- $s$ > is (i) a property-instance of  $P$ ; and (ii) an inseparable part of  $s$ , what I also call a mode of  $s$ . Assuming for the sake of argument that a lump of clay is a substance (most likely, it is an MA, not a substance) and that it has a spherical shape, then, the property <being spherical> is a universal attribute, and <the-having-of-sphericity-by-the-clay> is a mode (inseparable part) of the clay and a property-instance of sphericity.

## 2.2 Holistic Unity: Genuine Wholes, Relations, and Aggregates

Various relations obtain between the parts of a whole and between the parts and the whole itself. As noted, Husserl was a realist regarding universals. Besides monadic properties, he held to the existence of what I would call external and internal relations. Roughly, internal relations stand “between elements within a given whole,” while external relations stand “between that whole (or elements in that whole) and something outside the whole (Ewing 1934: 118).” Regarding internal relations, Gustav Bergmann (2004: 54) explains that “*The ontological ground of an internal connection is the natures of the entities it connects and nothing else.*”

Internal relations also possess modal characteristics not possessed by external relations. According to D. M. Armstrong,  $R$  is an internal relation = def.  $R$ 's holding between  $a$  and  $b$  is necessitated by the intrinsic natures of  $a$  and  $b$  (Armstrong 1978: 84–85; 1989: 43–44, 55, 100; 1997: 87–89). Internal relations are necessitated by their relata, such that if  $a$  and  $b$  are inseparable parts of some whole  $W$ , then there is no possible world in which  $a$ ,  $b$ , and  $W$  exist and where  $R$  does not obtain between  $a$  and  $b$ . The nature of inseparable parts, as such, exemplifies internal relations, while the nature of separable parts, as such, exemplifies *only* external relations.

I understand internal relations as follows:

*Internal Relation:*  $R$  is an internal relation between  $a$  and  $b$  iff (i) facts about  $R$  are grounded in facts about the natures of  $a$  and  $b$ , and (ii) necessarily, if  $R$  fails to obtain,  $a$  and  $b$  are altered.

If the  $R$  of  $aRb$  is internal to  $a$  (or both  $a$  and  $b$ ), then for all  $x$ , if  $x$  does not stand in  $R$  to  $b$ , then  $x \neq a$ . An internal relation is grounded in the nature/essence



of the relevant relatum or relata. Conversely, I understand external relations as,

*External Relation:*  $R$  is an external relation between  $a$  and  $b$  iff (i) facts about  $R$  are not grounded in facts about the natures of  $a$  and  $b$ ; and (ii) possibly  $R$  fails to hold between  $a$  and  $b$ , while at least  $a$  or  $b$  remain unaltered.

If the relation,  $R$ , of  $aRb$  is *external to  $a$*  (or  $a$  and  $b$ ) then  $a$  can exist and retain identity if it fails to stand in  $R$  to  $b$ . Spatial relations, for example, are external.

As we will see shortly, this distinction, along with Husserl's separable/inseparable part distinction, determines the natures of and distinction between a *genuine whole* and an *aggregate*, and between *holistic unity* and *functional unity*.

Consider first a distinction between a genuine whole and an aggregate *taken as a whole*. According to Husserl, it is in the essence of an inseparable part that it is united (by internal relations) with its correlated whole. Husserl refers to these wholes as genuine wholes.

*Genuine Whole:*  $W$  is a genuine whole iff (i)  $W$  is a whole, (ii)  $W$  has only inseparable parts, and (iii)  $W$  is unified intrinsically by, and only by, the nature of  $W$ 's inseparable parts.

The paradigm case of a Genuine Whole is an Aristotelian substance. And throughout history, the fundamental axiom for such substance is that no substance has other substances (separable parts) as constituents. The notion of a Genuine Whole supports this axiom and shows that it does not entail that substances have no constituents. The need not be bare particulars to satisfy the axiom.

The notion of a Genuine Whole—especially condition (ii) is not true of wholes (understood in a very weak sense) with at least one separable part. Husserl calls such wholes aggregates (what I have been calling MAs).

*Aggregate:* an object  $O$  is an aggregate iff (i)  $O$  has at least two separable parts, and (ii) the separable parts of  $O$  stand only in external relations (more precisely, external relation-instances) between or among each other and  $O$ .

Consequently, necessarily, there is no  $O$  such that  $O$  is both a genuine whole and an aggregate. If  $O$  has both separable and inseparable parts,  $O$  cannot be a genuine whole, as genuine wholes do not have separable parts. Even if the inseparable parts of  $O$  could be unified intrinsically, it would not follow that  $O$  as a whole is intrinsically unified, as  $O$  also has separable parts that stand only in external relations to each other. Consequently, for all  $O$ , if  $O$  is a whole, then  $O$  will be either a genuine

whole or an aggregate.<sup>5</sup> The logical space is exhausted by these options. According to Husserl, for any genuine whole  $W$ ,  $W$  is unified by internal relations-instances between the inseparable parts of  $W$  and  $W$  itself.

It is the relation-instances among the essences of various parts that determine the kind of unity various actual/possible wholes do or can have. Husserl's analysis of these wholes, along with the constitutive nature of the essences of various parts provide laws of combination among the instances of those essences.

Accordingly, Husserl distinguished compatible and incompatible objects. Two objects are compatible if they can be joined together into a whole. And they are incompatible if they cannot be so joined. Compatibility/incompatibility is determined by the immanent essence of the relevant objects, that is, in virtue of *what kind* of object they are, and not by their individuality *per se*. Also relevant to compatibility/incompatibility is the form (essence, type of combinatorial structure) of the actual or possible whole. If two objects can combine into the unity of a kind of whole, they can do so in part because of the form of unity of the whole. Thus, two objects can be compatible under one form of unity but not another. For example, no physical object can be red and green all over at the same time but can be red and green when these moments are adjacent.

The nature of a genuine whole and an aggregate also determine the kind of unity each has. Genuine wholes possess what Leibniz called "true unity" or what I will call holistic unity. In contrast, aggregates may possess a much weaker functional unity. I understand this distinction as follows.

*Teleological Holistic Unity:*  $O$  is holistically unified iff (i)  $O$  is a genuine whole, and (ii) the parts of  $O$  work together to accomplish some end as a consequence of the relations among  $O$ 's parts.

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<sup>5</sup> Here is a possible concern. Supposing mereological universalism is true, then everything that exist have a fusion. Suppose that numbers are necessary objects. This means that the numbers 1, 2, 3 form a fusion, which exists necessarily, the fusion [1, 2, 3]. This fusion turns out to be a genuine whole. Here is the worry: this counterexample shows that Genuine Whole, as I've stated it, does not capture the concept of a genuine whole, because intuitively fusions are not genuine wholes. This does not strike me as a serious concern for the following reasons. First, it is not clear to us that mereological fusions are genuine wholes. It seems the members of a fusion are separable parts as they can exist and retain their identity outside the fusion. Alternatively, we could understand this counterexample as showing that our intuitions about fusions are mistaken, at least concerning a minimal set of fusions, those with parts that exist necessarily. To accommodate this concern, Genuine Whole can be stated disjunctively:  $x$  is a genuine whole iff (i)  $x$  is a whole, and (ii)  $x$  is either a mereological fusion, where the parts of such a fusion exist necessarily or (i)  $W$  is a whole, (ii)  $W$  has only inseparable parts, and (iii)  $W$  is unified intrinsically by, and only by, the nature of  $W$ 's inseparable parts.

The sort of teleology expressed by Teleological Holistic Unity is immanent teleology, a teleology that is grounded in  $O$  and its parts. Such teleological unity is immanent in  $O$ .

In contrast to Teleological Holistic Unity, one might adopt the following thesis for aggregates.

*Teleological Functional Unity:*  $O$  is teleologically functionally unified = def. (i)  $O$  is an aggregate; (ii) the separable parts of  $O$  work together by way of and only of efficient causality; (iii) diachronically, the efficient causal chains expressed in (ii) may be taken as teleological by an observer even though they exhibit no immanent teleology.

Teleological Functional Unity is expressed in such a way that immanent teleology is absent. Thus, aggregates do not exhibit genuine teleology and most philosophers would employ some version of etiological reduction to supplement their account of the “teleology” characteristic of aggregates. Therefore, one might define functional unity as follows:

*Functional Unity:*  $O$  is functionally unified = def. (i)  $O$  is an aggregate, and (ii) the separable parts of  $O$  work together to cause some effect as a consequence of the external relation-instances between and among  $O$ 's parts.

One way to understand the unity of a Genuine Whole is Husserl's view that necessity “is packed into” dependence and dependence into inseparable parts. For Husserl,  $a$  is dependent, or founded, on  $b$ , just in case, necessarily,  $a$  exists only if  $b$  exists. This is not, however, a brute fact on Husserl's view. As Willard (1994: 141) explains, “the existential dependence (or lack thereof) is derivative from the essence or nature of the contents concerned, from the properties constitutive of what they are.”

These dependency relations are governed by what Husserl calls “laws of essence.” If  $a$  depends on  $b$ , it will be in virtue of the essences of  $a$  and  $b$ . The fact that  $a$  is an inseparable part of  $b$  is grounded in facts about the nature of  $a$  and  $b$ . Consequently, the dependency of the inseparable parts of a whole  $W$  is a result of the internal relations, the laws of essence, among both the inseparable parts of  $W$  as well as among the inseparable parts and  $W$  itself (Husserl 1970: 476–481). The part-whole relation consists in the inherent connections and disconnections between properties (or essences) that constitute both the natures of the wholes and the parts of the whole (Willard 1994: 142). Husserl's view is, therefore, a kind of priority holism or substantial priority thesis. A Genuine Whole,  $W$ , is ontologically prior to  $W$ 's inseparable parts. The inseparable parts of  $W$  receive their identity from how they are internally related to  $W$ .

The holistic unity of an entity is a product of the entity's internal nature; it resides within the entity. The internal relations of an entity do the work of a principle of unity. Conversely, an aggregate possesses only functional unity, a unity

that is not the product of anything within the aggregate itself but of the external relations among its separable parts. Accordingly, the internal structure of a Genuine Whole includes a set of internal relations among its inseparable parts, which provide for the holistic unity of the genuine whole. Similarly, the structure of an aggregate, the set of the aggregate's external relations, determines the functional unity of the aggregate. Therefore, only mereologically simple entities, substances without separable parts, are holistically unified, as true unity is grounded in the kind of dependence or "foundation" that exists uniquely between wholes and their inseparable parts (Husserl 1970: 478).

In closing out this section, one more important distinction needs clarification.

*Endurance*: An object  $x$  endures over time iff (i)  $x$  retains strict, absolute, Leibnizian identity through accidental intrinsic change, (ii)  $x$  is wholly present at each moment at which it exists, and (iii)  $x$  has no fundamental temporal parts.<sup>6</sup>

"Persistence" can be used as a generic claim about an object existing over time, with endurance and perdurance as different ways to spell out persistence. But often, persistence is a weaker claim than endurance in that if an object persists over time, it does not sustain absolute identity.

There are two main versions of persistence in this latter sense with different varieties of each:

- (a) *Perdurance*: an object  $x$  perdures over temporal interval  $T$  just in case (i) there is a series of temporal parts such that all of the series constitute  $T$ , (ii)  $x$  has distinct part-stages (time slices) that exist wholly at each temporal moment constituting  $T$ , (iii) the part-stages all stand to each other in some relevant relation  $R$ , and (iv)  $x$  is identical to the relevant history, namely, to the total of all the part-stages standing in  $R$  to each other.

Objects are space-time worms and exist at different times by having distinct parts at those times.

- (b) The *Series-of-Instantaneous-Entities* view: an object  $x$  persists throughout a time-interval  $T$  constituted by temporal instances  $t_i - t_n$  iff (i) at each temporal instant  $t$  that constitutes  $T$ , there exists one and only one non-repeatable  $x$ -like entity, (ii) the  $x$ -like entities form a unified series of instantaneous  $x$ -like entities  $S$  by standing in relation  $R$  to each other, and  $x$  is constituted by  $S$ .

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<sup>6</sup> Some would reject (ii) and allow for either non-fundamental temporal instances or two fundamental entities—temporal instances and enduring wholes. See Koons and Pickavance (2017: 539).

Here, an object persists in virtue of there being the relevant series of whole entities at each relevant temporal instant. According to some scholars, this is the view of Theravada Buddhism according to which the “self” is identical to a series of instantaneous I’s. More plausibly, this view is eliminativist with respect to the self.

### 3 MAs are Mereological Inconstant Objects Subject to ME

#### 3.1 An Ontological Assay of MAs

Why should we believe ordinary material objects construed as MAs are mereologically inconstant? The short answer is: *Given part alteration, and a precise account of MAs, that account does not have the ontological resources to ground or account for the type of unity needed for a MA to be a continuant.* It may even be that this account does not have the ontological resources to avoid eliminativism regarding MAs, but that issue must be left for another time.

A proper metaphysical analysis of MAs provides no entity adequate to ground metaphysically their literal identity through part alteration. To illustrate, suppose we have some MA  $W$ , say a car, in the actual world  $w$  at some time  $t$ , and let “the  $ps$ ” refer distributively to all and only the atomic simples (assuming such) that make up  $W$ . Given that the  $ps$  just are a specific list of simples taken distributively regardless of structure, a different list of simples, the  $qs$ , would not be identical to the  $ps$ , even if both lists shared all but one part in common. This same insight would be true if we took “the  $ps$ ” and “the  $qs$ ” collectively as referring to some sort of mereological sum. In either case, no entity “over and above” the parts exists to ground sameness through part alteration. Nor can it rationally be asserted that such a plurality-influx retains strict identity as a brute fact. The identity of such a many at a given time is derivative, not fundamental, and resides in the identity of its parts (and relation-instances between and among them).

Taking  $W$  to be a real whole, it has different persistence conditions from—and, thus, is not identical to—the  $ps$ .  $W$  could be destroyed and the  $ps$  (taken in either sense) could exist. Now, let  $S$  stand for all and only the various relations standing between and among the  $ps$ .  $S$  is  $W$ ’s *type* of structure. Is  $W$  identical to  $S$  and the  $ps$  at time  $t$ ? No.  $W$  has its own structure, say in comparison to some other whole  $W^*$  exactly similar in structure to  $W$ .  $W$  and  $W^*$  have their own token structures of the same type.

Given that  $S$  is a universal, it is not sufficient for individuating  $W$ ’s specific structure. For that we need SI,  $W$ ’s structure-instance,  $W$ ’s token of  $S$ , and SI will consist of all and only the specific relation-instances that are instantiated between

and among the *ps*. Let “the *rs*” stand for all and only the relevant relation-instances that compose *SI* at *t*. I think it is now obvious that *SI* is an MA composed of the *rs*. If the *rs* undergo a change of relation-instances, it is no longer the same (ordered) collection of relation-instances. Given that *SI* just is an MA or, perhaps, a specific ordering of the *rs*, if the *rs* undergo a change of relation-instances, *SI* ceases to exist; a different structure (perhaps exactly similar to *SI*) obtains, since no entity serves as a ground for *SI*’s sameness through part replacement. If *W* is the *ps* plus *SI*, it follows that *W* is subject to mereological-essentialist constraints. Let the *qs* stand for all and only the atomic simples that compose *W*\* at time *t*’ later than *t*. And let the *s*’s stand for all and only the relevant relation-instances that compose *W*\*’s structure instance at *t*’. It seems obvious *W* and *W*\* are not identical because there is no entity to serve as the ground for identity.

It will not do to assert as a brute fact that the wholes *W* and *W*\* just are the entities that stand in the identity relation, and that is all one needs to say about the matter. Not all alleged brute facts are created equal. In regards to *W* and *W*\* construed as MAs, recall that the latter are exhaustively composed of separable parts and external relation-instances, and both are in flux. Moreover, MAs are wholes that are ontologically subsequent to and dependent on their separable parts and external relation-instances for their existence. Thus, when MAs are in focus, given this ontological dependency, even if MAs are construed as real wholes, their status as derivative and ontologically dependent entities render them inadequate candidates to serve as the ground for endurance as a brute fact.

It is interesting to note that several of the late Medieval Aristotelians noted that a shift from classic substances with substantial forms and prime matter to substances depicted as Democritian atoms resulted in several troubling results: a loss of grounding for the synchronic unity of macro-objects, especially organisms, a loss of teleology and, more important for present concerns, an inability to distinguish metaphysically genuine generation/corruption and mere alteration. This inability meant that the former collapsed into mere alteration with the result that genuine accidental or substantial change is replaced by mere instantaneous succession. Everything is alteration. The clear result is that macro-objects are all MAs construed as mereological inconstant objects (Pasnau 2011: 552–557).

Someone might object that we have deeply engrossed commonsense intuitions according to which the ordinary aggregates of everyday life are continuants even in light of part alteration. However, the source of error for these intuitions is easy to spot: They abandon the Scientific Image and are falsely based on the Manifest Image. And as David Barnett notes, from the latter perspective, we see aggregates as simple blobs and are misled into thinking of them as enduring continuants (Barnett 2010: 161–74, especially 170–71).

### 3.2 Objection 1: As a Primitive Brute Fact the MA as a Whole Grounds Endurance

In my view, granting that composition is not identity, the best objection to my argument is one according to which it is simply the composite itself – the MA as a wholly physical object – that grounds identity through the envisioned part replacement. There is nothing mysterious about this and, accordingly, there is no need to search for some additional ground for identity here.

I briefly responded to this kind of objection above, but I want to proffer additional considerations here. Limiting our focus to MAs and their inseparable parts, the dependence/grounding of the former in the latter is of two sorts, essentially<sub>1</sub> grounded and rigid existentially grounded (Inman 2018: 62–74).

*Essentially<sub>1</sub> Grounded:* (IG)  $x$  is essentially<sub>1</sub> grounded in  $y$  = def. there is a two-place predicate ' $F$ ' such that it is part of the identity of  $x$  that  $x$  is related by  $F$  to  $y$ .

*Rigid Existentially Grounded:* (RG)  $x$  is rigidly grounded in  $y$  = def.  $(Ex \rightarrow Ey)$ .

IG goes beyond existence grounding by specifying what is necessary for  $x$  to exist as the kind of thing it is. RG states that the existence of  $x$  depends on a specific entity ( $y$ ). Applied to MAs,  $x$  is the composite (e.g., the wholly physical body),  $y$  is all and only  $x$ 's separable parts, and  $F$  is a predicate that expresses the part-whole relation. According to IG, if the  $y$ s add or lose a separable part, then  $x$  no longer stands in the part-whole relation to the  $y$ s. Call the new collection of all and only  $x$ s separable parts the  $z$ s. IG shows us why  $x$  loses its identity when the  $y$ s are replaced with the  $z$ s. Consequently, the composite cannot ground identity through part replacement since in such replacement the composite itself does not endure.

While I am setting aside considerations of external relation types and instances, it is worth briefly mentioning that with the replacement of the  $y$ s with the  $z$ s,  $x$  actually stands in a different instance of the part-whole relation to the  $z$ s than it did to the  $y$ s. This is another reason why the composite does not endure and cannot ground the sought-after entity that resolves the difficulty I am raising.

RG straightforwardly entails the same conclusion. If it is necessarily the case that the existence of  $x$  entails the existence of the  $y$ s, then when the  $y$ s are replaced with the  $z$ s,  $x$  no longer exists. Remember, an MA is a complex whole that is existentially dependent on its separable parts. Those parts are independent of the MA of which they are parts for their identity and existence. For example, the parts of a car are independent in this sense. When they are assembled such that they stand in the relevantly ordered set of relation-instances, the car exists as a complex entity dependent on those parts as IG and RG specify.

It would be difficult to reject IG and RG as expressions of the way an MA relates to its separable parts, especially in light of the centrality of role played by

the Standard Mereological Hierarchy with Priority Microphysicalism in analyzing individuals above the bottom level. If one does reject these principles, then we are owed a better analysis of MAs. As things stand, in light of IG and RG, it seems that the mere assertion that the complex whole just is the enduring continuant through part replacement is not adequate. It will not do for someone to respond that identity is primitive, and no such ground is needed. But surely, when it comes to complex objects, we are owed at least some sort of account of how such an identity could be brute. Not all brute primitives are created equal. I can see how a constituent-less bare particular's self-identity could be brute, but complex objects are another matter altogether.

### 3.3 Objection 2: Immanent Causation to the Rescue?

The major attempt to sustain MAs are enduring continuants regardless of part or relation-instance alteration. This approach is a version of the causal chain of perdurance given that the various stages of an MA stand in some appropriate relation *R* to each other. The view under consideration adds another condition that, if satisfied, it transforms MAs from perduring entities into enduring continuants, viz., that Immanent Causation (IC) is at work in the chain. And the most rigorous account of IC has been offered by Dean Zimmerman (1998: 433–471). Unfortunately, Zimmerman's account of IC is not particularly relevant to our present discussion, so I set it aside.<sup>7</sup>

An alternative—and more relevant – view of IC is one that was advanced by the late Medieval Aristotelians according to which when a power or faculty acts and the effects of those acts terminate within itself (strong immanence) or within the substance to which it belongs (weak immanence), it is a case of IC. Thus, in discussing organisms, David Oderberg (2018: 211–233) characterizes IC as “causation that originates within an agent and terminates in that agent...” An action directed

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<sup>7</sup> Several features of Zimmerman's account are not of importance for dealing with MAs, dynamic systems or animalist construals of organisms: 1. He seeks an account of mere persistence, not endurance. 2. His focus is on homeomerous *K*-masses involving locutions like “some *K*” or “the *K*” such that every mass of homeomerous stuff-kind is *K* through and through, i.e., every proper part of *K* is a mass of *K*. It may be that “some water”, “some gold” or atomic simples are to be construed as homeomerous masses, but organisms or persons construed as aggregates are not. Moreover, virtually no Mere Substance Dualism takes the person to be composed of soul-stuff. At one time, Richard Swinburne seems to have held to such a view (1997: 153–55), but he subsequently abandoned it (2013: 32–39, 149). 3. He grants that ME is basically true for homeomerous masses, and, thus, they suffer the same problems of diachronic persistence as MAs. 4. He cashes out his view of causation in terms of nomic subsumption of events, very similar to D. M. Armstrong's position. However, I employ a causal powers framework.



entirely outward, that terminates on or in something other than the acting substance, is a case of transient causation (Cheyne 2000: 58–59, 121).<sup>8</sup>

Kevin Corcoran (2006: 72–73, 127–30) appropriates this classical understanding of IC as a solution to the problem of PI, but it applies equally to MAs in general. According to Corcoran, a necessary condition for PI is the literal endurance of the constituting body/animal of a person. This plus some analysis of being a person, e.g., a relational one, is sufficient for PI. On this view, the body/animal is a complex object composed of separable parts and, as such, is an MA. Corcoran claims that the living body remains numerically the same over time despite part alteration just in case the different stages in the body's career stand in an IC relation to each other in the right way. IC grounds strict identity through an MA's temporal stages even though part alteration occurs. If Corcoran's account is correct, it provides a significant defeater for my argument in the previous section.

Does this account work? For three reasons, I think not. First, this IC account is not necessary for PI. Consider what is surely a possible world  $w$ , an exact duplicate of the actual world, except for one feature: In  $w$ , divine occasionalism is the only causality that occurs. Specifically, substances do not exhibit either immanent or transient causation. Still, substances, e.g., human persons, are genuine enduring continuants in  $w$  through various kinds of accidental change.

Second, the IC account is circular and presupposes as fundamental the very thing that is supposed to be derivatively grounded by IC. For a causal action to count as immanent, the action must originate and terminate within the same substance. So, IC is grounded in the more fundamental sameness of substance. Thus, IC cannot serve as the ground for the very thing it presupposes in the first place to count as IC.

Finally, the account conflates two questions: (1) What causes  $P_1$  at  $t_1$  to exist at  $t_2$ ? (2) What accounts for  $P_1$  at  $t_1$  being identical to  $P_2$  at  $t_2$ ? IC might—might—be a good answer to (1), but it does not follow that it is a good answer to (2). Indeed, it fails in this regard.<sup>9</sup>

To summarize, I have attempted to show that MAs are subject to ME constraints. To accomplish this goal, I presented The Mereological Argument and identified the role that ME plays in it, clarified certain background issues, provided a primer on Husserlian mereology, presented an argument for the claim that ME constraints apply to MAs, and assessed two main defeaters for my claim. The reader may not agree with my conclusion, but I hope that the dialect presented above will further the discussion in a profitable way.

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<sup>8</sup> Cf. Thomas Aquinas, *ST Iq18a3*, especially *Reply Obj. 1*.

<sup>9</sup> For a list of other arguments against the complex view, see Madell (1981: 1–22).

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