

ARTICLE

LEIBNIZ'S NOTION OF AN AGGREGATE¹

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INTRODUCTION

A common motif in Leibniz's later metaphysical writings is his 'aggregate thesis', the claim that bodies are aggregates of substances.² The thesis is found as early as 1686,³ though exclusively in connection with the bodies of human beings. In 1695 it is⁴ extended to include the bodies of other animate beings and, from around 1699 onward it is acknowledged with regard to all individual bodies.⁵ For this reason, a proper understanding of Leibniz's notion of an aggregate is essential if we are to make sense of his philosophy of body more generally.

In what follows, I focus exclusively on the notion of aggregate that Leibniz employs, providing an account of this category along with a critical discussion of recent interpretations that differ from mine. It is not my aim in the current paper to tackle the aggregate thesis itself. However, the

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² This is not to say that bodies are *exclusively* aggregates of substances for Leibniz. For example in the *Metaphysical Consequences of the Principle of Reason*, he allows that they may be aggregates of other bodies as well (cf. C. 13–14/MP 174–5).

³ Cf. the letter to Arnauld of 28 November/8 December 1686 (GP II, 75/LA 93; GP II, 77/LA 95).

⁴ This is found in the margin of notes that Leibniz composed in 1695 as a response to comments by Michel Angelo Fardella (cf. AG 104 n.148).

⁵ Cf. The letter to Thomas Burnett of 1699; letters to De Volder from 1699–1700 GP II, 193/L 521; GP II, 205–6; GP II, 252/L 530; comments on Wachter's *Elucidarius cabalisticus* c.1707 (AG 274); and *Metaphysical Consequences of the Principle of Reason* c.1712 (C 13/MP 174–5). It is interesting to note that, although Leibniz continues to speak of aggregates in connection with bodies after this time (e.g. in *Anti-barbarus Physicus* c.1712–16 (GP VII, 344/AG 319), and the *Conversation of Philarete and Ariste* – revised version – from 1715 (GP VI, 586/AG 262), there seems to be no *explicit* statement to the effect that bodies are aggregates of *substances*.

account of aggregates that I shall develop here will provide the basis for further illumination of the way which Leibniz understands the relation between bodily reality and the monads, or simple substances, which form the bedrock of Leibniz's ontology. More precisely, in the first section, I provide an inventory of the other terms that are synonymous with, or nearly synonymous with 'aggregate'. In the second section, the notion of an aggregate is analyzed, with particular attention paid to the ontological status of aggregates and the role of perception in their constitution. Here I advance an interpretation that is at odds with a view that is prominent in the current literature, and most readily associated with Donald Rutherford. Finally, in the third section, I turn to the question of whether Leibniz allows for a category of 'mereological aggregate' as well as the category whose account I have developed in previous sections. This view has been defended recently by Glenn Hartz. I argue that Hartz's case is unpersuasive.

THE TERM 'AGGREGATE' AND ITS SYNONYMS

Leibniz's use of the term 'aggregate' can be traced back to his very earliest writings. In the *Specimen quaestionum philosophicarum* of 1664, Leibniz speaks of a 'flock' as an example of a 'whole, or that which is designated by the collective name "aggregate"' (A VI i, 75). Here, as elsewhere, we see the term used in a manner that clearly has a foundation in common sense. An aggregate is, in some sense, a collection of things. However, the words 'aggregate' (which is used both as a noun and a verb), 'aggregation', and other cognates are technical terms for Leibniz. For this reason, we should be wary of following our own intuitions regarding their English language equivalents when we interpret Leibniz's use of these terms.

Although Leibniz never provides a strict definition of the notion, we find accounts of what it is for something to be an aggregate in passages that span almost thirty years of Leibniz's career. But before proceeding to these accounts, it is important to consider one other issue. So far, I have talked exclusively about Leibniz's use of the term 'aggregate' and its cognates. However, in many places we find different, but equivalent, terminology, some of which will prove significant below.

In the *New Essays on Human Understanding*, Leibniz speaks of the term 'aggregate' as equivalent to the scholastic '*ens per aggregationem*' (NE 226).⁶

⁶ It is not clear exactly from where Leibniz is deriving this terminology. However, Suarez holds that an *ens per aggregationem* is a being that has 'accidental unity', or a unity which is imposed from without, but which lacks any order among its constituents (*Metaphysical Disputations* IV, iii, 14). In contrast with Leibniz, Suarez would not count a flock as an aggregate. However, as we shall see below, Leibniz shares the view that aggregates have an extrinsic rather than an intrinsic unity. We shall also see that Leibniz acknowledges that aggregates may have different degrees of unity, although he regards all pluralities that have extrinsic principles of unity as aggregates.

We find this alternate terminology throughout Leibniz's mature writings,⁷ sometimes rendered in the French as 'estre par aggregation'.⁸ Elsewhere Leibniz strays a little further. In the *Conversation of Philarete and Ariste* he observes:

A body is not a true unity; it is only an aggregate, which the Scholastics call *ens per accidens*, a collection like a flock. Its unity comes from our perception. It is a being of reason, or rather of imagination.

(GP VI 586/L 623)

Here the scholastics are said to use the term '*ens per accidens*', rather than '*ens per aggregationem*', to refer to what Leibniz calls an aggregate.⁹ And the circle is closed in a piece from c.1679, where Leibniz speaks of an '*ens per accidens* or [*seu*] *ens per aggregationum*' (A VI iv, 162).¹⁰ This is not to say that Leibniz regarded the terms '*ens per accidens*' and '*ens per aggregationem*' as strict synonyms. The former also includes entities denominated by words such as 'doctor' and 'king', which are accidental ways of being a human being,¹¹ and clearly do not satisfy the account of aggregate that I will set out below. However, in many instances, it is clear from the context that the two terms are being used equivalently.

Finally, there are occasions on which Leibniz invokes less technical terms that appear to be synonymous with 'aggregate'. In a letter to Sophie of 1705, he speaks of 'a mass of matter' as 'an aggregate [*aggregatum*], a mass [*amas*], a multitude of [*multitude de*] an infinite number of true substances' (GP VII, 564), suggesting that 'multitude' and 'mass' are simply different words for 'aggregate'. And in the first two sections of the *Principles of Nature and Grace* and the *Monadology* there is evidence that this equivalence extends to the terms 'composite [*composé*]' and 'collection [*assemblage*]'.¹²

LEIBNIZ'S NOTION OF AGGREGATE

Perhaps the most explicit account of the term 'aggregate' appears in a series of notes, probably dating from around 1689–90:

[F]or an aggregate it is sufficient that many beings, distinct from it, are understood to agree in a similar way with respect to it; namely if *A*, *B*, *C* are considered in the same way, and by that [consideration] *L* is understood to be

⁷ For example, see A VI iv, 162 (ca.1679); A VI iv, 1466 (1683); GP IV, 511/AG 162 (1698); GP II, 250–2/L 529–31 (1703); GP II 276/AG 182 (1705); GP II 304 (1706).

⁸ For example, GP II 75/LA 93; GP II 96–7/LA 120–1; NE 146.

⁹ Also see A VI iv, 1506; GP II, 516/AG 203; GP II, 518/AG 204; GP II 520/AG 205.

¹⁰ Also see A VI iv, 576.

¹¹ Cf. A VI iv, 402.

¹² Cf. GP VI, 598/AG 207; GP VI, 607/AG 213.

established, *A*, *B*, *C* will be the things aggregated and *L* the whole made by the aggregation.

(A VI iv, 998)

Here Leibniz tells us that an aggregate is a whole that is made when a number of things are considered as having some common aspect. The same account is repeated, in a set of definitions dating from the early 1680s:

That which is one *per se* is one from the nature of the thing [*a parte rei*]. That which is one *per accidens* arises when many entities are conceived in the manner of one by a single act of mind, like a pile of logs.

(A VI iv, 401)¹³

Similar passages occur later in Leibniz's career. Thus, in a letter to De Volder of November 19, 1703 we find:

[A]n aggregate is nothing other than all those things from which it results taken at the same time, which really have their unity only from a mind, on account of those things which they have in common, like a flock of sheep.

(GP II, 256)

In this last passage Leibniz offers a concrete example. A flock of sheep is an aggregate because it is a plurality of distinct animals that has been unified by a mind on the basis of common features. We are never told exactly which features Leibniz has in mind here. Moreover, since the term 'flock' is vague, it could plausibly be predicated of distinct aggregates which were aggregated on the basis of different features. Although we usually think there is a flock when many sheep share the simple feature of relative spatial proximity, we can also imagine flocks individuated by more complex principles of aggregation involving things such as ownership. But, whatever the grounds, it is important to notice that in both these cases, Leibniz's account makes the existence of an aggregate dependent on the activity of an aggregating mind. The sheep are a flock *only because* someone has perceived them as standing in some relation to one another, and the existence of the sheep alone is not sufficient for the existence of the flock.¹⁴

So far I have remained neutral about the kind of representation of the constituents that may provide the basis for the existence of an aggregate. This is with good reason, since Leibniz is never explicit on the issue. In a passage cited above, he speaks of the constituents of aggregates as being 'understood to agree in a certain respect' (A VI iv, 998). But nothing is said

¹³ Although Leibniz couches the definition in terms of his distinction between things which are 'one *per se*' and 'one *per accidens*', we have already seen that these two terms are sometimes used interchangeably.

¹⁴ Also see A VI iv, 401; A VI iv, 1506; GP II 97/LA 121; GP II, 101/LA 126; GP II, 184/519; GP II, 517; NE 146; NE 226.

about the question of whether the perception of such agreement must be grounded in sensory or intellectual representations of the things aggregated.

Among Leibniz's favorite examples of aggregates are a flock of sheep and an army,¹⁵ which may seem to suggest that aggregation always involves the senses. Furthermore, in the letter of 30 April 1687, Leibniz observes that, were the Grand-Duke's diamond and the Grand-Mogul's diamond brought close together, they would make an aggregate that would be 'an entity of the imagination' (GP II, 97/LA 121). Perhaps on the basis of passages such as these, Glenn Hartz has suggested that aggregates exist just in case there is a representational state that 'includes an extended appearance', which is considered to be a 'unified colored, continuous thing' (1992, 524).¹⁶

However, Leibniz is also happy to speak of the same aggregate as existing where the Duke's and the Mogul's diamonds are a long distance apart. Here he refers to the combination as an 'entity of reason' (ibid.), and elsewhere he talks of aggregates that are made of 'times', and from all the Roman Emperors.¹⁷ Thus, Leibniz appears not to limit the way in which minds are acquainted with the elements from which they form an aggregate. Aggregates must be such that their constituents are the contents of singular thoughts, but Leibniz appears liberal in his conception of the kinds of mental acts that may provide the basis for such thoughts.

The Ontological Status of Aggregates

At present I am ignoring the differences that arise from consideration of the 'mereological' notion of aggregates that I shall discuss below. Given this, what I have said so far will probably be acceptable to most commentators who have written on Leibniz's notion of an aggregate. However, I will now consider the ontological status of aggregates, and what I have to say from hereon will be more contentious.

An important passage that speaks to this issue can be found in the *New Essays*. Leibniz responds to Locke's introduction of the category of '*collective Ideas of several Substances*' (*Essay* II xii, 6), such as the idea of an army of men or a flock of sheep, as follows:

The unity of the idea of an aggregate is a very genuine one; but fundamentally we have to admit that this unity of collections is merely a respect or a relation, whose foundation lies in what is the case within each of the individual substances taken alone. So the only perfect unity that these 'entities by aggregation'

¹⁵ Cf. A VI iv, 906; GP II, 183/L 519; GP II, 186; GP II, 205; GP II, 250/L 529; GP II, 256; GP II, 271/L 537.

¹⁶ This is an aspect of what Hartz calls Leibniz's 'perceptual account of aggregates' (1992, 524). As we shall see below, Hartz holds that Leibniz usually intends the term 'aggregate' to signify a different category of entities, 'mereological aggregates'.

¹⁷ Cf. A VI iv, 162; and A V iv, 627.

have is a mental one, and consequently their very being is also in a way mental, or phenomenal, like that of the rainbow.

(NE 146)

Leibniz notes that, while our *ideas* of aggregates have a unity that is ‘very genuine’, the aggregates or collections themselves are unified by nothing more than a relation grounded in ‘what is the case within’ the things that are aggregated. From here he concludes that the only true or ‘perfect’ unity that aggregates possess is the unity found in our ideas of them, and that their being is mind-dependent as well.

Leibniz does not identify aggregates with the ideas that we have of them. Nonetheless, the ideas of aggregates are essential constituents of them and their unity may be identified with the unity of these ideas. We can see that it follows from here that aggregates have a mental or ‘phenomenal’ being, provided that we recognize that Leibniz is making two further assumptions. The first is a thesis regarding the ontological status of relations. Relations are not features of the real world for Leibniz. They exist in the minds of beings that apprehend similarities between intrinsic features of individual things. If there were no perceivers there would be no relations, although the grounds for such relations could still be present.¹⁸ Since the unity of aggregates is to be identified with a relation – the complex relation in which all its constituents stand – the unity of aggregates will exist only in minds.

The second thesis is expressed clearly in a letter to Des Bosses from 11 March 1706: ‘Being and unity are convertible, and when a being is brought about through aggregation it is also one in this way, even if this being and unity is semi-mental [*semimentalis*]’ (GP II, 304).¹⁹ We can see from this passage that Leibniz holds that unity and being are convertible, or necessarily co-extensive, and that this applies to the being of aggregates. This claim will take on an added importance later, when we come to consider the possibility that Leibniz was committed to the existence of ‘mereological aggregates’. But for now its significance lies in the fact that it is conjoined with the previous claim that the unity of aggregates is mind-dependent. For from these two assumptions, Leibniz infers that the being of aggregates is mind-dependent as well.²⁰

We must be careful not to draw too strong a conclusion at this point. For Leibniz does not claim, as Robert Adams has suggested, that ‘aggregates have their unity, and therefore their being, *only* in the mind’ (1994, 246 – italics added). Instead he says that their being is ‘in a way mental’ (NE 146). It seems that Leibniz regards the being of aggregates as dependent on the

¹⁸ For example, see A VI iv, 28; GP II 517; LH IV 7C bl./Mates, 225; NE 227; NE 265. For the most detailed treatment of Leibniz’s views on relations see Mungai (1992). Mungai considers the ontological status of relations as *entia rationalis* in Chs. I and VII.

¹⁹ Also see GP II, 97/LA 121; GP VI, 516; and NE 211.

²⁰ Cf. McCrae (1976, 135–6).

being of the things that are aggregated. This point is made more explicitly in a letter to Arnauld of 30 April 1687, where Leibniz observes:

What constitutes the essence of a being through aggregation is only a state of being of its constituent beings; for example what constitutes the essence of an army is only a state of being of the constituent men. This state of being therefore presupposes a substance whose essence is not a state of being of another substance.

(GP II, 96–96/LA 121)

As we have seen, Leibniz thinks that an aggregate, such as a flock of sheep, exists *only* if a mind exists and apprehends the relation that constitutes the essence of that aggregate. However, this is not all that is required. For there to be such an essence, there must be things standing in those relations. Thus, the being of an aggregate also depends on the being of the things from which it is aggregated. Leibniz respects the common sense intuition that a herd of actual sheep will partake in reality in a way that the idea of the cast of characters in Hamlet never could. For the being of an aggregate will always depend in part on the being of those things from which it is aggregated.²¹

Although this has no direct bearing on the subsequent arguments that I shall make, I think it is worth pausing to note a number of consequences of the account of aggregates that I have set out above. The fact that aggregates depend for their being both on the perception of relations and on the things related has important ramifications for the conditions under which aggregates may exist. As Leibniz notes explicitly in a piece from c.1689–90, an aggregate does not remain the same if it loses any of its parts.²² Thus, if a flock of sheep is a Leibnizian aggregate of sheep, it will be unable to survive the death, of just one of them. So here Leibniz's terminology diverges a little from common usage. For, in contrast, Farmer Giles might plausibly be said to have a flock which was half the size it was last year.

In addition, it is compatible with Leibniz's account of aggregates that the same group of individuals constitute more than one aggregate at the same time, and continue to constitute one of those aggregates, whilst ceasing to constitute the other. The sheep in the pasture might be aggregated as Farmer Giles's flock and at the same time aggregated as the five youngest sheep in Swaledale. Over time, the sheep might change in such a way that they ceased to be related in the ways necessary for being the five youngest animals and yet continue to be aggregated as a flock.

Finally, it should be clear that Leibnizian aggregates can come into existence remarkably easily. All that is required is that some mind apprehends a set of relations between a number of things with which it is acquainted. In particular, Leibniz seems to place no inter-subjective constraints on the

²¹ Cf. Rutherford (1990a, 19; 1990b, 531; 1994, 71; 1995a, 222; 1995b, 149) and Hoffman (1996, 118).

²² Cf. A VI iv, 1001. Also see Sleight (1990, 124).

formation of aggregates. If I were to recognize the spatial proximity between my desk and cat they could form an aggregate. It is true that the existence of this aggregate would be unstable – the cat’s walking into the next room might be sufficient for its destruction – and probably of little or no interest to anyone else. But, as far as I can see, it would be a Leibnizian aggregate nonetheless. Aggregates are very cheap.

Aggregates and Perception

As we have seen, there is an intimate connection between the unity and being of aggregates and the relations that obtain between their constituents. Indeed, in the passage from the *New Essays* above,²³ Leibniz appears to equate the unity of aggregates with a certain complex relation in which all of its constituents stand.

Such considerations have led Donald Rutherford to claim that, for Leibniz, ‘aggregates . . . have a foundation in certain individuals, which together determine the existence of a distinct aggregate being in so far as they are apprehended as standing in certain relations to one another’ (1994, 71).²⁴ All that is required for an aggregate to come into existence, on Rutherford’s interpretation, is that some plurality of individuals is understood to be related in certain ways.²⁵

But although there may be *prima facie* evidence for this view, it is hard to see how it can be made consistent with other texts that speak to the issue. Consider the following passage from the letter to Arnauld of 28 November 1686:

There is as much difference between a substance and such an entity [i.e. an aggregate] as there is between a man and a community, such as a people, army, society, or college, which are moral entities, where something imaginary exists, dependent upon the invention of our minds.

(GP II, 76/LA 94)

Leibniz suggests that aggregates are imaginary and depend on ‘the invention of our minds [*la fiction de nostre esprit*]’.²⁶ This contrasts with what Leibniz says about relations in notes on the philosophy of Aloys Temmick.

²³ Cf. NE 146.

²⁴ Also see Rutherford (1990a, 18–19; 1990b 532; 1995a, 221–2; 1995b, 149).

²⁵ Given Leibniz’s views on the mind-dependence of relations, this reduces to the claim that an aggregate comes into being wherever a perceiver groups two or more individuals together. However, in what follows, I shall follow the lead of previous commentators and continue to speak of the perception or apprehension of relations as that which is required for the existence of aggregates.

²⁶ Also see the final version of the letter to Arnauld of April 30, 1687, where Leibniz speaks of the aggregates as ‘being made [*soient faits*]’ (RL 69), and the series of definitions from c.1685(?) where he observes that ‘we *make* an aggregate unity from all the Roman Emperors’ (A VI iv, 627 – italics added).

For here we learn that relations come into existence 'without the addition of any free act of will' (VE 5, 1083). If aggregates are nothing more than individuals that are perceived as standing in certain relations, and the perception of relations does not include a free act of will, how can aggregation include 'mental invention'?

The claim that there is more to aggregation than the perception of relations receives further support from the letter to Arnauld of 30 April 1687. Speaking of aggregates, Leibniz observes: '[T]here is sometimes more, sometimes less, basis for assuming many things to be forming a single thing, according to the degree of connection between these things' (GP II, 96/LA 121). Here the fact that many things form an aggregate is said to have a foundation in the connections, or relations, between things. However, the unity is said to be 'assumed [*supposer*]' on the basis of these connections, rather than something that is perceived or understood directly. As Leibniz says a little later, aggregates are things that 'exist by opinion [*esse opinione*]' (GP II, 101/LA 126).

I think that it is hard to make sense of these passages if we understand aggregates to be constituted solely by the perception of relations between them. Leibniz seems to be talking about a process that involves at least two distinct mental acts, or at least two different components in the single act of aggregating.²⁷ First, there is the perception of a number of things as standing in certain relations, and second, an act of 'invention', through which the perceiver comes to treat the relations as the basis for an aggregated entity. The concept of aggregate that appears to be articulated here is one which tracks the common sense intuition that there is more to treating a group of things as a single collection than simply perceiving that they have some basis which allows them to be collected together. I perceive many things lying in front of me on my desk that bear such relations to one another. However there is a difference between those that I regard as collective individuals, such as the pages and cover that make up my copy of the Leibniz-Arnauld Correspondence, and those which are merely distinct entities, such as the first page of the book and my coffee cup.

This reading is also supported in a final passage from the 30 April 1687 letter to Arnauld, where Leibniz concedes that aggregates may possess the 'accidental unity' that constitutes their being to differing degrees.²⁸

I agree that there are degrees of accidental unity, that an ordered society has more unity than a chaotic mob, and that an organic machine has more unity

²⁷ In the current analysis I do not distinguish between the perception of the intrinsic properties of things that ground their relations, and the perception of the things as related. However, as Nicholas Jolley has suggested to me, this might well be regarded as a third component in the complex act of aggregation.

²⁸ Not all accidental unity is of the kind that comprises aggregates. However, the unity of aggregates is a species of accidental unity. As we have already seen, entities like doctor and kings are said to have accidental being (cf. A VI iv, 402) and consequently their unity will be merely accidental as well.

than a society; that is to say it is more appropriate to conceive of them as a single thing, because there are more connections between the constituents.

(GP II, 100/LA 126)

What is important here is the account that Leibniz provides of what it is for accidental unity to come in degrees. For an aggregate to have a higher degree of accidental unity is for it to be 'more appropriate to conceive of [it] as a single thing'. In fact, Leibniz goes a little further and suggests that the greater the number of connections between certain individuals, the more adequate the basis for treating them as one thing. Indeed, they are said to have *more* accidental unity, or more of the kind of unity that constitutes an aggregate.

This kind of qualification does not appear to make sense on Rutherford's reading. If the existence and unity of an aggregate were determined simply by the perception of the relations between its constituents, then a chaotic mob would be *just as much an aggregate* as an ordered society. It would simply be a *less ordered* one. How could the existence of more connections leave the perception of the individuals as an aggregate subject to normative assessment? In short, if the unity of aggregates were grounded the way Rutherford claims, the existence of an aggregate would be an all or nothing matter. Where relations were perceived there would be an aggregate, where no relations were perceived there would not.

In contrast, on the reading that I have suggested, we *can* make sense of what Leibniz is saying here. For it is possible that 'the mob' and 'the ordered society' fail to be aggregates despite the fact that their constituents are perceived to stand in a complex relation. All that is required is that this relation not be regarded as the basis for considering the related individuals as one thing. Furthermore, there is room to ask which among the related entities that a given individual perceives should be accorded this additional status of aggregate. Indeed, Leibniz gives us at least one of the conditions that might lead a given plurality of related individuals to be more appropriately treated in this way, namely the existence of more connections between them.

The final source of support that I want to offer for my interpretation of Leibniz's notion of aggregate is a little more complex. It turns on the issue of which minds are said to perform the act of aggregation.²⁹ We need to

²⁹ It is also worth noting that in places such as *Monadology*, sections 82–3 (GP VI, 621/AG 82–3. Also see GP VII, 502) Leibniz makes it clear that only rational beings, such as humans and God, can be said to have minds. This raises the question of whether the existence of an aggregate is something that cannot be brought about by through the action of a non-rational animal such as a cat or dog. I do not claim to have a definitive answer to this question. However, Leibniz also speaks of aggregates as produced 'for convenience in reasoning' in the letter to Arnauld of April 30, 1687 (GP II, 101/LA 126), which provides additional evidence that he did not think of aggregates as present to non-rational entities. One might wonder what hinges on all this. But remember that our interest in the notion of aggregates stems largely from the fact that Leibniz holds that bodies are aggregates of substances. On my reading, this entails that a world without minds would contain no bodies, and, since I shall argue below that the divine mind is not productive of aggregates, this further entails that, for Leibniz, bodies exist only because finite minds do.

begin by returning to what Leibniz says about the perception of relations. As we have already seen, relations are not features of the real world for Leibniz, but exist in the minds of beings that apprehend similarities between intrinsic features of individual things. But there is an additional aspect to Leibniz's view. As we learn in the *New Essays*:³⁰ 'The reality of relations is dependent on mind, as is that of truths; but they do not depend on the human mind, as there is a supreme intelligence which determines them from all time' (NE 265).³¹ While it is true that relations are mind-dependent, this does not mean that they depend for their existence on any *created* mind. God's apprehension is sufficient.

If aggregation is constituted by nothing more than the perception of relations, and God's perception is the grounds for all relations, God will apprehend all the relations that constitute all the aggregates. Thus the divine mind will be the ground for the reality of all aggregates. Donald Rutherford embraces just this conclusion, when he notes that, for Leibniz, 'in so far as God apprehends relations among monads, complex beings – *entia per aggregationem* – result' (1994, 75).³² However, *pace* Rutherford, I want to suggest that Leibniz thinks of aggregates as beings that are produced through the mental activity of *finite* minds. Given this, it follows that there must be more to aggregation than the perception of relations.

Prima facie evidence that God is not the aggregator of all aggregates comes from the fact that, at least as far as I am aware, Leibniz never once speaks of God performing an act of aggregation. And when Leibniz does draw attention to the agents in question, they are always *human*. In a passage cited above, from the letter to Arnauld of 30 April 1687, Leibniz suggests that it is 'our minds' that are responsible for aggregates.³³ Earlier in the same letter, the aggregate of the diamonds of the Grand-Duke and the Grand Mogul is said to change from being an entity of 'reason' to one of 'imagination' as they become closer, which makes sense only on the assumption that it is human, or certainly non-divine, perception that provides the basis for their aggregation.³⁴ This sentiment is echoed throughout Leibniz's career. In a passage that we have already seen above, from c.1685, Leibniz observes that '*we* make an aggregate unity from all the Roman Emperors' (A VI iv, 627, italics added). And in a letter to Samuel Masson, from 1716, we learn that 'matter is an aggregate [*amas*] [. . .] whose unity is constructed by *our* conception' (GP VI, 625 AG 227, italics added).³⁵

These passages provide support for the claim that it is human minds that

³⁰ For example, see A VI iv, 28; GP II 517; LH IV 7C bl./Mates, 225; NE 227; NE 265. For the most detailed treatment of Leibniz's views on relations see Mungai (1992). Mungai considers the ontological status of relations as *entia rationalis* in Chs. I and VII.

³¹ Cf. VE 5, 1083; NE 227; GP II, 438.

³² Cf. Rutherford (1994, 75–6; 1995a 223; 1995b, 152). Robert McRae (1976, 135–6) also suggests that the unity of aggregates consists simply in the apprehension of relations between the things aggregated.

³³ Cf. GP II, 101/LA 126.

³⁴ Cf. GP II 96/LA 121.

³⁵ Also see NE 226; GP VI 586/L 623.

give rise to at least some aggregates. However, we should not rush to the conclusion that this overturns Rutherford's reading. For, although Rutherford gives the role of aggregating mind to God, it is consistent with what we have seen that aggregates be determined by the divine mind *as well* as human minds in certain situations. It is commonplace that perceptual relations allow for many perceivers. So, if aggregation is a species of perception, there seems nothing obviously inconsistent in the suggestion that the same aggregate might exist in the mind of God and his creatures.

In fact, I think that the passages already cited are intended to express the claim that our mental activity is involved exclusively in the production of aggregates. But there is one passage that is even harder to square with Rutherford's reading. Again we need to turn to the letter to Arnauld of 30 April 1687. Here Leibniz claims that 'the unity of these entities [i.e. aggregates] exists *only* in *our mind*' (GP II, 97/LA 121, emphasis added). I suggested above that some of Leibniz's claims about aggregates are incompatible with the claim that they are determined by God's perception of relations. But here we find an explicit statement to the effect that the accidental unity of aggregates, in virtue of which they are aggregates, is something that is to be found *only* in the minds of humans.

Finally it is worth remembering that Leibniz speaks of aggregates as beings that are produced 'for convenience in reasoning', and 'that exist by opinion [and] by convention' (GP II, 101/LA 126).³⁶ It is difficult to see how one could sensibly apply these kinds of characterizations to the products of an act of the divine mind. If it makes sense to speak of divine reasoning at all, it is clearly not the kind of cognition that would leave God in need of a conceptual shorthand for its execution. Nor does it make sense to have God engaging in choices that are governed by 'opinion' and 'convention'. These considerations point us even more firmly to the conclusion that Leibniz understands aggregation as an activity of finite minds, rather than the mind of God.

This conclusion about the role of the divine mind in the production of aggregates is of intrinsic interest. However, these considerations were introduced in connection with an earlier question, namely whether there is any more to aggregation than the perception of relations. If my conclusion concerning the role of God is correct, then we also have an answer to this question.

As we have seen, Leibniz believes that God perceives all the relations in the universe. If it is also true that aggregates exist wherever the relations between the things that are aggregated are perceived, it follows, as Rutherford has claimed, that God's mind is the one in which all aggregates are to be found. However, we have seen that Leibniz never speaks of God in this way. And, furthermore, I have presented a number of considerations that speak directly against conceiving of aggregation as something that is performed by the divine mind. It therefore follows that there must be more

³⁶ Cf. GP II, 252/L 531.

to aggregation than the perception of relations, and that the account of aggregates that involves perception and *an additional* mental act of 'treating as a unity' is the more plausible reading.

Leibniz leaves it unclear exactly what it is to treat a system of related things as a unity. However, we have already seen that aggregates are constructed for 'convenience in reasoning' (GP II, 101/LA 126). This suggests that aggregates are formed in order that we might conceptualize the world more easily, that they provide a mental shorthand which allows us to reduce the complexity found in our experiences of reality. On this reading, where we construct an aggregate, we are choosing (albeit sometimes unconsciously) to regard a plurality of related things as *one* thing that will be quantified over when we reason about the world.

Here we find something that is analogous to the situation that Leibniz observes in the choice that should be made between the Copernican and Ptolemaic accounts of planetary motion. Leibniz does not think that the truth of the matter requires that we adopt either theory when considering astronomical phenomena. However, he believes that the Copernican theory should be accepted, and should provide the basis for our thinking, since it is the more intelligible.³⁷ Presumably, intelligibility will play an important role in the selection of aggregates. But the more important point is that in both cases, conceptualizing the world involves something more than perception. There is also an appetitive element, which leads to a selection of the best theory or the best collections of related things.³⁸

MEREOLOGICAL AGGREGATES?

At this point my positive account of the notion of an aggregate is complete. However, before closing, it is necessary to consider another account that has been offered recently by Glenn Hartz. Hartz suggests that Leibniz is committed to the existence of 'mereological aggregates', which are accounted for in such a way that 'perceivers are altogether left out of [the] analysis'. (1992, 526).³⁹ Indeed, Hartz goes as far as claiming that 'most often' this is the way in which Leibniz intends the term 'aggregate' (op. cit., 525).⁴⁰

³⁷ Cf. C 591/AG 92.

³⁸ The issue of the basis upon which given sets of relations are treated as unities is clearly an issue of importance for understanding the role that aggregates play in Leibniz theory of body. However, it is an issue that must be treated elsewhere.

³⁹ As noted above, Hartz also recognizes a notion of a 'perceptual aggregate' that is mind-dependent – see Hartz (1992, 523–5). However, as already noted, this does not coincide exactly with the account that I have outlined above.

⁴⁰ Cf. Hartz (1992, 525–7). Hartz's reading may well be implicit in the writings of other commentators such as Broad (1975, 90–3), Jolley (1986, 42–3) and Mates (1986, 204–5). However, given the lack of attention to the notion of aggregate, this is hard to say with any confidence. Adams (1994, 245) claims that aggregates are 'close ontological kin to sets', which may seem to imply that they have a mind-independent principle of aggregation. However, the subsequent discussion suggests that he intends something closer to my account.

Hartz's mereological aggregates are the product of 'straightforward mereology'. Such an aggregate is 'just the parts taken together' (op. cit., 526). Here, Hartz wishes to understand the notion of 'being taken together' in such a way that there need be nothing which actually 'takes' the things in order for them to form a unified aggregate. They are mereological sums.

An initial worry for Hartz's reading is that it appears to reduce to the one presented by Rutherford if properly understood. In classical mereology, mereological sums are related to their parts by the part-whole relation.⁴¹ So, if Leibniz's aggregates are to be regarded as mereological sums, they will have elements that are perceived as standing in the whole-part relation by God. They cannot be wholes if perceivers are really left out of the analysis altogether.

But even if we suppose that it makes sense to speak of aggregates as 'mind-independent collections over and above their parts' (Hartz 1992, 526), there are reasons for thinking that this cannot be a notion of aggregate that Leibniz sanctions. To begin with, it is notable that there are no definitions or explicit accounts of the notion of aggregates which support the inclusion of the category of mereological aggregate. And, as I shall argue below, the textual evidence that Hartz does provide is less than compelling. But first I want to consider an argument that the notion of a mereological aggregate cannot be accommodated, given one of Leibniz's most basic constraints on ontology.

Here I want to return to something that we have already considered. Leibniz is committed to the convertibility of unity and being. Perhaps the most famous statement of this view is found in the letter to Arnauld of 30 April 1687: 'I hold as axiomatic this basic proposition, which varies only in emphasis: that what is not truly *one* being is not truly one *being* either. It has always been thought that one and being are reciprocal things' (GP II, 97/LA 121).⁴² We can see from this letter that Leibniz regards the unity of true beings, or real things as *axiomatic*. On the other hand, mereological aggregates, are supposed by Hartz to be 'just the parts taken together' where 'those parts aren't sewn up with any kind of 'metaphysical thread' or unified by any metaphysical principle' (1992, 526). It is hard to see how these two claims are compatible. If aggregates are to be *something*, it seems undeniable that they must have a principle of unity of some sort. Indeed, it is plausible to think that it is precisely the provision of such a principle that leads Leibniz to introduce his mind-dependent notion of aggregation in the first place.

At this point, one might wonder whether the principle applies to aggregates. In the letter to Arnauld, Leibniz speaks of things that are 'truly one being'. So perhaps he intends that we restrict the convertibility of unity and being to substances. However, we must remember the letter to Des Bosses,

⁴¹ See Lewis, (1991) for an introduction to classical mereology.

⁴² Cf. GP II, 304; GP VI, 516; NE 211.

in which Leibniz asserts that: 'Being and unity are convertible, and when a being is brought about through aggregation it is also one in this way, even if this being and unity is semi-mental [*semimentalis*]' (GP II, 304). Here the principle is said to apply to aggregates explicitly. Thus, it is hard to see how Leibniz could admit mind-independent beings into his ontology that are the product of mere mereology in the way that Hartz intends.

This argument appears decisive to me. Nevertheless, we cannot ignore the passages that lead Hartz to introduce mereological aggregates into his account of Leibniz's ontology. Hartz regards each of the passages as incompatible with the claim that an aggregate is a mind-dependent collection. I shall suggest that they can be readily understood on a univocal account.

Let us consider Hart's textual evidence. The passages that he cites are of four kinds. I provide one example of each:

- 1 [W]hat constitutes the essence of an entity through aggregation is only a state of being of its constituents; for example, what constitutes the essence of an army is only a state of being of the constituent men (GP II, 96–7/LA 121).
- 2 I admit that the body apart, without the soul, has only a unity of aggregation, but the reality remaining to it comes from its constituent parts which retain their substantial unity because of the living bodies that are included in them without number (GP II, 100/LA 125).⁴³
- 3 [T]here are indivisible unities in things, since otherwise there will be in things no true unity, and no reality not borrowed. (GP II, 267).
- 4 A mass is an aggregate of corporeal substances (GP VII, 501–202).⁴⁴

Before I explain why I do not regard any of them as evidence of Leibniz's commitment to mereological aggregates, I want to try to get clear about what is at stake here. We have already seen numerous passages, some of them explicit accounts, in which Leibniz tells us *exactly* what an aggregate is. Furthermore, in these passages Leibniz's explanation of the notion of an aggregate depends essentially on the activity of perceivers. In contrast, the passages selected by Hartz are supposed to be significant because they employ the term aggregate in ways that are inconsistent with mind-dependence.

In the light of this, I think the burden of proof lies squarely with Hartz. If we are to sacrifice the parsimony brought by a univocal account of aggregates, we need strong evidence to the contrary. Where there is no *need* to assume mereological aggregates, there is no justification for them. And it seems to me that these passages do not show that we need mereological aggregates.

⁴³ Also see GP IV 395–6/AG 252–3; GP II, 261.

⁴⁴ Also see GP III, 260/AG 289.

I want to begin my consideration of the evidence with the final passage, since this seems to be the least persuasive. Hartz simply observes: 'As [Leibniz] says in the final quotation, a sample of mass *is* an aggregate of substances. That is straightforward mereology' (1992, 526). I confess that I am unable to see why. On the reading that I offered before, entities such as masses, bodies or flocks may identified with aggregates of other things just as readily.

Unfortunately Hartz does not discuss passage (1). But he probably regards it as significant in the following way. Leibniz suggests that the essence of an aggregate can be understood solely in terms of the properties of the things from which it is aggregated. This might lead one to conclude that the aggregate itself must have its being independently of an aggregating mind as well, and that Leibniz is suggesting, for example, that a number of men counts as an army simply in virtue of each having the relevant properties.

The mereological reading of (1) is possible. But (1) is ambiguous; it is also compatible with my univocal account of aggregation, as follows. Let us assume that an army is an aggregate of men in my non-mereological sense. How would one answer the question as to what constitutes the essence of the army? One would draw attention to the features of the group of men that make them an army rather than an aggregate of a different kind – say a string quartet. One would not make reference to the fact that the men are aggregated by a perceiver in order to explain what it is that makes the army the *kind* of aggregate that it is. This would be like giving an account of the essence of a substance, such as a human being, by making explicit reference to the features that make it a substance. But, if this is the case, then there is surely no reason to think that the passage in question legitimates the postulation of a distinct kind of aggregate in Leibniz's ontology.

Hartz's interest in passages (2) and (3) comes from the fact that Leibniz speaks of aggregates as having a 'reality' that comes from those things that constitute them. In (2) Leibniz suggests that, considered without its soul the body has 'reality remaining to it from its constituent parts' despite the fact that it has 'only a unity of aggregation' (GP II, 100/LA 125). In (3) he states that aggregates have a reality that is 'borrowed' from these constituents.

The basic challenge to the univocal account comes from the claim that aggregates have a reality that does not depend on the activity of an aggregating mind. For Hartz, this is evidence that Leibniz is sometimes willing to speak of the existence of aggregates even where there is no aggregating mind.⁴⁵ But it is hard to understand why there should be any inconsistency

⁴⁵ In correspondence, Hartz has suggested that another aspect of the first passage may be important for his reading. In (2), Leibniz speaks of 'the body apart, without the soul' as having 'a unity of aggregation' (GP II, 100/LA 125). One obvious way in which this would support the case for mereological aggregates, would be if Leibniz's talk of the body without the soul, were construed in such a way that the soul were regarded as the aggregating mind from which the body derived its being. But Leibniz is clearly talking about the soul that confers substantial unity on the body here, the soul of the human being in question, and there is no suggestion that this soul is the only one that may aggregate the constituents of the body into a single individual.

here. As I have already explained at length above, Leibniz's aggregates have a complex kind of being that is dependent upon the mind that aggregates and those things that are aggregated.

Having being need not be the same thing as having reality. As Leibniz tells Arnauld, aggregates 'always have as much reality or substantiality as there is true unity in what goes into their composition' (GP II 97/LA 122). Where Leibniz speaks of reality in the passages that Hartz cites, he is speaking of the being that is possessed by substances. And in the light of this, we can see how an aggregate might gain reality from things which have mind-independent being, while another part of its being was essentially determined by an aggregating mind.

Again, we can see why from a common-sense perspective. Consider the compact discs that are aggregated as my favorite three from my collection. According to the notion of aggregate that I have outlined, this aggregate can only exist where someone considers the CDs in this way. But surely it is also the case that the aggregate will only have *reality* if the CDs have reality themselves. If it were to turn out that they had been imagined to exist, or that they had been destroyed by my dog since they were last seen, the aggregate would not be real. For the aggregation would have been of imaginary, or no-longer existent things. Furthermore, it seems quite natural to think, in cases where aggregates are aggregates of real things, that they 'borrow reality' from those things – a reality that the aggregates would not have if they were aggregates of things without their own reality.

Finally, it is worth considering the context in which (2) appears. Shortly after this passage Leibniz tells Arnauld that:

[I]t can be said of these composite bodies and similar things what Democritus said very well about them, they exist by opinion, by convention [...] one must not let oneself be deceived and make of them so many substances or truly real entities; that is only for those who stop at appearances, or those who make realities out of all the abstractions of the mind.

(GP II, 101/LA 126–7)

Here Leibniz emphasizes that, to the extent that aggregates themselves have being, it is only as abstractions, which are ideas in the minds of those who conceive of them. This conventional and mental existence is not the true reality that belongs to substances. Thus, the sense of Leibniz's initial remark becomes clear. The only way in which aggregates can be said to partake in reality is when they are aggregates of real things.⁴⁶

⁴⁶ It might be wondered whether the univocal account of aggregation that I have been defending is consistent with Leibniz's willingness, in the *New Essays*, to speak of aggregates as 'substantial entities put together by nature or human artifice' (NE 328). Here it appears that nature rather than the activity of minds is the principle of aggregation in certain circumstances. However, it should be remembered that Leibniz wishes to treat *all* bodies as aggregates. Given this, the passage can be seen as an expression of the fact that aggregates may fall on either side of the traditional boundary between bodies that are naturally produced, and those which are artifacts produced from natural bodies.

Where does this leave the case for mereological aggregates? I suggest it is lost. We have seen that none of the evidence that Hartz produces in their favor is compelling. He claims to present passages that require extending Leibniz's ontology beyond the inclusion of a category of aggregates that are mind-dependent. However, each of the passages is understood at least as easily on a univocal reading. Thus, by considerations of parsimony alone, we have reason to reject Hartz's view. But, furthermore, I have argued that the notion of an entity consisting of a mind-independent plurality is inconsistent with Leibniz's deepest commitments. Such a plurality would not be a *plurality* at all for Leibniz; it would simply be many things.

But for all that I am convinced that Hartz does not make a case for mereological aggregates, there is another passages that he does not highlight that is awkward for my univocal reading. In a letter to Sophie of 31 October 1705, Leibniz observes: 'We can therefore conclude that a mass of matter is not truly a substance, that its unity is only ideal, and that (leaving the understanding aside) it is only an aggregate [*un aggregatum*]' (GP VII, 564). In this passage, matter is presented as something that is an aggregate, and as something that exists where the understanding is 'left aside'. It seems that Leibniz is speaking of an aggregate which exists even where the mind is left out of consideration. Here there is little option than to claim that Leibniz was careless in this letter, using the term 'aggregate' to refer to the things aggregated. And presumably Hartz would say that it is evidence of the existence of aggregates of the mereological kind. But we might also ask how the passage should be interpreted on the mereological reading.

As we have seen, Hartz does not think that mereological aggregates are in competition with aggregates that are mind-dependent. He recognizes the undeniable fact that there is a category of aggregate that is mind-dependent. The term is equivocal, with the mereological reading as the one that should be understood as most often present. However, given this, the passage reads somewhat strangely. Leibniz is claiming that matter has unity if and only if there is a mind involved, but that it is only an aggregate without the mind. Surely matter that was unified by a mind would be an aggregate as well, just not a mereological one. Thus, Leibniz is left making the claim that a mass of matter, which he frequently refers to as an aggregate, is only an aggregate when it is considered independently of the understanding.

The passage is difficult for all parties. I admit that it does not sit well with my account of aggregates. But it does not sit well with Hartz's equivocal reading either. If there were independent grounds for taking the category of mereological aggregates seriously, then there might be reason for concern. However, in the light of all that has been said previously, I feel justified in treating it as an anomaly.

CONCLUSION

In conclusion, then, I have argued that Leibniz's notion of aggregate should be understood as the notion of a mind-dependent collection of things that bear some relation to one another. In contrast with Donald Rutherford, I have claimed that there is more to the mind-dependence of aggregates than the perception of the relations between their constituents, and that the minds in question are finite minds, rather than the mind of God. Furthermore, I have argued that there is no reason to follow Glenn Hartz and introduce an additional category of mereological aggregates into Leibniz's ontology. A univocal interpretation of the kind that I offer is more plausible.

It is not my aim to go any further in the present paper. However, I want to close by returning to the reason for my initial interest in aggregates. As I noted at the beginning, Leibniz claims throughout his mature writings that bodies are aggregates of substances. If the notion of an aggregate is to be understood the way that I have suggested, it will have obvious ramifications for the way in which we understand this 'aggregate thesis'. The existence of bodies, like other aggregates, will be dependent upon finite minds. This raises important questions as to just which aggregates individual bodies will be identified with. Presumably not every aggregate of substances will count. In particular, there will need to be some explanation of how it is possible for the very same body to be perceived by different aggregating minds. The answers to these questions cannot be given here. However, it seems clear that whatever the precise details they will involve a view of material reality that accords a significant role to the perceptions and interests of human beings.

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ABBREVIATIONS OF PRIMARY SOURCES

- A G. W. Leibniz. *Sämtliche Schriften und Briefe*. Berlin: Akademie: Verlag (1923–) Cited by series, volume and page.
- AG G. W. Leibniz. *Philosophical Essays*. Ed. and trans. by R. Ariew and D. Garber. Indianapolis: Hackett (1989).
- C *Opuscules et fragments inédits de Leibniz*. Ed. by L. Couturat. Paris: Alcan (1903).
- FB *Réfutation Inédite de Spinoza*. Ed. by L. A. Foucher de Careil. Paris (1854).
- FdeC *Nouvelles Lettres et opuscules inédits de Leibniz*. Ed. by L. A. Foucher de Careil. Paris (1857).
- GP *Die philosophischen Schriften von G. W. Leibniz*, 7 vols. Ed. by C. I. Gerhardt. Berlin (1875–90). Cited by volume and page.
- GM G. W. Leibniz. *Mathematische Schriften*, 7 vols. Ed. by C. I. Gerhardt. Berlin (1849–55). Cited by volume and page.
- L G. W. Leibniz. *Philosophical Papers and Letters*, 2nd. edn. Trans. and ed. by L. E. Loemker. Dordrecht: Reidel (1969).
- LA *The Leibniz-Arnauld Correspondence*. Ed. and trans. by H. T. Mason, with

- an introduction by G. H. R. Parkinson. Manchester: Manchester University Press (1967).
- LH Die Leibniz-Handschriften der königlichen öffentlichen Bibliothek zu Hannover. Ed. by E. Bodemann. Hannover and Leipzig: Hann'sche Buchhandlung (1895).
- MP G. W. Leibniz. *Philosophical Writings*. Ed. and trans. by M. Morris and G. H. R. Parkinson. London: Dent (1973).
- NE G. W. Leibniz. *New Essays on Human Understanding*, 2nd edn. Ed. and trans. by P. Remnant and J. Bennett. Cambridge: Cambridge University Press, (1996).
- RL *Lettres de Leibniz á Arnauld d'après un manuscrit inédit*. Ed. by G. Rodis-Lewis. Paris: Presses Universitaires de France, (1952).
- VE G. W. Leibniz. *Vorausedition zur Reihe VI – Philosophische Schriften – in der Ausgabe der Akademie der Wissenschaften der DDR*. 10 Fascicles. Münster: Leibniz-Forschungsstelle der Universität Münster (1982–91). Cited by Fascicle and page.

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