Rea on Universalism

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Universalism is the thesis that, for any (material) things at any time, there is something they compose at that time. In McGrath (1998), I argued that, contrary Peter van Inwagen (1990), Universalism is compatible with common sense metaphysical facts such as these: that I am now composed of atoms, that I was ten years ago composed of different atoms, but that the atoms that composed me ten years ago still exist today.[1] However, I insisted that the price of this union is the admission of pluralism about composition, i.e., the thesis that some composition is automatic while some is not.[2] Such pluralism, when conjoined with Universalism and common sense metaphysics, entails the possibility, indeed the actuality, of co-location.

Michael Rea (1999) agrees that Universalism is compatible with common sense metaphysics but denies that the Universalist needs to pay the price of co-location. Rea proposes, instead, that the Universalist accept α

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[1] This paper, like Rea's (1999) and my earlier paper (McGrath (1998)), presupposes an endurantist or three-dimensionalist framework.

[2] Here are relevant definitions:

The xs automatically compose something at t =df the mere existence of the xs at t is necessarily sufficient for there being, at t, a y such that the xs compose y.

The xs automatically compose O at t =df the mere existence of the xs at t is necessarily sufficient for the xs composing O at t.

To say that all composition is automatic is to say that, in general, if the xs compose O at t, they automatically compose O at t.

α   For some xs, what the xs compose depends on how they are arranged. (202)

Rea then reasons as follows. Universalism states that, for any xs, there is something they compose. Universalism is therefore consistent with the conjunction of α and the denial of co-location. Consider me and the atoms that currently compose me. The Universalist may say that, although the atoms that currently compose me automatically compose something at every moment of their joint existence, <u>what</u> they compose can well depend on how they are arranged. If they are arranged person-wise, they compose a person, but if they are widely scattered they compose something else. Rea concludes that Universalists who deny co-location may reject the principle (P1), used in my argument:

(P1)   For any xs, if the xs automatically compose something at t, there is exactly one object they automatically compose at t, their sum.

Rea, in effect, denies that 'automatically composing something' entails 'there being something automatically composed'.[3]

In my article, I called (P1) unexceptionable. I do not believe Rea has shown how reasonably to take exception to it. In this note, I will describe some of the problems that Universalists face by giving up (P1) and pursuing Rea's strategy instead.

One question Rea does not explicitly discuss in his paper is whether the atoms that currently compose me <u>always</u> compose a sum as long as they exist. If they do, and if co-location is impossible, then it follows, given commonsense metaphysics, (i), that I am

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[3] See note 2.

now the sum of my atoms, and (ii), that the current sum of my atoms is distinct from the

sum that those same atoms composed ten years ago, since those atoms didn't compose

me at all ten years ago. So it seems that if co-location is impossible, then if the atoms

that currently compose me always compose a sum, they compose different sums at

different times.

However, Universalists standardly treat sums as the concrete analogues of sets.[4] Just

as we say that there cannot be two sets having exactly the same members at a time or

over time, so we say that there cannot be two sums of exactly the same objects at a time

or over time. What would make two such sets (sums) different?[5]

Why believe in such set-like sums? For all the reasons one believes in the

corresponding sets. What is more, believing in sums may be easier than believing in sets,

since sums are concrete objects. The sum of the xs seems little more than the xs taken

together. Lewis (1991), for example, claims that the sum of all the cats is 'nothing over

and above the cats that compose it'. (1991, 81).[6] Yet even if the cats can't literally be

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[4] Wiggins (1968), Burge (1977), and Lewis (1991), as I read them, so regard sums (aggregates).
[5] Van Inwagen reports that all the Universalists he is aware of treat expressions of the form 'the sum of x and y' as 'unproblematical proper definite descriptions, ones that no more demand the addition of "at t" than does "the set that contains just x and y"'. (1990, 77). Michael Burke (1994) claims that, on the standard conception of aggregates – the conception of them as the concrete analogues of sets – 'an aggregate has the persistence conditions it has in consequence of being an aggregate', and that 'an object that has the persistence conditions it has in consequence of being an aggregate will persist just so long as do all of the objects of which it is the aggregate'. (Passage quoted from Rea (1997, 259.)
[6] Lewis (1991, 85) claims there is a strong analogy between the relation between objects and their sum and the relation of identity. Concerning unrestricted summing or fusing, he writes:

If Possum exists, then automatically something identical to Possum exists; likewise if Possum and Magpie exist then automatically their fusion exists. Just as Possum needn't satisfy any special conditions in order to have something identical to him, so Possum and Magpie needn't satisfy any special conditions in order to have a fusion.

And concerning uniqueness, he writes:

Just as there cannot be two different things both identical to Possum, likewise there cannot be two different fusions of Magpie and Possum. A kind of transitivity applies, with Magpie and Possum together as a plural middle term. If x is they, and they are y, then x is y.

said to <u>be</u> their sum, their joint existence 'constitutes' the existence of their sum, where constitution here implies a mutual supervenience: if S is the sum of the xs, then necessarily, S exists iff the xs exist.

How, then, can we define this notion of a sum? Van Inwagen's definition, standard in extensional mereology, is this: y is a sum of the xs iff the xs are all parts of y and every part of y overlaps at least one of the xs. (1990, 29). Although useful to formal mereology, this definition is not adequate for Universalism as a philosophical theory.[7] The trouble is that, conjoined with commonsense facts, it permits the very same objects to have different sums over time,[8] and if co-location is possible, it permits the very same objects to have more than one sum at a time.

The standard definition of a sum ignores a significant difference between the sets of naïve set theory and their concrete analogues: whereas only sets can have members, sums are not the only entities that can have parts, for ordinary objects can as well. Thus, the open sentence 'the xs are all parts of y and every part of y overlaps at least one of the xs' may be true (with respect to the variable 'y') simultaneously of both an ordinary object and a sum. An adequate explanation of sums must take such facts into account.

I submit that the Universalist does best to leave the notion of a sum undefined and characterize it axiomatically, as the naïve set theorist does for the notion of a set. Here

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[7] Footnote 5 of McGrath (1998) thus contains two mistakes. The first is a misquotation of van Inwagen, substituting 'y is the sum of the xs' for van Inwagen's 'y is a sum of the xs'. The second and more important mistake is not to distinguish the notion characterized by van Inwagen's definition of 'y is a sum of the xs' from the notion that is characterized in what follows.

[8] Thus in discussing his example of building blocks for a model of the Coliseum, Van Inwagen writes,

If the arrangement of the blocks is irrelevant to the question whether they compose anything, why should it be supposed to be relevant to the identity of the thing they compose? (1990, 77).

we follow closely Tyler Burge's (1977) theory of aggregates. We begin by laying down axioms of existence and uniqueness:

Set existence: For any xs, for any time t, at t, there is a set of the xs.

Sum existence: For any xs, for any time t, at t, there is a sum of the xs.

Set uniqueness: For any sets S, S', for any times t and t', if S, at t, is a set of the xs, and S', at t', is a set of the xs, then S= S'.

Sum uniqueness: For any sums S, S', for any times t and t', if S, at t, is a sum of the xs, and S', at t', is a sum of the xs, then S=S'.

A difference between sets and sums emerges in the following uncontroversial axiom (A) relating sums to the part-whole relation:

(A)   If S is a sum of the xs, then S has the xs as parts and every part of S overlaps at least one of the xs.

    Furthermore, 'sum existence' and 'sum uniqueness' seem defensible only on a certain conception of the essence of sums, a conception under which the existence of the xs constitutes the existence of their sum. We may therefore add to our list of axioms 'sum essence':

Set essence: For any xs, if S is the set of the xs, then necessarily,

(i)   S exists iff the xs jointly exist

(ii)   S exists and is the set of the xs iff the xs jointly exist.

Sum essence: For any xs, if S is the sum of the xs, then necessarily,

(i)   S exists iff the xs jointly exist

(ii)   S exists and is the sum of the xs iff the xs jointly exist.

These axioms give us only the beginnings of a theory of set-like sums. I now want to briefly discuss some first steps in constructing a fuller theory of set-like sums on the basis provided thus far. I draw substantially from Burge's (1977) theory of aggregates, though I part company with him on some matters.

To begin with, sums may have two sorts of parts: summation parts and non-summation parts. An entity x is a summation part of a sum S iff, (i) x is not identical with S; (ii) x is such that there are entities, the ys, each of which has no part in common with x, such that the sum of x and the ys is S. Every sum essentially has its summation parts as parts throughout its existence, whereas this is not true of its non-summation parts. For example, the sum of my car and me always and essentially has the two of us as parts, but when my car loses its right side-view mirror, or when my hair is cut, our sum loses a non-summation part.

Given the notion of a summation part, we may define the notion of a summation atom. A summation atom is an entity that lacks summation parts. Using this notion, we finally define the important notion, whose name I take from Burge (1977), of a member-component. An entity x is member-component of a sum S iff, (i) x is a summation atom,

and (ii), x is an ancestor of S under the relation of <u>is a summation part of</u>. (A member-component of S is a part of S, given the transitivity of parthood.) [9] Here is an example. Suppose that a is the sum of b and c, i.e., $a=b+c$, where b and c have no part in common. Suppose further that $c=d+e$, and that e is a summation atom. Then e is a member-component of a, since e is a summation atom that is a summation part of something that is a summation part of a.

With the notion of a member-component of a sum in place, we may follow Burge (1977, 101) and imitate set theory once again by laying down an axiom of extensionality:

Set Extensionality: Set S = Set S' iff S and S' have precisely the same members.

Sum Extensionality: Sum S = Sum S' iff S and S' have precisely the same member-components.

Given 'sum extensionality', where a_1, a_2, and a_3 are summation atoms, the following expressions denote the same sum (here I use '+' indifferently for generalized and for binary summation):

$a_1 + a_2 + a_3$

$(a_1 + a_2) + a_3$

$a_1 + (a_2 + a_3)$

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[9] The notion of a summation atom corresponds to Burge's notion of an individual (1977, 104). However, unlike Burge, I do not define 'summation atom' relative to a theory. Nor do I define a summation atom as something that is a member-component of some sum, as Burge later suggests (1977, 104). That seems particularly unhelpful, as Burge admits, since the intuitive idea of a member-component presupposes the idea of a 'building block' of a sum, or in Burge's terms, it presupposes the idea of an individual. Moreover, although I will argue below that persons are not sums of the atoms that compose them, I will not try to argue for the more ambitious conclusion that persons are <u>summation atoms</u>. I believe, however, that such an argument is likely to be successful. A person is not the sum of a brain, a heart, etc., anymore than a person is a sum of her atoms.

    My definition of <u>member-components</u> of a sum also has the advantage over Burge's that it doesn't treat sums $a+(a+b)$ and $a+b$ as distinct, where a and b are summation atoms. Burge seeks to avoid treating these as distinct by repudiating the former (1977, 103). However, it is difficult to deny that if there are sums, then there are sums of sums. Why shouldn't there be? We may not have occasion to talk about them very much, but they exist.

$(a_1 + a_3) + a_2$

Let me note that, while the notions defined in preceding paragraphs are important in constructing a theory of set-like sums, they will not be crucial to my argument against Rea. That argument, in fact, will rely only on 'sum existence', 'sum uniqueness', and Axiom (A).[10] [11]

Returning, then, to Rea. For the Universalist, the atoms that now compose me must compose something at each moment of their joint existence. So, either my atoms now have a sum or they don't. To say they don't is to abandon 'sum existence'. Thus, suppose that the Universalist says they do now have a sum. If she takes up Rea's strategy, then she must say that this sum is identical to me. (To say otherwise is to permit co-location, given Axiom (A).) However, she must also say that my atoms had a different sum 10 years ago. (If I am their sum now and they didn't compose me 10 years ago, they had a different sum then.) To say that is to abandon 'sum uniqueness'. Rea's strategy is thus unavailable to the Universalist if she uses a notion of sum that satisfies both 'sum existence' and 'sum uniqueness', along with the uncontroversial Axiom (A).

Suppose, however, that the Universalist rejects set-like sums and appeals instead to sums defined in the standard way (as in Van Inwagen's definition). Might she still take up Rea's strategy? Rea's α is formulated in terms of 'some xs' rather than 'all xs', but he is claiming that among the values of this plural quantifier are the atoms that compose me now. So, consider these atoms as they will be far in the future, say in 1000 years, widely

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[10] Ernest Sosa asks why we need both sets of ordinary objects <u>and</u> set-like sums of them. Can't we reduce objects of one of the two kinds to objects of the other? I remain neutral on this large question, while noting that it is a problem with which a Universalist must grapple. See Burge (1977, 106-7) for a discussion of the problems facing reductionism.

[11] Given our axioms, it appears that masses of "bottomless gunk" are not set-like sums. (K-stuff is bottomless gunk if every mass of K has proper parts all of which are masses of K.) Accommodating such masses may require a "non-well-founded" theory of sums.

scattered across the Earth. According to Universalism, they compose something. But what do they compose and in virtue of what do they compose it? They aren't arranged, and so α can't get a grip.[12] I submit that the Universalist can have reason to think that these atoms compose something only if she believes in set-like sums. For consider what she must say. Call the object that my current atoms will compose 1000 years from now O. In virtue of what do these atoms compose O? Not in virtue of anything about their inter-relations or relations to other entities, since they may be as widely scattered as you stipulate them to be.[13] But what sort of object could be composed by other objects regardless of their arrangement? Not a familiar kind of object, such as a person, a heap, a baseball team, a flock of birds, etc. The only sort of object that could be so composed is an entity whose existence is constituted by the existence of the composing objects.[14] But to say this is to commit oneself to set-like sums, and therefore, given commonsense metaphysics, to commit oneself to pluralism about composition and co-location. For if it is the mere existence of the atoms that currently compose me which constitutes the existence of this object O that they compose 1000 years from now, then those atoms compose O whenever they exist, and so they compose O even now, while they also compose me.[15]

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[12] Van Inwagen stresses the irrelevance of arrangement to an object's composing a sum. See my note 7.

[13] Likewise, we may stipulate them to jointly lack arrangement across nearby counterfactual situations.

[14] Peter Simons (1987, p. 113) writes, concerning an objection to extensional mereology made by Rescher:

The objection is in our view perfectly correct. We might put it in this way. Certain individuals exist purely in virtue of a number of other individuals' existing, those which are its parts. These are sums. Then there are individuals which exist only when certain other individuals exist and are related to one another in a certain way. [Emphasis in the original]

[15] Many Universalists do not restrict their summation principles to material objects. If there are abstract objects, universals, and supernatural beings, then there are objects precisely overlapping any number of them taken together. But what arrangement could explain why the number 7, the Empire State Building and the Archangel Gabriel compose the entity they do? None, presumably. These three objects compose something purely by virtue of their identity, and what they compose is a set-like sum.

Thus, I claim that whether Universalists believe in set-like sums or not, they should find Rea's strategy unworkable. If they accept such sums, they cannot take up Rea's strategy, since that strategy leads to the denial of either 'sum existence' or 'sum uniqueness'. If they reject them, they lose their reason to maintain Universalism. Accepting set-like sums naturally leads to the acceptance of the principles (P1) – (P3) of my original paper (McGrath 1998, 118). And these principles, given Universalism and the commonsense metaphysical facts mentioned at the beginning of this paper, lead to pluralism about composition and co-location.[16]

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