

# MINIMIZING MAXIMALITY

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## Abstract

Judgments about the locus of synchronic personal identity are often guided by the intuition that “I” am the thing that thinks, or minimally, that neither my body nor any part of it is a thinker distinct from me. Ted Sider argues in a series of articles that in order to reconcile this intuition with the principle of microphysical supervenience, we must accept ‘being a thinker’ as a maximal property. Michael Burke extends this conclusion to justify animalism’s claim that the human animal, rather than the brain, is the thinker (and thus the seat of personal identity).

I argue first that a scientific account of parthood, rather than property maximality, is the proper way to reconcile microphysical supervenience with the thinker thesis. Second, even if one accepts maximality, it cannot be applied to determine whether the brain qualifies as a thinker, rather than just the locus of an animal’s thought.

Whatever else I may be, I am a thing that thinks. Presumably, I am the only thinker that thinks all and only my thoughts. The brain seems to be the locus of thought; am I therefore a brain? Perhaps I am the whole human animal, possessing a thinking brain as a part. But on what grounds could the whole animal be considered a thinker to the exclusion of the brain? We can complicate the matter even further: if the whole human animal counts as a thinker, it is in virtue of having a thinking brain as a part. Whether or not the animal has a left big toe is surely irrelevant to its being a thinker, but then why consider the whole animal, rather than a slightly abbreviated (sans left big toe) animal, the genuine thinker? Only one of these candidate entities can be the genuine thinker, since they are not identical to each other and I am identical to the thinker. But what criteria can we use to identify the winning candidate? Put another way, how are we to determine which entity has the property ‘thinkerhood’?

In a recent article,<sup>1</sup> Ted Sider argues that this ‘thinker dilemma’ can only be

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<sup>1</sup>‘Maximality and Intrinsic Properties.’ *Philosophy and Phenomenological Research* 63 (2001): 357-364.

solved by treating thinkerhood as a ‘maximal property’.<sup>2</sup> A maximal property can only be had by the most extensive candidate entity, and therefore if thinkerhood is maximal, only the whole human animal counts as a thinker.

This appeal to the maximality of properties is both unnecessary and counter-productive: unnecessary because we are already equipped with a successful method of dispelling the thinker dilemma, and counter-productive because it yields results that are more counterintuitive than the original dilemma.

## 1 A Word About Properties

Since the maximality of properties proposes to solve the too many thinkers dilemma by reclassifying a presumably intrinsic property as extrinsic, it is helpful to have at least a preliminary account of intrinsic properties. Sider bases his discussion on the following Lewisian framework:<sup>3</sup>

A property is a basic intrinsic iff:

- (i) It is independent of accompaniment or loneliness. A lonely object is one that does not coexist with any contingent object wholly distinct from itself, while an accompanied object does coexist with such a distinct contingent object.<sup>4</sup>
- (ii) It is not a disjunctive property. Disjunctive properties can be expressed by a disjunction of natural properties, but are not themselves natural properties.<sup>5</sup>
- (iii) It is not a negation of disjunctive properties.

Basic intrinsics are not the only form of intrinsic properties; an entity can also have intrinsic properties made up of its basic intrinsic properties. So we must understand intrinsic properties to be “truth-functional compounds of basic intrinsic properties; or, more precisely, properties that supervene upon the basic intrinsic properties of their bearers.”<sup>6</sup>

<sup>2</sup>Sider frames his argument in terms of consciousness, but in order to avoid the mires associated with attempting to define consciousness, I have recast the discussion in terms of thinkerhood. All of the analysis should still apply.

<sup>3</sup>Lewis develops this account in several papers: ‘Defining Intrinsic’ (1998); ‘Marshall & Parsons on Intrinsic’ (2001); ‘Redefining Intrinsic’ (2001).

<sup>4</sup>Jaegwon Kim, ‘Psychophysical Supervenience’, *Philosophical Studies* 41 (1982), 51-70.

<sup>5</sup>To clarify this concept we need an account of natural properties, which Lewis defers to Barry Taylor. Properties are natural to the extent that they—more precisely, predicates expressing them—play the central and fundamental classificatory role within regimented physics or within future unified science. (Lewis, *Redefining Intrinsic*. *Philosophy and Phenomenological Research* 63.2 (2001); Citing Barry Taylor, “On Natural Properties in Metaphysics,” *Mind* 102 (1993): 83-100.)

<sup>6</sup>Lewis, *Redefining Intrinsic*. *Philosophy and Phenomenological Research* 63.2 (2001): 385.

Whether a being is a thinker seems to be independent of any wholly distinct entity, and consequently thinkerhood is at least intuitively an intrinsic property. As such, it is subject to the following principle of Microphysical Supervenience:

MICROPHYSICAL SUPERVENIENCE (MS) –

Necessarily, if atoms  $A_1$ - $A_n$  compose an object  $O_1$  that exemplifies certain intrinsic properties, then any atoms like  $A_1$ - $A_n$  in all their respective intrinsic properties, related to one another by all the same restricted atom-to-atom relations as  $A_1$ - $A_n$ , compose an object  $O_2$  with the same intrinsic properties as  $O_1$ .

If thinkerhood is an intrinsic property and  $O_1$  is a thinker, any  $O_2$  composed of atoms like  $A_1$ - $A_n$  in all their respective intrinsic properties (and related to one another by all the same atom-to-atom relations) must also be a thinker.

## 2 Is Thinkerhood Maximal?

### 2.1 The Positive Account

Sider argues that this principle creates trouble for the belief that thinkerhood is an intrinsic property. His argument presupposes a particular view of composition, namely the doctrine of arbitrary undetached parts (DAUP):

DAUP: For every material object  $M$ , if  $R$  is the region of space occupied by  $M$  at time  $t$ , and if  $\text{sub-}R$  is any occupiable sub-region of  $R$  whatever, there exists a material object that occupies the region  $\text{sub-}R$  at  $t$ .<sup>7</sup>

This doctrine has two clear but questionable implications:

- (i) any occupiable sub-region of  $R$  whatever counts as a part of  $R$
- (ii) all such parts are real material objects distinct from  $M$ .

According to DAUP, the thinking human animal  $O_1$  (call her Martha) has  $O_2$ , the object consisting of Martha's left big toe complement (call her Martha-minus) as a part. Martha-minus is composed of atoms exactly like the atoms  $A_1$ - $A_n$  that compose Martha, arranged in exactly the same way, and contains all the physical features necessary for thought in Martha. Since objects exactly alike with respect to atomic structures are also exactly alike with respect to intrinsic properties, if thinkerhood is an intrinsic property, then Martha-minus is also a thinker. Martha-minus is only one of a near infinite set of objects  $O_{2-n}$  that would seem *prima facie* to be thinkers.

<sup>7</sup>Van Inwagen, "The Doctrine of Arbitrary Undetached Parts" in *Ontology, Identity, and Modality*, CUP, 2001, 75.

To escape the absurd conclusion that every conscious human animal has a mighty host of distinct thinkers as parts, Sider argues that thinkerhood must be a maximal (hence extrinsic) property. In order to avoid divorcing it from intrinsic properties completely, Sider offers the following definition of maximal properties:

A property P is a maximal property iff to have P, an entity must have the associated intrinsic property, P\* and not be a proper part of any slightly larger P\*.

To be a thinker, then, a candidate entity must (i) be a thinker\*, and (ii) not be a part of a slightly larger thinker\*. So while they qualify as thinkers\*, O<sub>2-n</sub> are blocked from being thinkers simply by being a proper part of a slightly larger thinking\* entity, Martha.

### 2.1.1 Burke's Extension to Brains and Animals

Michael Burke argues in his *Is My Head a Person?* that thinkerhood maximality can also be used to answer the 'Too Many Thinkers' problem for animalism.<sup>8</sup> The 'Too Many Thinkers' dilemma arrives for the animalist in this way: Suppose I am identical to the thing that thinks my thoughts. The animalist tells me that I am the human animal, and have a brain for a part. There is increasing evidence from the neurosciences suggesting that the brain is itself the entity that thinks.<sup>9</sup> If I am an animal that possesses a brain, rather than a brain itself, then it seems there are two entities that think my thoughts: a brain, and the animal. I cannot be strictly identical to both, and therefore I am, and am not, identical to the thing that thinks my thoughts. Appealing to the notion that thinkerhood is a maximal property, Burke argues, allows the animalist to respond with this argument:

1. If being a thinker is a maximal property, then only the largest thinking\* being is properly a thinker.
2. The animal is a thinker\*.
3. The brain is a thinker\*.
4. The brain is a proper part of the animal.
5. So the animal is a thinker and the brain is not a thinker.

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<sup>8</sup>Burke leaves his argument couched in terms of heads, but since the problem arises more clearly when put in terms of animals and brains, rather than their heads, I have recast the argument in terms of brains. (Burke, 'Is My Head a Person?' *On Human Persons* (ed. Klaus Petrus, 2003) 113-116, 118.)

<sup>9</sup>As noted by Bennett and Hacker, an increasing number of neuroscientists have begun to describe the processes of the brain as 'thinking', and while this is not at all the same thing as a scientific proof that the brain thinks, it provides some justification for the belief. (Bennett & Hacker. *Philosophical Foundations of Neuroscience*. Blackwell, 2003): 154-156.)

So though both the brain and the animal are thinkers\*, thinking is a maximal property, and hence only one entity (the animal) is the proper subject of the predicate ‘thinker’, while the other (the brain) is only a thinker\*, and would be a thinker if it were not a proper part of the first.

## 2.2 Criticism

The suggestion that thinkerhood is a maximal property has met with mixed reviews, and for good reason. Eric Olson briefly considers maximality as an argument in favor of animalism, but ultimately dismisses it. He rejects the mereological machinery necessary for Sider’s argument by denying that arbitrary undetached parts exist. As for Burke’s adaptation, Olson considers it to be unhelpful, establishing only the biconditional that ‘The brain is a thinker iff the animal is not,’ but failing to prove that either entity is the genuine thinker.<sup>10</sup>

Sider and Burke see maximality as a clever way of escaping the wildly counter-intuitive claim that every thinking thing has a myriad of thinking things as parts. I think it no less strange to posit a myriad of thinking\* entities. If anything, this intensifies the counter-intuitiveness: now there are a myriad of entities that would be thinkers if only they didn’t travel in packs, who could become or replace me should I suffer bodily injury.

### 2.2.1 Misapplication to the Brain

Burke’s adaptation avoids Martha-minus entities, but there is reason to worry that Burke’s theory relies on a misapplication of the maximality account. Maximality is designed to deal with entities that have equal claim on the purportedly maximal property. The examples used to support maximality are either homogeneous entities (e.g. rocks, tables), or else heterogeneous entities on the same compositional level (Martha and Martha-minus).

It is certainly not the case that animals are homogeneously thinkers\* in the way that rocks are homogeneously rocks\*. One can think of a single rock as being composed of several rocks\* seamlessly joined together. Any part of the rock is properly a rock\*, and if being a rock is a maximal property, would be a rock in its own right if detached. This relation between rocks and rock bits is not analogous to the relation between animals and brains. Animals are thinkers\* only in virtue of having a brain that is itself a thinker\*; the additional material in the animal has no independent ability to think\*. It is not the case that any arbitrary part of the animal would be a thinker if it were detached; thus the animal cannot be said to be homogeneous with respect to the property of thinking\*.

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<sup>10</sup>Olson, ‘Brains’ *What Are We: A Study in Personal Ontology* (2007): 82.

The relation between Martha and Martha-minus seems a closer parallel to the animal and brain relation. Martha is not homogeneously a thinker; she is a thinker in virtue of having a thinking\* brain. However, the analogy to the brain case is illusory: Martha and Martha-minus are both thinkers\* in virtue of having the brain as a thinking\* part. Comparisons between the two Marthas are therefore homogeneous comparisons. In the brain case, the animal's claim to think\* is based derivatively on the brain's direct instantiation of the property of being a thinker\*. To employ maximality in this case would be to make a cross-level comparison between heterogeneous entities, a move not in fact parallel to any of the cases offered in support of maximality.

### 3 Alternative Account Provided by the Sciences

#### 3.1 The account

If property maximality was the only successful answer to our thinkers dilemma, we might be willing to accept these costs, but there is an alternative: the concept of composition which is central to scientific explanation.

##### 3.1.1 Compositional Levels & Proper Parts

This view, which I shall refer to as the scientific account, relies on compositional levels, rather than the doctrine of arbitrary undetached parts, to determine when one entity counts as a part of another. Scientific composition is a relation between a single higher-level entity and the many lower-level entities that compose it. Every part of a higher-level entity is a whole at a lower-level, and "wholes at one level function as parts at the next (and at all higher) levels."<sup>11</sup>

In applying this theory to the thinker dilemma, it is crucial to note the respective compositional levels of the entities in question. For entity A to be a proper part of entity B, A must be a lower-level entity than B.<sup>12</sup> The brain is an organ, playing a compositional role in the human animal, and is consequently a proper part of the animal, like the heart and kidneys. Martha-minus, on the other hand, is an entity at the same compositional level as Martha, and therefore cannot be a proper part of Martha.

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<sup>11</sup>Wimstatt, *The Ontology of Complex Systems; Levels of Organization, Perspectives and Causal Thickets*, *Canadian Journal of Philosophy* 20 (1994) 222.

<sup>12</sup>Ibid., 233. Wimstatt explains, "Thus if one entity is a part of another it is characteristically at a lower level of organization than the other, and lower level compositional levels always pick out objects which are parts of those at higher levels."

### 3.1.2 Properties

Scientific theories generally seek to provide a parsimonious explanation of phenomena in terms of entities and covering laws. Such explanations rely on an analysis of the properties of and relations between entities at various levels.<sup>13</sup> On each compositional level, various wholes have properties in virtue of the properties of their parts. Properties are individuated by their causal profiles: the same property always contributes the same causal powers to an individual under the same background conditions, and a set of properties at one level can compose a different property at a higher level. The higher-level entity does not simply inherit the properties of its lower-level parts; in fact, several properties (like being colored or having a positive charge) are only able to be had at certain compositional levels. Each property is possessed by the entity at the level of instantiation.

Even simple organisms are made up of entities expressing properties at several different compositional levels. For example, consider the common fruitfly (*Drosophila Melanogaster*). The fly has two eyes, each made up of 760 eye-units with 8 photoreceptors each. Each of these photoreceptors contains approximately 100 million rhodopsin molecules, a light-absorbing protein. The photoreceptor cells instantiate one of three properties, depending on which isoform of rhodopsin it expresses. Each rhodopsin molecule instantiates the property of expressing a particular isoform (Rh1, Rh3 or 4, or Rh5 or 6). These 100 million lower-level entities compose a single photoreceptor, which instantiates the property of absorbing a particular kind of light (Blue, UV, or Green, respectively). These 8 photoreceptors compose an eye-unit, which instantiates the property of sensing visual data. The 760 eye-units compose a single eye, with the property of receiving visual data. The eye, together with the rest of the fly's visual system and certain brain functions, instantiates the fly's property of seeing.<sup>14</sup>

The fly is clearly the most extensive individual, but we would be mistaken to say that because the photoreceptors are contained within the fly, it is the fly, and not the photoreceptors that instantiates the property of absorbing blue light. Such a move would force us to predicate of the higher-level entity a long conjunction of the properties instantiated in the lower-level entities. This would not infrequently result in contradictory pairs of properties, where no contradiction would occur if the properties were predicated of their separate lower-level instantiators.

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<sup>13</sup>This point comes to the surface in the debate over models of explanation, and while there is disagreement about the specific features necessary for a theory to sufficiently explain the phenomena, all parties seem to agree on this characterization of the goal. (Ruben, 'Arguments, Laws, and Explanation', p. 737, and Hempel, 'Two Basic Types of Scientific Explanation', p. 686, in *Philosophy of Science*, ed. M. Curd & J.A. Cover, 1998)

<sup>14</sup>Information for this analysis was gathered from Nichols R, Pak WL. Characterization of *Drosophila melanogaster* rhodopsin. *Journal of Biological Chemistry* 1985 Oct 15;260(23):12670-4.

### 3.2 Application to the Thinker Dilemma

Armed with this account of parthood and properties, it is easy to name the genuine thinker. Recall that we identified three candidate entities: (A) the whole human animal, (B) the brain, or (C) a Martha-minus type of abridged entity. On the scientific view, the entity that has the property  $x$  must be the entity at the lowest level at which that property is instantiated. ‘Filtering blood’ is a functional property instantiated in the kidneys; ‘pumping blood’ in the heart. Each of these organs is included in, and relies on the more extensive human animal, but these properties are nonetheless possessed by the respective organs. If thought occurs at the level of the brain, as data from the neuroscience suggests, then (B) is the genuine thinker in the same way that kidneys are the genuine blood filterers. Whether the antecedent is true is a matter for empirical inquiry, but the formula is clear enough.

Adjudicating between (A) and (C) would be difficult, since the two entities are on the same compositional level. However, it is unclear why the scientific view would be required to acknowledge (C) as a real candidate. Entities like Martha-minus are not proper parts of Martha, so unless they are identical to Martha, they cannot exist as physical objects in the same spatial region. So, either Martha-minus exists and is identical to Martha, or does not exist as a real material object. The parsimony principle constrains us to only postulate the existence of entities necessary to explain the phenomena, and Martha-minus does not appear necessary.

This conclusion can be reached by another road. Suppose that Martha (with all her intrinsic properties) is composed by atoms  $A_1-A_n$ . Martha-minus is composed of the same atoms, minus those in Martha’s big toe. Since the atoms  $A_1-A_n$ (Martha) and  $A_1-A_{n-x}$ (Martha-minus) differ in none of their organizational or intrinsic properties, whatever object they compose must have all the same intrinsic properties. The composed entities would be distinct material objects if they were composed of distinct material, but in this case Martha-minus’ atoms ( $A_1-A_{n-x}$ ) are not just similar, but are actually numerically identical to Martha’s atoms ( $A_1-A_n$ ). In their ‘undetached’ state, these atoms simply continue composing the single object Martha (and all of her intrinsic properties), rather than constituting a second non-identical object. As a result, ‘Martha-minus’ must be understood simply as a name picking out a specified region of Martha, rather than a competitor for thinkerhood.

It appears, therefore, that one can answer the dilemma simply accepting the scientific view as the proper account of parts and wholes. If Martha-minus never exists as an entity distinct from Martha, she cannot over-populate our world with too many thinkers.



## 4 Taking Stock

Assuming that we are interested in resolving the thinker dilemma, must we resort to maximality?

### 4.1 Thinker Dilemma

The intuitive costs of property maximality are high: we must accept the existence of any number of nearly thinking beings, the thinkers\*; we must assert that relational properties are all that blocks the expression of the otherwise intrinsic thinkerhood. What do we purchase? Only the privilege of being a half-step above all the other thinkers\*, and being the only thinker in your head. I am not the first to object that this is too steep a price<sup>15</sup>. Sider's response is straightforward: there cannot be droves of thinkers in each conscious being, and we cannot deny the principle of microphysical supervenience. Sider believes the sole remaining option is to embrace maximality. He urges us to accept the counter-intuitiveness as a necessary cost to preserve the dictates of science, writing "the question is one of trust: do you trust science, or do you trust your intuitions, intuitions that may well be merely the result of semantic constraints of maximality?"<sup>16</sup>

Happily, we can stay true to science without paying such a high intuitive price. The scientific view of composition supplies a principled way to preclude Martha-minus types from infringing on our mental privacy.

### 4.2 Maximality and Scientific Method

Scientific explanation is rooted in a levels-based view of composition. This in turn requires that properties instantiated at a given level are ascribed to entities in that same level, a practice that is inconsistent with the dictates of maximality. A great deal of scientific progress has been made by predicating properties of the entity that directly instantiates the property; to justify altering this practice, we would need to present an alternative with a better success rate, or at a minimum evidence that the current practice is mistaken. The maximality account can supply neither.

At this point perhaps we should take Sider's exhortation to side with science seriously: if, ignoring intuitive concerns, we ought to adopt the theory that preserves successful scientific principles, then it seems we ought to abandon the notion that thinkerhood is a maximal property.

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<sup>15</sup>Merricks, 'Against the Doctrine of Microphysical Supervenience', *Mind* 107 (1998): 59-71.

<sup>16</sup>Sider, 'Maximality and Microphysical Supervenience.' *Philosophy and Phenomenological Research* 66 (2003): 149.

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