

Any Sum of Parts which are Water is Water

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ABSTRACT

Mereological entities often seem to violate ‘ordinary’ ideas of what a concrete object can be like, behaving more like sets than like Aristotelian substances. However, the mereological notions of ‘part’, ‘composition’, and ‘sum’ or ‘fusion’ appear to find concrete realisation in the actual semantics of mass nouns. Quine notes that ‘any sum of parts which are water is water’; and the wine from a single barrel can be distributed around the globe without affecting its identity. Is there here, as some have claimed, a ‘natural’ or ‘innocent’ form of mereology? The claim rests on the assumption that what a mass noun such as ‘wine’ denotes – the wine from a single barrel, for example – is indeed a unit of a special type, the sum or fusion of its many ‘parts’. The assumption is, however, open to question on semantic grounds.

1. Innocence, Guilt, and the Utterance of Quine

1.0 *Mereology*. Mereologists posit a variety of contentious principles of composition, whereby diverse objects – wholes, ‘fusions’ or ‘sums’, analogous to sets but without a membership relation – may be constructed on the basis of specified ranges of objects, abstract or concrete, assigned the roles of ‘parts’, parthood in this context being akin to set-theoretical inclusion. The question of whether, in any particular axiomatized system, the definitions can be somehow plausibly mapped into any natural-language understandings of ‘object’, ‘whole’ and ‘part’ is a further question, as is the question of whether there (‘really’) are objects, recognisable independently of the mereological system, which actually satisfy its axioms.

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Naturally, the mereologist is free to deny that her favoured system is contentious; she may urge that fusions of the kind contrived within her system do exist, that the system does in fact match up with the real world, or part of it. She may even go so far as to declare that her system posits no novel, hitherto unsuspected entities – that its principles of composition and fusions are in effect implicit in our everyday world-view, or in the natural-language use of words like ‘and’ and ‘part’, the use of plural referring expressions, and so on.

David Lewis, for example, declares his own system of mereological constructions to be ontologically innocent in some such sense (Lewis, 1991). Nevertheless, there is a serious question as to whether his system is indeed as he declares it to be. As Byeong-Uk Yi has plausibly argued, it is *not* innocent to propose that as Lewis has defined them, there are such things as sums or fusions of individual objects, and it is *not* innocent to treat composition as identity (Yi, 1990).

I hereby declare my sympathy for Yi’s robust sense of the constitution of reality, and take the view that along with round squares, doctrines such as that of the Trinity are simply incoherent.¹ Nevertheless, matters look very different, once attention is re-directed from such Lewisian objects as the sum of Tom and Jerry to the mereological status of such kinds of stuff as water, wine and bread. For as it happens, there is here a prominent and *prima facie* plausible, genuinely innocent application of mereological principles, observed among others by Quine in *Word and Object* (Quine, 1960, p. 93).

1.1 ‘*Quantities*’. Quine there remarks that the natural-language semantics of what he calls *mass terms* directly satisfy mereological principles: ‘any sum of parts which are water is water’ is the way he puts it. And Helen Cartwright, in her influential doctrine of ‘quantities’, has followed Quine in this regard, writing that «there is, I think, a ‘natural’ mereology for a given set of quantities of, e.g., water in the sense of ‘quantity of –’, as I have elsewhere tried to explain» (Cartwright, 1975a).

¹ I here mean the ‘3-in-1’ doctrine as initially formulated and voted in by the Homoousian majority among the 1800 bishops at the First Council of Nicaea in C.E. 325, whereby three individuals are pronounced a single substance. As for Yi, and as Russell observes in another context, «a robust sense of reality is very necessary in framing a correct analysis of propositions about unicorns, golden mountains, round squares, and other such pseudo-objects» (Russell, 1919, pp. 169–170).

Now suitably defined, concrete mass terms denote material *stuff* or *matter*-stuff like water, iron, hydrogen and wine.² And since much of our world consists precisely of such material stuff or matter, there appears to be a solid basis for the direct, non-constructed relevance of mereological principles to a substantial part of our actual world. No independently contrived mereological system seems required – mereological principles apply directly to mass term semantics. Indeed, there here seems to be no more ‘innocent’ alternative to what looks like an inherently mereological system.

In a recent article, Keith Hossack also, rather cautiously, endorses just such a view (Hossack, 2000). Hossack adopts a terminology not of ‘quantities’ but of ‘masses’ (a term coined for anything which might be referred to as *some stuff* – some wine, some bread, some water, and so forth – and proceeds to cautiously remark that ‘mereology is perhaps most successful in the case of masses’.³ He continues

If we read ‘x is part of y’ as ‘x is some of y’, then transitivity holds. The lower half of the water is part of the water in the glass, which is part of all the world’s water, and the lower half of the water is part of the world’s water. Moreover the axioms of fusions or sums seem to hold at least if the mass is pure; any arbitrary collection of masses of water does seem to have a unique sum.

In effect, then, what Hossack sees in the Quinean formula is precisely a real world vindication of fundamental mereological principles.

² The definition in (Cartwright, 1975b) is narrow and precise.

³ The term ‘masses’ is due not to Cartwright but to Dean Zimmerman (1995). The intent behind the use of such technical terms is to ‘convert’ a non-count noun to a count noun (CN, for short) – in effect, to assert (with or without argument) that what the non-count term denotes is, contrary to its natural language grammar, a single object, individual or thing. It is then crucial for the purpose at hand to clearly distinguish the wine in a glass or bottle – that is, what is interpreted to be the maximal mass of wine in the glass or bottle, in this technical sense, from the ‘mass’ of wine presented by a glass or bottle, in the more ordinary non-gimmicky and innocent sense of a single compact and continuous body of stuff, a body or mass which is itself divided into and replaced by three smaller masses, when the wine is poured. In this more ordinary sense, bottles and glasses of wine are themselves masses of wine – we drink bottles and glasses of wine – and these are compact, individuated bodies of the liquid, dependent for their individuated existence on the containers which constitute their ‘forms’. In this sense of ‘mass’, the wine is distinct from the mass or masses it happens to be in; it was in a single mass and it, the very same wine, is now in three distinct masses. The employment of a natural-language term for what is in fact a distinct technical purpose in this manner is regrettable, in persuasively eliding or obscuring the very considerable difference in the implications of the two associated concepts.

Hossack's remark is cautiously hypothetical, and the fact that he writes 'x is *part* of y' rather than 'x is *a part* of y' is itself an indication of his caution.⁴ Nonetheless, Hossack speaks of *masses*, in the plural, and treats references to water, like Quine, as references to distinct objects, each of which might constitute *a part* of other objects of the kind. And it is evident that such things behave more like sets and their subsets than like Aristotelian substances. But in the very nature of the case, and regardless of whatever else might be true, the ideas of parts and wholes are at the very least the ideas of discrete objects – units, individuals or things. Correlatively, theories of parts and wholes are *theories* of individual objects, individually countable parts and wholes. Whether or not each part itself has proper parts, as with Lewisian gunk, each part must at any rate be *one*.⁵

2. Innocence Lost

2.0 Real scattered objects. Let us consider these matters more closely. I choose to speak of wine instead of water, and begin with the bottle of Brunello on our dining table. The bottle at first contains a certain amount of wine, 75 ccs, we may suppose.⁶ Having opened the bottle, I pour the wine into three glasses to prepare for lunch. The wine which previously occupied a single compact region of space, defined by the inner surface of a bottle, is identical with the wine which is now spatially distributed, in multiple glasses and in multiple locations around the table; *some of* the wine which was in the bottle is now in each of the three glasses. Plainly, both the degree of 'scatter' of the wine, and the number of glasses which are used to contain it, are entirely irrelevant to its identity.⁷ What, if anything, might seem interesting or

⁴ In speaking in this way, Hossack seems to acknowledge something special in the 'some of' relationship – something underpinning his use of the expression 'part' without the singular determiner.

⁵ On gunk – a recent term for an ancient concept, and one which corresponds to the actual semantics of what I have elsewhere called 'pure' non-count nouns – see (Lewis, 1991).

⁶ We may naturally and innocently refer to this wine as 'an amount of wine'; but the formal behaviour of terms with this structure is complex, to be treated with caution.

⁷ The question of the relationship between the wine which now occupies three distinct glasses, and the wine in each one of the glasses, is addressed in section 3.

remarkable about this state of affairs? One answer to this question would proceed as follows.

Our day-to-day experience of and interaction with the world accustoms us to thinking primarily in terms of ‘ordinary objects’ or Aristotelian substances – structured, physically organised objects, the parts of which bear determinate spatial relationships to one another. The fact is, however, that there seems to be something here of a very different nature – something capable of occupying spatially disconnected locations, where the degree of separation and number of distinct locations have no bearing whatsoever on its identity. If this is correct, it is surely interesting, even perhaps remarkable, in itself. It is as if we have stepped outside the abstract axiomatic constructions of mereology, to encounter a real-life demonstration of something resembling mereological wholes and parts, before our very eyes. It is tempting to say that – so far as the non-atomic *semantics* of words like ‘wine’ are concerned – the wine which was once in the bottle *really is* no more than the totality of its potentially or actually scattered parts.⁸

Now there are two key points in all of this. There is what I take to be an indisputable *fact*, that the identity of an amount of stuff, unlike that of a concrete individual substance, is independent of its degree of scatter or spatial distribution. On the other hand, there is a mereological *interpretation* of the fact – in this particular case, an interpretation of the relationship which exists between the wine on the table, and *some of* it (that is, the relationship which exists between *some wine* and *some of* some wine). Or, what comes to the very same thing, there is a mereological interpretation of the formal status of what expressions like ‘the wine on the table’ and ‘some wine’ actually *denote*. The significance of the indisputable fact itself remains to be addressed; I first consider each of these equivalent interpretations in its turn.

2.1 *The relationship.* Consider now two neutral (‘innocent’) descriptions of two aspects of this state of affairs. (i) The wine from the bottle just is – is straightforwardly identical with – the wine in glasses A, B and C. (ii) The wine in *each* of the glasses A, B and C is *some of* the wine in glasses A, B and C; hence the wine in glasses A, B and C is an amount of wine which is – and here,

⁸ The semantics of ‘wine’ require that whatever is some of some wine will also be some wine.

is or consists of— a lesser amount of wine in glass A, a lesser amount in glass B, and a lesser amount in glass C.⁹ Furthermore, *the* amount of wine in glasses A, B and C is indisputably the (mathematical) sum of the amounts of wine in each of the glasses A, B and C.¹⁰ The semantical phenomenon of cumulative reference corresponds, I suggest, to the relationship represented by *is or consists of* in statement (ii), rather than to the relationship of identity as expressed in statement (i).¹¹ Intuitively, the relationship represented by *is or consists of* must in some sense be one of composition, not the (straightforward, pure, ‘innocent’) relation of identity.

This, no doubt, is how the relationship is understood in the first instance by the mereologist – as a compositional part/whole relationship between one sum object and three part objects. She may also, with Lewis and the Trinitarians, guiltily take it to be a relationship of identity; and in my view, there is a sense in which she might even be right about this. But if so, she is right, only because there are neither at least three proper part-objects on the table, nor one maximal whole-object.¹² *Either* it is a relationship of identity, and there are no wine-objects on the table, *or* it is instead a relation of composition, and there are at least four such objects on the table (and most likely, countless such things).¹³ That is the view which I wish to now explain and defend.

⁹ I do not say that the wine in the glasses is or consists of three amounts of wine; the grammar of ‘amount’ licenses no such assertion; see note 15.

¹⁰ ‘An amount of wine’ is an equivalent concrete natural-language designation for ‘some wine’; ‘the amount of wine’ is an abstract natural-language designation for the universal measure of some wine; the wine in different glasses might yet be the same amount of wine (there might be 25ccs of wine in each glass). The grammar of the expressions ‘an amount of ___’ and ‘the amount of ___’ closely parallels that of the grammar of the expressions ‘a number of ___’ and ‘the number of ___’; the former is used to make concrete indefinite reference to a number of objects, the latter is an abstract reference to a number. There are major differences between numbers and amounts – the question of a choice of measures does not arise for numbers, giving them a certain ‘absolute’ status.

¹¹ In referring to the wine in glasses A and B and C, I have not referred to the wine in any one of the three glasses; and in referring to the wine in each of the three glasses, I have not referred to the wine in all three glasses.

¹² The thought that deity appears both as one and as many, but in reality is neither, might conceivably have a certain pantheistic appeal.

¹³ For the first disjunct, the relationship of identity – non-standard though it is – obtains between a (non-singular) amount of wine and itself (see note 15). The second disjunct, which Lewis would no doubt accept, is simply false, or so I urge in 2.2 and 2.3.

Now the mereologist is likely to share the common assumption that the object–concept itself is an all-purpose, all-inclusive concept – that whatever we may speak of, refer to or think about *cannot fail* to be an object in some minimal but reasonably precise sense. As Russell writes in a well-known passage, «whatever may be an object of thought, or may occur in any true or false proposition, or can be counted as one, I call a term. This, then, is the widest word in the philosophical vocabulary» (Russell, 1903/1937, p. 43).

But this view can itself be questioned. If it is an essential feature of the object–concept that objects must be capable of being numbered and distinguished, then the fact that there exists a major semantic category of *non-count* nouns (*NCNs*) – nouns precisely for the diverse varieties of *stuff* – should constitute grounds for re-evaluation of the mereologist’s fundamental but unexamined belief.¹⁴ There are several arguments for the conclusion that the basic subject–matter of the mereological thesis in this domain – that is, whatever is *some wine* – is *not*, as the mereologist supposes, a unitary object.

2.2 The denotation (*i*). In ‘On denoting’, Russell declares that ‘*the*, when it is strictly used, involves uniqueness’. This is Russell’s criterion for a *singular* description – where such a description is understood to be a description which *denotes*, if anything, a single unit of some kind. The essence of the Theory of Descriptions is given by this declaration, which says in effect that if ‘*the*’ is joined with a *singular* noun ‘*F*’, then ‘*the F*’ means ‘*the only F*’. That is, a description having the form ‘*the F*’ is singular, if the concept-expression it contains (the ‘*F*’ itself) applies or purports to apply *uniquely*. Here, I attempt only to explain the rationale behind this theory; I have defended it at some length elsewhere.¹⁵

Now if there is exactly one fish on a certain table, then the concept-expression ‘fish on that table’ can be said to apply uniquely, and the definite description ‘*the* fish on that table’ counts as semantically singular.¹⁶ Here, the noun ‘fish’ *itself* has a semantically singular occurrence. Suppose however that there are many fish on the table – some fish on this plate, some others on that. Then ‘fish on the table’ applies to the fish on this plate, and *also* to the fish on that plate. Here, the use of ‘*the* fish on the table’ to denote is evidently *not* a

¹⁴The matter is addressed in (Laycock, 2010).

¹⁵The criterion is defended at length in Laycock, 2006.

¹⁶I choose the noun ‘fish’ because it has the syntax of a zero-plural noun.

singular use. It is, of course, plural (the *fish-es*), and the noun ‘fish’ itself has a semantically plural occurrence. The fish on this plate are now *some fish* which are *some of* the fish on the table.

Consider then the use of the description ‘the wine on the table’, in the presence of two glasses of wine. Here, the concept-expression ‘wine on the table’ applies to *both* the wine in this glass and the wine in that glass. It follows that – much as with ‘the fish on the table’ in its plural use – ‘*the wine on the table*’ cannot be semantically singular. However, unlike ‘fish’ in its count noun sense, ‘wine’ has no *other* semantic form – it lacks a cognate singular form, and so cannot be plural *either*. Although non-plural, the NCN is akin to a plural CN in being semantically non-singular; and *qua* semantically non-singular, it cannot designate a (single) object.

2.3 The denotation (ii). It follows immediately from an understanding of the count/non-count contrast that what underlies the kinship of plural CNs and NCNs is indeed the fact that both are semantically *non-singular*.¹⁷ CNs, first, are semantically *either* singular or plural: singularity and plurality are the twin semantic sub-categories which jointly exhaust this category of nouns. It would seem then to follow directly that the category of NCNs can be *neither* singular nor plural (a fact which itself is obscured if, instead of *non-count noun*, the appellation *mass noun* is employed). NCNs are then to be classed as semantically non-singular, simply in virtue of being non-count. And given this, two propositions follow automatically.¹⁸

First, NCNs have in common with plural nouns the distinction of being semantically non-singular. The semantic kinship between NCNs and plural nouns is these days widely recognised; what is typically unnoticed, in this recognition, is the simple fact of its non-singular semantic *basis*. And second, NCNs have in common with singular nouns the distinction of being semantically non-plural. Quantification involving such nouns must then also be semantically non-singular, a fact reflected in their non-acceptance of singular determiners. As with plural nouns, we speak of ‘all water’, ‘some water’ and

¹⁷ To the best of my knowledge, this claim was first advanced in (Laycock, 1975). The kinship of NCNs and plural CNs is noted, among others, by Schein (1994). Schein however argues that any formalisation must involve «reduction to singular predication, via a Davidsonian logical form». But since NCNs are neither singular nor plural, this is impossible.

¹⁸ These semantic points are argued in (Laycock, 2006), see in particular chapters 1, 3 and 4.

‘more water’, but not in the singular of ‘a water’, ‘each water’ or ‘one water’; and ‘any’, ‘all’ and ‘some’ appear to interact with NCNs much as they do with essentially plural nouns.

Now as it happens, this non-singular analysis of the semantics of NCNs has also been affirmed by Tom McKay.¹⁹ In a helpfully concise account, McKay notes that while NCNs are indeed on a par with plural nouns in respect of their non-singularity,

Plural discourse has natural semantic units that are the same as those of singular discourse, but stuff discourse has no natural semantic units, and reference and predication seem to proceed on a different model than that of an individual and a property. (McKay, 2008, pp. 310–311).

In consequence, he urges that in the case of words like ‘water’,

We should not expect a successful reduction to singular reference and singular predication, something that the application of traditional first-order logic would require [...] when we say that water surrounds our island [...] our discourse is not singular discourse (about an individual) and is not plural discourse (about some individuals); we have no single individual or any identified individuals that we refer to when we use ‘water’.

There are, in a word, *no individuals* introduced by the use of ‘water’, and to this extent, McKay and I are in complete agreement.

3. The Ontological Insignificance of an *Amount* of Wine

3.0 *The relationship of being ‘some of ___’ that which is ‘some ___’ once again.* It is a truism well worth repeating, that the ideas of parts and wholes are the ideas of discrete objects-units, individuals or things. Individual units and their unitary parts are uncontroversially ubiquitous. Every fish is such a unit, and its eyes are parts of it. Here, we have three units – a fish, and each of its eyes. Now suppose there are exactly ten fish on the table, on three plates. That fish which is closest to me is *one* of them. But it is not *a part* of them, because while *it* is a unit, *they* are *not* a unit. They are *ten* units, and nothing can be a

¹⁹ See his ‘Critical Notice’ of Laycock 2006 (McKay, 2008). McKay is the one and only philosopher to date to have written a book devoted entirely to non-singular predication and reference, though his subject matter is almost entirely that form of non-singular predication which is plural (McKay, 2006).

part of something else, unless both it and what it is a part of are individual units. Similarly, it is not a *member* of them, and so does not ‘belong’ to them; it may be a member of one or another club, gathering or other ensemble, but *they* themselves are not, as such, identical with a club or gathering or any other unit of that genre. They are many, while the gathering to which they earlier belonged was one.

Furthermore, any two of the fish cannot be a part of the fish on the table, because any two of them are no more a unit than are all ten of them. Any two of them are *some of* them, and the (innocent) relationship which holds between *a number of objects* and *some of* those objects – between *the fish* on the table and *some of* those fish, for example – is a different kind of relationship from that of (innocent) whole and part, or of set and subset.²⁰ The distinctive nature of the ‘some of’ relationship is recognised by Lewis among others, although it is plainly not the same relationship (innocently speaking) as that of part to whole. To think of two of them as being (somehow ‘literally’) *a part* of them, is of course to think of both ‘two of them’ and ‘them’ as naming *units*. And indeed if this is what we think, then at least for the purposes of the current issue, we do indeed have objects of a very different kind – a different *category*, in fact – from ‘ordinary’ substantial physical objects – objects which have (potentially or actually) scattered parts. At the same time, however, we have lost our unperturbed contact with reality, and must be deemed ontologically guilty in Yi’s good sense.

Much as the fish on this plate are *some of* the fish on the table, so the wine in this glass is *some of* the wine on the table. But in *neither* case do we have something which can be innocently counted either as *a unit* or *a part* of something else.

3.1 *The ontological status of quantity.* Both the idea of an amount of matter, and the idea of a number of objects, combine the ontic categories at issue – the categories of *objects* and of *matter* – with a notion of *quantity*, a notion of how many or how much. The idea of *a number of* objects – if it can be thus dignified

²⁰ We may decree that the fish are members of a set having cardinality of ten. But insofar as a set is itself a unit whole, *they* cannot be identified with this whole, it being one and they many – unless, of course, we are Descartians who believe that ten (ordinary) individuals might be not only ten different and distinct (ordinary) individuals but as well be (identical with) only and exactly one (unusual) individual, ten times as big as any one of the ten.

– self-evidently combines the neutral idea of ‘objects’ *simpliciter* with the further idea of determinate but unspecified *multiplicity* or number. Similarly, the idea of an amount of stuff combines the neutral idea of stuff or matter *simpliciter* with the further idea of determinate but unspecified amount. And non-singular *references* to either matter or to objects necessarily incorporate this fact. Thus, the bare plural sentence

There were fish on the table during lunch

says *less* than the non-bare sentence

There were a number of fish on the table during lunch.

The latter carries implications of *identity* – it might be followed by

No-one ate any of *them*

– but the former carries no such implications; it might be followed by the pseudo-anaphoric

They were constantly replenished by the waiters.²¹

And in parallel identity-related fashion, the bare non-count sentence

There was wine on the table during lunch

says less than the non-bare sentence

There was an amount of wine on the table during lunch.

The former sentence might continue ‘Prosecco to begin with, and Brunello to follow up’ (a continuation which would be bizarre indeed for the latter sentence).

Syntactically, the form of plural reference involves a single *grammatical* subject, whose *semantic* character involves a determinate number of distinct units – units whose identities are drawn together, merely via the collective *form* of a single human act of reference. The idea of *a number of* objects involves, in effect, the *fusion* (ordinary sense) of the *ontic* category of objects

²¹ By a ‘pseudo-anaphoric’ relationship, I mean that unlike standard anaphora or cross-reference, in which a pronoun picks up the identity of a previous reference, no such identity, no sameness of fish, is implied in the use of the bare noun.

with the *semantic* category or form of plural reference.²² Hence the answer to the question of just what *category* the phrase ‘a number of objects’ itself expresses or represents must be that it represents, if anything, an essentially *hybrid* category – one which reflects the semantical category of plural reference itself. It follows that a sentence, the subject of which has this semantic form, lacks any distinct metaphysical significance on precisely this account. This non-ontic character of plural reference is reflected, among other things, in the fact that a number of objects cannot be said to have *ceased* to be until the last one of them has ceased to be; while those objects cannot be said to have *persisted*, or retained their identities, unless all of them have persisted.

There are in short no such *things* as ‘numbers of objects’; there are individual objects, and there are numbers. From the standpoint of assertions of existence, the sole categorially or ontically salient fact consists in the information that there are *objects* of this or that kind which are thus-and-so, in a given context. In expressing empirical quantity, and thereby laying the semantic basis for plural identity-statements, the presence of ‘some’ constitutes the introduction of an element which is *adventitious*, from the standpoint both of the relevant kind and of the ontic category itself. The non-singular ‘some of’ relationship, along with the terms which it relates, is a hybrid relationship without ontological content. What it is *not* is an ontic relationship of part to whole.

Essentially these points apply also to the idea of an amount of stuff or matter, and to the relationship between that and the neutral idea of matter *simpliciter*. There are no such *things* as amounts of stuff; there is stuff of one sort of another; and there are amounts. Indications of quantity are a matter of empirical information, information which has no bearing on the categorial or ontic import of a sentence. In postulating entities where none exist, Quine, Cartwright and Hossack stand together in the dock, to be pronounced ontologically guilty.²³

²² As such, the category of objects is without a number – it is ‘neutral’, neither singular nor plural, but it may be represented or expressed in either singular or plural form.

²³ Occam’s presence among the jury is unnecessary.

4. Innocence Regained

Now I began by noting that when there is wine in three glasses, *there is something* which occupies spatially disconnected locations, where both the degree of separation and the number of distinct locations are completely irrelevant. But while this is undoubtedly the case, in just what sense *is* this the case? In what sense is there something in spatially disconnected locations? Once the non-singularity of NCNs is clearly understood, the sense in which this is the case is neither remarkable nor interesting – or rather, no *more* interesting or remarkable than the actual semantics of NCNs themselves.²⁴ At the end of the day, it is no more interesting or remarkable than the fact that, if there are fish scattered about in various locations, then there will be something which occupies – that is, there will be some *things* which *occupy* – these spatially disconnected locations.

In this latter case, although *objects* are *scattered*, there are no scattered *objects*. An ontologically innocent or neutral account of this state of affairs has the scatter distributing merely over *many*, rather than being a collective feature of some *one* – there being no such ‘one’. The scatter is a feature of plurality; there is no unitary plural whole with many individual parts; there are simply many individuals, along with *references* to all of those individuals collectively, or to some of them in particular. This then is the ‘innocent’ or ordinary view of fish and of references to fish. There are merely objects of this kind, distributed in different places.

Likewise, so far as the wine on the table is concerned, while there is an amount of stuff which occupies these spatially disconnected locations, that stuff is no more a unit than are the fish; so that although the *stuff* is scattered, here too there is no scattered *unit*. Rather, there is merely stuff of this kind, distributed in different places and in varying amounts; here, scatter distributes not over the many but the much. It is, first and foremost, the direct illusion of unity which generates the belief that there are mereological entities before our very eyes, entities which then appear to legitimate the mereological posit in a way it would otherwise be lacking.

²⁴ For a devotee of the semantics of the predicate calculus, the semantics of NCNs should seem remarkable indeed.

And finally, for the cases of both stuff and things, there are genuine wholes which are the innocent sums of innocent parts. Much as the amount of wine in glasses A, B and C is an abstract *amount* – not an amount of wine – the (mathematical) sum of the amounts of wine in each of the glasses A, B and C, so the number of fish on the plates is a number, the mathematical sum of the number of fish on each plate.²⁵ Numbers and amounts, unlike wine and fish themselves, display an authentic mereological relationship of addition to one another.

By contrast, the fact that this fish and that fish are two is nothing other than the relationship of non-identity between them; numerical *adjectives* in general express no more than the non-identities of countable individuals.²⁶ It is perhaps tempting to think that there must *be* something in our concrete reality, to which ('abstract') numbers directly correspond. But number itself requires no physical 'embodiment' to have application to reality; arguably, all that is required is the mere existence of one-one correlations between objects – correlations which can be established, along with 'same number', without being able to count.

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²⁵ What I am calling an abstract amount is a universal – if the amount of wine in two separate glasses is identical, then we have an amount of wine in one glass which embodies the same universal or abstract amount as the wine in the other glass.

²⁶ This is I suggest the innocent view of multiplicity, a view I have tried to defend in (Laycock, 2006).

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