THE FORMAL DIMENSION OF COMMON SENSE CONCEPTS AND THE COUNT-MASS DISTINCTION

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This paper sketches out a fragment of the formal dimension of object and substance concepts (Prasada, 2016) and shows how it provides the basis for the interpretation of count and mass uses of nouns including those that result from grinding and sorting as well as "fake mass nouns" (e.g. *furniture, jewelry*). On the approach taken here, the formal dimension of concepts specifies perspectives from which to think and talk about things. Common nouns appear to be mapped onto conceptual representations that provide multiple perspectives from which to think and speak about things some of which require count syntax and others which require mass syntax. The picture that emerges is one in which +count and +mass are best thought of as applying to particular senses or uses of a noun rather to nouns as such. In this, the present work is very consistent with the theory of the count-mass noun distinction found in Pelletier (2012) and related work. In the present approach, however, not all senses have equal status with some senses having conceptual priority over others. Furthermore, systematic differences in the manner in which different count as well as different mass senses of a noun may be interpreted arise from differences within the formal dimension of conceptual representation. What unites the various count and mass interpretations is that count uses of nouns involve discrete quantification, whereas mass uses of nouns involve non-discrete quantification, however, the manner in which these modes of quantification are recruited depends on the perspective provided by the sense in question. Below, I consider a series of questions about the interpretation of count and mass senses of nouns and sketch the formal characteristics of

the conceptual representations that ground different interpretations of count and mass uses of nouns.

Why does pluralizing mass nouns such as *mud* or *wine* allow a subkind reading?

Pluralizing names for substances (e.g. *muds, wines*) results in subkind readings (e.g. kinds of mud, kinds of wine) that are readily available without drawing on contextual or conventional information. The ready availability of this reading as well as its lack of reliance on contextual or conventional knowledge is explained if basic level kinds are understood to contain both concrete instances as well as abstract subkinds. Evidence for this comes from the ambiguity of sentences such as *They have two elephants at the zoo* which can be interpreted as quantifying over either instances (e.g. Babar & Dumbo) or subkinds (African and Indian elephants). For object kinds, both instances and subkinds are intrinsically countable and thus both readings are available. For substance kinds, on the other hand, only the subkind reading is available in the absence of the use of contextual or conventional knowledge to identity instances for the purpose of counting. Thus in this case, the plural serves to select the subkind reading that is available for all representations of substance kinds.

How does pluralizing mass nouns like *mud* or *wine* allow a reading in terms of contextually or conventionally defined units that can be counted?

If kinds are understood to be constituted by concrete instances as well as abstract subkinds, in the absence of contextual or conventional knowledge, instances of substance kinds will not be discretely quantified and counted, because the perspective provided by the kind does not specify any division into instances. As such, the arbitrarily divided instances of substance kinds are measurable, but not countable. To count the instances of a substance kind, we must adopt

a perspective in which the instances are identified in a nonarbitrary manner and thus rendered countable. Pluralization of the noun serves as a cue to adopt such a perspective and in doing so, requires us to use contextual or conventional information to identify instances for the purpose of counting. Adopting this contextually and conventionally licensed perspective allows us to count instances of substance kinds, however, it is not equivalent to the perspective which we use to count instances of object kinds. The number of instances of an object kind is the quantity of objects of the kind in question, but the number of contextually or conventionally identified instances of stuff is not the quantity of stuff of that kind. For example, if John had a Guiness, and two Budweisers, and Sally had two Guinesses and one Budweiser, we can say they both had three beers even if it turns out that Guinesses are sold as pints but Budweisers are sold as 12oz servings. In this situation, they had the same number of beers, but not the same quantity of beer. This asymmetry is not possible given the perspective provided by representations of object kinds.

How are mass nouns that refer to the output of a universal grinder interpreted?

If objects are ground up the count noun used to refer to the object can be used as a mass noun to refer to the matter of which they object had been constituted (Pelletier, 1975). For example, we can talk about there being hat on the floor as well as raccoon on the road. Furthermore, like standard names for substances, *hat* and *raccoon* can be used to both measure and count contexts (e.g. *There are 2 quarts of hat/raccoon on the floor; There are two piles of hat/racoon on the floor*). Looking more carefully, however, we see important differences emerge.

When we use *hat* (or any other name for an object that is an artifact) as a mass noun in this context, we use it to talk about the portion of (unsorted) stuff that is identified as coming

into existence as a result of destroying a particular hat. This manner of identification carries with it no implication that the stuff is the same type of stuff as the stuff generated by grinding any other hat. On the other hand, applying the grinder to an animal or plant does result in a portion of stuff that can also be identified as a kind of stuff—every raccoon that falls into the grinder produces the same kind of stuff and thus there are generalizations about it -- *Is raccoon fattier than squirrel?* makes sense, but *Is hat denser than mitten?* does not. As such, mass uses of count nouns for artifacts can refer to the portion of stuff that results from destroying the object, but cannot be used to refer to a kind of stuff, whereas mass uses of count nouns for living things can be interpreted either as referring to the portion of stuff of which the living thing was constituted or to the kind of stuff of which the living thing was constituted.

We can also ask whether *raccoon* and *hat* are like mass nouns like *mud* or *wine* in supporting subkind readings when pluralized? Given that *hat* is not understood as being able to refer to a kind of stuff, it follows that subkind reading for the pluralized version of hat should not be possible. This seems to be true – *how many hats were on the floor?* cannot be interpreted as how many kinds of hat(stuff) were on the floor. On the other hand, given that *raccoon* can be interpreted as referring to a kind of stuff, one would expect that it should be possible to get the subkind reading for the pluralized version. This does not seem to be the case, however. The reason for this seems to be that *raccoon* is understood as referring to a single kind of stuff by definition rather than by hypothesis as is the case with *mud* or *wine*. A similar restriction on subkind readings is found for object kinds when membership conditions are stipulated definitions (e.g. *John has two rooks* can only mean he has two instances of the kind rook, it cannot mean he has two kinds of rooks). We thus see, that we can formally

distinguish two types of kind representations for basic level object kinds---ones which *hypothesize* the unity of the kind in question and thus are understood as potentially containing both instances and subkinds; and ones which *by definition* only contain instances and no subkinds. Furthermore, these differences are relevant to the interpretation of mass nouns.

Accounting for fake mass nouns

Fake mass nouns such as *furniture* and *jewelry* have subkinds that are object kinds, yet the name for the superordinate category is mass. How is this possible? Superordinate kinds like vehicle or furniture contain subkinds, but do not directly contain any instances. There is no such thing as a vehicle or piece of furniture that is not some specific kind of vehicle or furniture. Furthermore, the superordinate kinds specify abstract functional properties shared by their subkinds. In the case of count superordinates, the function that characterizes each subkind fully realizes the abstract functional characteristic of the superordinate and thus any instance of a subkind fully realizes the abstract function of the superordinate. For mass superordinates, the abstract function cannot be fully achieved by the function that characterizes any single subkind (e.g. you cannot furnish a room with just chairs/tables/etc), and thus any instance of the subkind can only partially achieve the abstract function. Thus, the distinction between fake mass noun superordinates and "real" count superordinates involves a distinction between discrete and non-discrete quantification, not in the manner in which instances of the superordinate category (which neither type of superordinate has directly) are quantified, but in whether the abstract function that characterizes them can be discretely realized by the function that characterizes each subkind or whether it is only partially realized by any one subkind and realized to different extents cumulatively through the functions of many subkinds.

References

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