

# The semantics of mass nouns derived from gradable verbs

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## I. Introduction

What semantics should we attribute to nouns like *love* and *work*, which are derived from gradable verbs (i.e. verbs that accept comparatives: *Julie works more than Fred*)? We show that, from a morphosyntactic standpoint, these nouns are mass nouns. This leads us to consider and answer the following questions. How are these nouns interpreted in their various uses? What formal representations may one associate with their interpretations? How do these depend on the semantics of the verb? And where lies the semantic unity of nouns like *love* and *work* with the more familiar concrete mass nouns, like *wine* and *furniture*?

## II. The uses of nouns derived from gradable verbs

We find that a noun like *love* can appear together with a possessive phrase (*Julie's love for Tom*), or with an indefinite, mass determiner (*Julie has a lot of love for Tom*). It may be used in comparative constructions, its grammatical number being singular: *Julie has more love for Tom than for Fred*. It may also be employed without any determiner: *Love is rare*. It is in general invariable in grammatical number. And finally, the noun may sometimes be used together with a count determiner (*a great love*). This pattern of uses is the same as the one we find for concrete mass nouns (Gillon 1992): nouns like *love* and *work* and nouns like *wine* or *furniture* have the same morphosyntactic distribution. This means, quite simply, that they are all mass nouns.

## III. The interpretations of nouns derived from gradable verbs

We then examine in our talk how nouns like *love* are interpreted in their various uses. Here we focus on two prominent interpretations.

First, when they are used in possessive phrases, these nouns can be understood as referring to an *instance* of a property:

*Fred described Julie's love for Tom.*

This sentence may be paraphrased as: Tom described the particular love that Julie (and Julie alone) had for Fred. *Julie's love for Tom* refers to an instance of a property, a “trope” or “mode” (Lowe 1998).

Second, when used with an indefinite, mass determiner, or in a comparative phrase, these nouns are interpreted in terms of *degrees*:

*Julie has a lot of love for Tom. Julie has more love for Tom than for Fred.*

These sentences express something concerning the degree of Julie's love for Tom.

## IV. The semantics of the noun and its link to the semantics of the verb

### 1) Capturing the instance-interpretation

We take a noun like *love* to denote a relation  $R$  between an instance  $x$ , a bearer  $j$  and an object  $t$ : *Love*:  $R(x,j,t)$

When a possessive construction is added to the noun, we get (with  $\iota$  the iota operator):

*Julie's love for Tom*:  $\iota x [R(x,j,t)]$

Finally, the truth conditions of the full sentence are:

*Fred described Julie's love for Tom* is true iff  $\iota x [R(x,j,t)]$  is such that *described*( $f,x$ )

### 2) Capturing the degree-interpretation

We model sentences like *Julie has a lot of love for Tom* in a manner similar to what Higginbotham (1995) proposes for sentences like *Julie has a lot of wine*. In the case of nouns like *wine*, a measure function associates to an instance of wine the quantity of wine it contains. In the case of nouns like *love*, the measure function will operate as follows. When an instance  $x$  of love towards  $t$  manifests itself in  $j$ , the measure function  $\mu$  will associate to  $x$  the degree of love of  $j$  towards  $t$  in the circumstance.

*Julie has a lot of love for Tom* may then be represented as:

Julie has some love for Tom and Julie's love for Tom is a lot

$\exists y R(y,j,t) \wedge \iota x [R(x,j,t)]$  is such that  $\mu(x) > c^\circ$  {where  $c^\circ$  is a certain standard degree of love}

And for comparatives:

We take *Julie has more love for Tom than for Fred* to be true

iff  $\iota x [R(x,j,t)]$  and  $\iota v [R(v,j,f)]$  are such that  $\mu(x) > \mu(v)$

### 3) The link with the semantics of the verb

Like gradable adjectives, verbs like *love* and *work* accept comparatives: *Julie loves Tom more than Fred*. To account for this, we model these verbs in a manner similar to gradable adjectives, taking both to denote measure functions (Kennedy 2001). We thus represent *Julie loves Tom* as: Julie loves Tom at a degree  $d$  which is superior to a certain standard  $d^\circ$ . If  $\psi$  is the measure function denoted by the verb, then we have: *Julie loves Tom* is true iff  $\psi(j,t) > d^\circ$

We can now specify the link between the semantics of the verb and the noun through two axioms:

Axiom i) An instance of love towards  $t$  manifests itself in  $j$  iff  $j$  loves  $t$  to a certain degree:  $\exists x R(x,j,t)$  iff  $\exists d [d = \psi(j,t)]$

Axiom ii) The measure function  $\mu$  associated with the noun is the measure function denoted by the verb:  $R(x,j,t) \rightarrow \mu(x) = \psi(j,t)$

## **V. Conclusion**

We have proposed the following model. A noun like *love* denotes a relation between an instance of a property and two individuals,  $j$  and  $t$ . Like more familiar concrete mass nouns, this noun has an associated measure function  $\mu$ . This captures the interpretation of comparatives like *more* and mass determiners like *a lot of*. The relationship between the semantics of the verb and the noun is expressed through two axioms, like those given above. In particular, the second axiom says that the measure function associated with the noun is the measure function denoted by the verb. This set of assumptions accounts in a simple way for the instance-interpretations and degree-interpretations that these nouns are observed to have.

It also explains where lies the semantic unity of abstract and concrete mass nouns. Being common nouns, mass nouns have the capacity to refer (and nouns like *love* refer specifically to property instances). Being moreover mass nouns, they not only refer, but also have an associated measure function, which allows a comparison of the instances they denote, as required by comparatives and mass determiners like *a lot of*.

## **VI. References**

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