Grammatical Categories as Label Alignment

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A basic assumption in linguistic theory is that the primitives of syntax and logical form are abstract objects (e.g., formal features, semantic types). In this paper, I present an analysis of substantive terms (nouns and adjectives) in English as *labels*, where only their form, i.e. their phonological matrix, is needed to calculate distributional value and logical interpretation in context. Under this view, what labels apply to is not part of the formal analysis of language: it belongs to language use in context (i.e., Pragmatics), according to the conventions of a language. I use the copula BE to illustrate how a label gets to be interpreted as a proper noun, a mass noun or an adjective depending on whether it is *completely, widely* or *narrowly* aligned with the head of constituents headed by *is*. In short, a grammar is a sophisticated labelling system: out of a finite list of simple labels, it generates a potentially infinite number of complex labels, i.e., constituents, which impose specific values on their label-parts based on alignment principles.

To clarify the 'words as labels' hypothesis, consider grammatical plural: no longer seen as a distinction operating on atoms, sums or groups à la Link (1983) or Landman (1989), pluralization operates on *labels*. Since a singular form (say *dog*) can only apply to one object in discourse, targeting more objects with *dog* requires plural morphology (*dogs*): the plural is the copying of labels, a novel take on the idea that bare plurals are the name of kinds (Carlson, 1980). While plural labelling is based on an overt morphological paradigm, other grammatical values in English are introduced **covertly** during composition: complex constituents are thus *more than* the sum of their arbitrary parts; they are effectively *labelling patterns* for discourse use, imposing values on forms by **alignment difference**. To exemplify this, consider the predicative copular construction *Venus is bright*: in traditional terms, *is* contributes no meaning; its function (formalized $\lambda P\lambda x[P(x)]$) is the linking of a predicate complement (the adjective *bright*) to an argument (the individual *Venus*, the subject) (Mikkelsen 2011). Here, *Venus is bright* is interpreted as a complex label whose label-parts are directed to target an individual entity (*Venus*) and one of its properties (*bright*). The targeting differences reflect different alignments of the two forms with the head *is*. Let '*is*' be the head of a sentence which contributes an argument position for a subject, with a value of 1 for alignment purposes. A label receives a value of 1 when it is **completely aligned** with *is* at the output: a singular lexical form with a value of 1 targets an individual reality in discourse, e.g., a proper noun (PN) like *Venus*. A label has a value of <1 when it is **narrowly aligned** with the object *Venus is*. Narrow alignment means the label applies to something less than the individual, i.e., a property (like the adjective *bright*). Alignment differences extend to the mass noun (MN) reading of bare forms, as in *war is chaos*. In this case, the lexical forms effectively have **wider alignment** relative to the head, a value of >1: this is the pattern that targets notions with cumulative reference (Quine 1960).

The paper presents a formalization and shows that with bare singular labels in subject and complement positions (e.g. *x is (y)*), the grammar generates the following seven patterns:

Subject *x is* ↓ Comp *y* →	**A.** ADJ: $y<1$	**B.** PN: $y=1$	**C.** MN: $y>1$
1. PN: $x=1$ Venus is.	Venus is bright.	Venus is Phosphorous.	Venus is rock.
2. MN: $x<1$ Time is.	Water is clear.	* Rock is Venus.	Beer is alcohol.

The system excludes the unattested pattern in cell (**2B**), as shown in the presentation.

When substantive terms are labels, it is not the abstract part of the word (denotation or formal features, see Baker 2003) that is relevant for the analysis, but alignment of forms at the level of the constituent: denoting an individual, mass or property is more of a requirement for the *felicitous use of a word in discourse* given the values imposed on form by constituent structure. The paper argues that this approach leads to a simpler grammar that makes predictions about possible grammatical patterns in natural language.

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