An Analysis of Pseudopartitives and Measure Phrases that Say No to Extra Rules

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Abstract

Our analysis of pseudopartitives and measure phrases draws on the idea of 'of' as a copula in a pseudopartitive. The copular analysis allows us to avoid the complications caused by treating either the numeral-noun combination before the of-phrase or the of-object as the head of a pseudopartitive on agreement, and hence to account for all the agreement patterns without creating any extra rule. We also outline how we can extend our analysis to handle measure phrases that do not co-occur with of-phrases by treating these measure phrases as anaphoric, an analysis that can adapt to the anaphoric constructions in classifier languages. Such an analysis does not only come closer to the intuition of native speakers but also have an appeal from the perspective of the universality of languages.

1 Introduction

In this paper, we present our HPSG analysis of English measure phrases(MP) in pseudopartitives. Our analysis is motivated by gaps we find in two proposals on how MPs can be handled in HPSG. The first is Flickinger and Bond (2003). It does not cover pseudopartitives. The measure words they look at are mostly restricted to units of measurement. The second proposal is Wright and Kathol (2003). It deals with pseudopartitives but it says very little about units of measurement. Although these two papers complement each other in terms of coverage, the grammar rules given by them do not. It remains a challenge to provide a better coverage of pseudopartitives, particularly if we are to avoid creating extra rules for handling MPs.

2 Coverage of Existing Proposals

Let us go into more details on the coverage of Flickinger and Bond (2003). The following AVM is the SYNSEM of an MP generated by the measure phrase rule in this paper:

$$
\begin{bmatrix}
\text{CAT|HEAD } \textit{noun} \\
\text{CONT} \begin{bmatrix} \text{INDX } \begin{bmatrix} \text{PERNUM } \textit{3sing} \end{bmatrix} \\ \text{RELS } \left\{ \begin{array}{l} \text{DEGREE\_RELS, CARD\_RELS,} \\ \text{NOUN\_RELS} \end{array} \right\} \end{bmatrix}
\end{bmatrix}
$$

The above representation admits MPs mainly formed by numerals and units of measurement and accounts for the use of such MPs as the modifying noun in noun-noun compounds (1) and as a NP by itself (2).

(1) I bought a **fourteen inch** candlestick.

(2) **Three gallons** was enough.

The representation cannot be used for analysing (3) whose main verb agrees with the plural form of the measure word. The measure words used in such sentences are typically a collection of individuals.

(3) **Three herds** of deer are spotted.

Given that Flickinger and Bond (2003) make no claim about pseudopartitives, we do not say there is anything wrong with their analysis, except that the rule is given too general a name. It generates only a subset of MPs for a subset of contexts that they can occur in.

Let us move on to Wright and Kathol (2003). The following AVM is the rule that generates MPs found in their paper:

$$
\begin{bmatrix}
\text{SYNSEM} & \begin{bmatrix} \text{CONT} & \begin{bmatrix} \text{IND} & \boxed{3} \vee \boxed{6} \begin{bmatrix} \text{PERNUM} & \boxed{7} \end{bmatrix} \\ \text{RESTR} & \boxed{4} \cup \left\{ \begin{bmatrix} \text{MEASURE} & \boxed{2} \\ \text{SUBSTANCE} & \boxed{4} \end{bmatrix}, \begin{bmatrix} equiv \\ \text{ARG1} & \boxed{6} \\ \text{ARG2} & \boxed{3} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix} \\
\text{BASE} & \begin{bmatrix} \text{COMPS} & \langle \boxed{5} \rangle \\ \text{COLL} & bol \\ \text{CONT} & \begin{bmatrix} \text{IND} & \boxed{1} \begin{bmatrix} \text{PERNUM} & \boxed{7} \end{bmatrix} \\ \text{RESTR} & \boxed{2} \end{bmatrix} \end{bmatrix} \\
\text{COMPL} & \boxed{5} \begin{bmatrix} \text{HEAD} & prep \\ \text{CONT} & \begin{bmatrix} \text{IND} & \boxed{3} \\ \text{RESTR} & \boxed{4} \end{bmatrix} \end{bmatrix}
\end{bmatrix}
$$

Depending on the value of the COLL feature, the rule generates 1 or 2 representations of an MP. An MP is defined as a constituent formed by a measure word and an of-phrase in Wright and Kathol (2003). Assigning a positive value to the COLL feature of the measure word would allow the main verb to agree either with the object of "of" or the measure word itself. So both (3), whose main verbs agree with the measure word "herds", and (4), whose main verb agrees with the object of "of", can be accepted by the rule if we assign a positive value to the COLL feature of "herd(s)".

(4) One **herd of cows** cool themselves with mud.

Assigning a negative value to the COLL feature of the measure word would disallow the main verb from agreeing with the object of "of", thus ruling out the unacceptable sentence (5):

(5) *A **pile of logs** were burning

It is possible to use the COLL feature for handling some of the problematic agreement patterns demonstrated by MPs formed with units of measurement. Assigning a positive value to the COLL feature of the units of measurement "inches" in (6) and (7) would make both sentences acceptable.

(6) Fourteen **inches of cable** is used.

(7) Fourteen **inches of cable** are used.

However, there is no means by which to licence the most problematic agreement pattern illustrated by 8, in which the main verb neither agrees with the measure word nor the object of "of".

(8) Three **pounds of potatoes** is used.

3   Solution for Increasing Coverage

The first part of our solution to the problem described above comprises the lexical entry of a numeral and the lexical entries of two types of measure words given below. Measure words are treated as a subclass of nouns that carry a *qty* (for quantify) value for the QQP feature. The QQP feature determines whether a noun is a measure word that quantifies its sister (*qty*), an attributive noun that qualifies its sister (*qly*) or a predicative noun (*prd*). Both measure words and attributive nouns carry non-empty SPEC values. By the SPEC values they carry, measure words are divided into two types. A measure word of the first type would specify the number of its sister to be either equivalent to its own number or singular. A measure word of the second type would specify the number of its sister to be equivalent to its own number. Units of measurement belong to the first type. The optional singular number of the index of its sister captures the idea that a unit of measurement may grind the denotatum of the object of "of" to a mass. The second type of measure words includes collections of individuals, containers and shape classifiers like "pieces". The plural number of the indices of their sisters captures the idea that they individuate the denotata of their sisters by dividing them into countable portions/parts.

$$
\begin{bmatrix}
\text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} numeral \\ \text{SPEC} \ \langle \text{N} \begin{bmatrix} \text{LABEL} & \boxed{\text{L13}} \end{bmatrix} \rangle \end{bmatrix} \end{bmatrix} \\[2em]
\text{UDRS} & \begin{bmatrix}
\text{LS} & \begin{bmatrix} \text{LMAX} & \boxed{\text{L1}} \\ \text{LMIN} & \boxed{\text{L12}} \end{bmatrix} \\[1em]
\text{SUBORD} & \boxed{8} \left\{ \begin{array}{l} \boxed{\text{L1}} \geq \boxed{\text{L11}}, \ \boxed{\text{L1}} \geq \boxed{\text{L12}}, \\ \boxed{\text{L11}} \geq \boxed{\text{L13}} \end{array} \right\} \\[2em]
\text{CONDS} & \boxed{9} \left\{ \begin{bmatrix} \text{LABEL} & \boxed{\text{L1}} \\ \text{REL} & quant \\ \text{RES} & \boxed{\text{L11}} \\ \text{SCOPE} & \boxed{\text{L12}} \end{bmatrix}, \begin{bmatrix} \text{LABEL} & \boxed{\text{L11}} \\ \text{REL} & three \\ \text{SCOPE} & \boxed{\text{L13}} \end{bmatrix} \right\}
\end{bmatrix}
\end{bmatrix}
$$

Figure 1: three

$$
\begin{bmatrix}
\text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} noun \\ \text{SPEC} \ \langle \text{N} \begin{bmatrix} \text{INDEX}|\text{NUM} & \boxed{11} \vee sing \end{bmatrix} \rangle \end{bmatrix} \\ \text{SUBCAT} \ \langle \text{D} \rangle \end{bmatrix} \\[2em]
\text{UDRS} & \begin{bmatrix}
\text{INDEX} & \boxed{2} \\
\text{LS} & \begin{bmatrix} \text{LMAX} & \boxed{\text{L13}} \\ \text{LMIN} & \boxed{\text{L13}} \end{bmatrix} \\[1em]
\text{CONDS} & \boxed{7} \left\{ \begin{bmatrix} \text{LABEL} & \boxed{\text{L13}} \\ \text{REL} & pound \\ \text{DREF} & \boxed{2} \begin{bmatrix} \text{NUM} & \boxed{11} plural \\ \text{QQP} & qty \end{bmatrix} \end{bmatrix} \right\}
\end{bmatrix}
\end{bmatrix}
$$

Figure 2: pounds

$$
\begin{bmatrix}
\text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} noun \\ \text{SPEC} \ \langle \text{N} \begin{bmatrix} \text{INDEX}|\text{NUM} & \boxed{11} \end{bmatrix} \rangle \end{bmatrix} \\ \text{SUBCAT} \ \langle \text{D} \rangle \end{bmatrix} \\[2em]
\text{UDRS} & \begin{bmatrix}
\text{INDEX} & \boxed{2} \\
\text{LS} & \begin{bmatrix} \text{LMAX} & \boxed{\text{L13}} \\ \text{LMIN} & \boxed{\text{L13}} \end{bmatrix} \\[1em]
\text{CONDS} & \boxed{7} \left\{ \begin{bmatrix} \text{LABEL} & \boxed{\text{L13}} \\ \text{REL} & herd \\ \text{DREF} & \boxed{2} \begin{bmatrix} \text{NUM} & \boxed{11} plural \\ \text{QQP} & qty \end{bmatrix} \end{bmatrix} \right\}
\end{bmatrix}
\end{bmatrix}
$$

Figure 3: herds

Before we move on to explain what we will do with these lexical entries, let us give some explanation on the use of indices (boxed numbers) in figures that illustrate how our proposal works. From this section onwards, indices represented by the same boxed number are shared across figures, excluding Figure 3 and Figure 2. An index used in each of these two AVMs is shared with indices represented by the same boxed number in other figures. But between these two representations of measure words, indices represented by the same boxed number are not shared.

Now let us start constructing a pseudopartitive by applying schema 4 of Pollard and Sag (1994) and a revised version of the semantic principle of Reyle (1995) that works with an NP analysis of DET-N combinations to the lexical entry of "three" and the lexical entry of one of the measure words given above. The original version, which unifies the top label and the bottom label of the head daughter with those of the mother, would only work with a DP analysis of DET-N combinations. The revised version of the semantic principle Reyle (1995) would unify the top label and the bottom label of a quantifer with those of the constituent formed by the quantifier and a noun when the quantifier is the non-head daughter. The revised version is given in Figure 4.

$$
\begin{bmatrix}
\text{CAT} & \begin{bmatrix} \text{HEAD} & \boxed{93} \end{bmatrix} \\
\text{UDRS} & \begin{bmatrix} \text{LS} & \boxed{99} \\ \text{SUBORD} & \boxed{98} \cup \boxed{95} \\ \text{CONDS} & \boxed{97} \cup \boxed{94} \end{bmatrix} \\
\text{NHDTR} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \textit{quant} \end{bmatrix} \\ \text{UDRS} & \begin{bmatrix} \text{LS} & \boxed{99} \\ \text{SUBORD} & \boxed{98} \\ \text{CONDS} & \boxed{97} \end{bmatrix} \end{bmatrix} \\
\text{HDTR} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \boxed{93} \end{bmatrix} \\ \text{UDRS} & \begin{bmatrix} \text{LS} & \boxed{96} \\ \text{SUBORD} & \boxed{95} \\ \text{CONDS} & \boxed{94} \end{bmatrix} \end{bmatrix}
\end{bmatrix}
$$
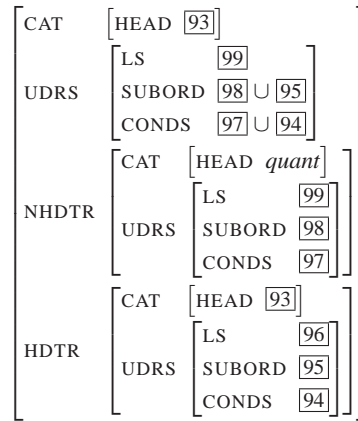
Figure 4: Revised semantic principle

Our first step yields the following representations of MPs:

$$
\boxed{1}\begin{bmatrix}
\text{CAT} & \begin{bmatrix}
\text{HEAD} & \begin{bmatrix} noun \\ \text{SPEC} \ \big\langle N \big[\text{INDEX|NUM} \ \boxed{11} \ pluarl \lor sing \big] \big\rangle \end{bmatrix} \\
\text{SUBCAT} \ \langle \rangle
\end{bmatrix} \\
\text{UDRS} & \begin{bmatrix}
\text{INDEX} & \big[\text{NUM} \ \boxed{11} \big] \\
\text{LS} & \begin{bmatrix} \text{LMAX} \ \boxed{L1} \\ \text{LMIN} \ \boxed{L12} \end{bmatrix} \\
\text{SUBORD} & \boxed{8} \\
\text{CONDS} & \boxed{9} \cup \boxed{7}
\end{bmatrix}
\end{bmatrix}
$$

Figure 5: three pounds

$$
\boxed{1}\begin{bmatrix}
\text{CAT} & \begin{bmatrix}
\text{HEAD} & \begin{bmatrix} noun \\ \text{SPEC} \ \big\langle N \big[\text{INDEX|NUM} \ plural \big] \big\rangle \end{bmatrix} \\
\text{SUBCAT} \ \langle \rangle
\end{bmatrix} \\
\text{UDRS} & \begin{bmatrix}
\text{INDEX} & \boxed{2} \\
\text{LS} & \begin{bmatrix} \text{LMAX} \ \boxed{L1} \\ \text{LMIN} \ \boxed{L12} \end{bmatrix} \\
\text{SUBORD} & \boxed{8} \\
\text{CONDS} & \boxed{9} \cup \boxed{7}
\end{bmatrix}
\end{bmatrix}
$$
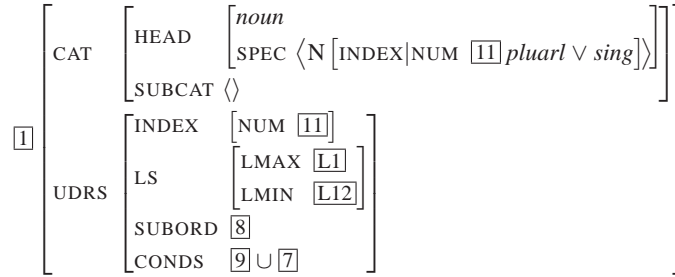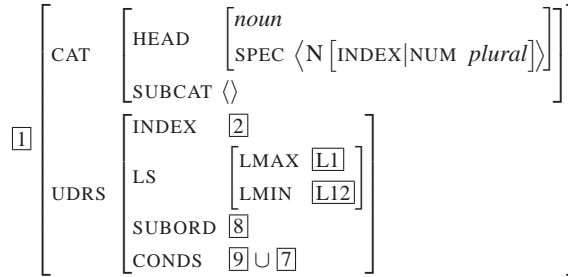
Figure 6: three herds

The second part of our solution comprises the lexical entry of "of", which is given an analysis different from that of "of" as used as a preposition in partitives. The differences in syntactic behaviour between pseudopartitives and partitives can be illustrated by Sentences 9 10, 11 and 12, which are taken from Selkirk (1976) and cited by Stickney (2004).

(9) A few of the leftover turkey has been eaten.

(10) A few has been eaten of the leftover turkey.

(11) A few of leftover turkey has been eaten.

(12) *A few has been eaten of leftover turkey.

It is possible to extract "of the leftover turkey" from the partitive 9 and from 10, whereas it is not possible to extract "of leftover turkey" from the pseudopartitive 11 and form 12. This means "of the leftover turkey" is a constituent whereas "of leftover turkey" is not. Therefore we put both a subject and an object in the SUBCAT list of "of" when it is used in a pseudopartitive. This means "of" would not form a constituent without cancelling out both its subject and object.

Further, to achieve a closer correspondence between the syntax and semantics, we invoke the copular analysis of "of" supported by Stickney (2004) and credited to den Dikken (1998). The equivalence relation between the denotatum of the of-object and the denotatum of the preceding NP given in Wright and Kathol (2003) as the semantic representation of "of" is the same equivalence relation between the subject and the object of a copula. A copular analysis is also useful for avoiding the agreement problem caused by the plural forms of units of measurement in grammar engineering. The copular head can prevent the verb that takes the pseudopartitives in question as subject from directly interacting with either the measure word or the object of "of". Below is the representation of "of":

$$
\begin{bmatrix}
\text{CAT} & \begin{bmatrix} \text{HEAD} & \textit{mon} \\ \text{SUBCAT} & \left\langle \text{NP}\begin{bmatrix} \text{INDEX} & \boxed{2} \\ \text{LABEL} & \boxed{\text{L13}} \end{bmatrix}, \text{NP}\begin{bmatrix} \text{INDEX} & \boxed{4} \end{bmatrix} \right\rangle \end{bmatrix} \\
\text{UDRS} & \begin{bmatrix} \text{INDEX} & \boxed{5} \\ \text{LS} & \begin{bmatrix} \text{LMAX} & \boxed{\text{L13}} \\ \text{LMIN} & \boxed{\text{L13}} \end{bmatrix} \\ \text{CONDS} & \boxed{6} \left\{ \begin{bmatrix} \text{LABEL} & \boxed{\text{L13}} \\ \text{REL} & \textit{part\_rel} \\ \text{DREF} & \boxed{5} \\ \text{ARG1} & \boxed{4} \\ \text{ARG2} & \boxed{2} \end{bmatrix} \right\} \end{bmatrix}
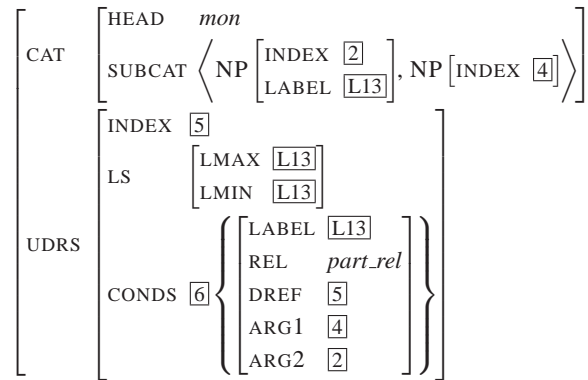\end{bmatrix}
$$

Figure 7: of

Notice that the HEAD value is typed to (instead of the conventional *preposition*), *mon*, *monotonic category*, which is projected to Schwarzschild (2006)'s "monotonic constructions". Syntactically, a monotonic construction is headed by 'of', but behaves like a noun phrase, inheriting the categorial properties from the lower NP.[1] Semantically, its interpretation uses a dimension that is monotonic relative to the part-whole relation in the domain given by the noun regarded as the semantic core of the noun phrase. Let us go into more details on how this part-whole relation works. The *part_rel* in the CONDS list of "of" creates a discourse referent corresponding to the sum of some part(s) whose material makeup is specified by its ARG2 value and whose size(the size of each part) is specified by its ARG1 value. Whether the sum of these parts (the DREF value of the *part_rel* and the INDEX of "of") is a singular individual(*sing*), a mass *sing* or a plural individual *plural* is determined by the SPEC value of the MP to be combined with the projection of "of". The projection of "of" is formed by applying schema 2 and the semantic principle of Reyle (1995) to the lexical entry of a noun and the lexical entry of "of". This yields the following representation of an of-phrase:

---

[1] It requires more syntactic work to precisely characterise the categorial nature of *mon*, however, particularly to determine its exact locus in the type hierarchy.

$$\begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \textit{mon} \\ \text{SUBCAT} & \left\langle \boxed{1}\,\text{NP} \begin{bmatrix} \text{INDEX} & \boxed{2} \\ \text{LABEL} & \boxed{13} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{UDRS} & \begin{bmatrix} \text{INDEX} & \boxed{5} \\ \text{LS} & \begin{bmatrix} \text{LMAX} & \boxed{\text{L13}} \\ \text{LMIN} & \boxed{\text{L13}} \end{bmatrix} \\ \text{CONDS} & \boxed{6} \cup \boxed{12} \left\{ \begin{bmatrix} \text{LABEL} & \boxed{\text{L13}} \\ \text{REL} & \textit{noun\_rel} \\ \text{DREF} & \boxed{4} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$
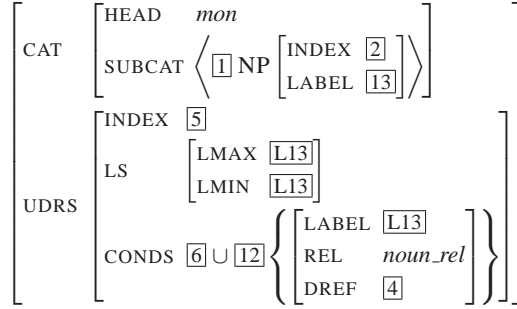
Figure 8: an of-phrase

Now we can construct a pseudopartitive by applying Schema 4 and our modified version of the semantic principle of Reyle (1995) to the of-phrase and the MP represented by Figure 5 or 6. The representation of the resulting pseudopartitive is given below:
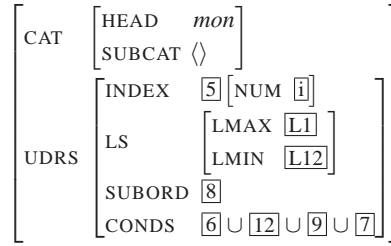
$$\begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \textit{mon} \\ \text{SUBCAT} & \langle \rangle \end{bmatrix} \\ \text{UDRS} & \begin{bmatrix} \text{INDEX} & \boxed{5}\begin{bmatrix} \text{NUM} & \boxed{i} \end{bmatrix} \\ \text{LS} & \begin{bmatrix} \text{LMAX} & \boxed{\text{L1}} \\ \text{LMIN} & \boxed{\text{L12}} \end{bmatrix} \\ \text{SUBORD} & \boxed{8} \\ \text{CONDS} & \boxed{6} \cup \boxed{12} \cup \boxed{9} \cup \boxed{7} \end{bmatrix} \end{bmatrix}$$

Figure 9: a pseudopartitive

For "three pounds of potatoes", the INDEX value $\boxed{i}$ would be a disjunction of singular or plural, allowing the MP to combine with singular and plural forms of the main verb of a pseudopartiive.

4   Handling Coercion by Salient Plural Individuals

We still have (4) left. Wright and Kathol (2003) point out that the agreement pattern exhibited by this sentence cannot be generalized to all combinations of measure words and of-objects, as illustrated by 5. Even for (4), replacing the plural verb "cool" with its singular form is found to be equally, if not more acceptable among native speakers. Wright and Kathol (2003) see the agreement pattern exhibited by (4) as a result of coercion by some salient plural individuals. Although dealing with saliency falls outside the scope of a grammar, we are aware that being animate appears to be a prerequisite for a plural individual to be salient in all the acceptable examples given by Wright and Kathol (2003). So we create a rule that allows the not-so-acceptable agreement pattern only when the of-object is animate. The rule

would convert the lexical entry of "of" to the representation given in figure 4. Note the *animate* value assigned to ARG1|ANI of the *part_rel*.
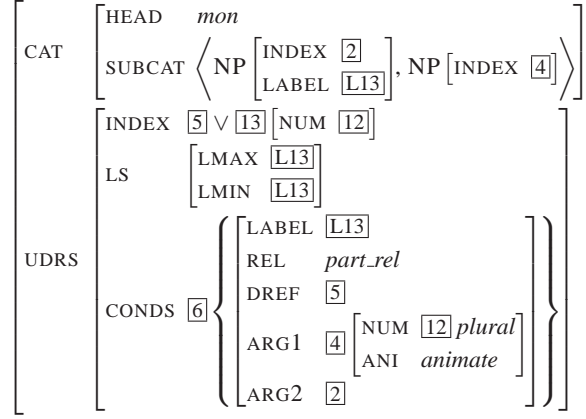
$$
\begin{bmatrix}
\text{CAT} & \begin{bmatrix} \text{HEAD} & mon \\ \text{SUBCAT} & \left\langle \text{NP} \begin{bmatrix} \text{INDEX} & \boxed{2} \\ \text{LABEL} & \boxed{\text{L13}} \end{bmatrix}, \text{NP} \begin{bmatrix} \text{INDEX} & \boxed{4} \end{bmatrix} \right\rangle \end{bmatrix} \\
\text{UDRS} & \begin{bmatrix}
\text{INDEX} & \boxed{5} \vee \boxed{13} \begin{bmatrix} \text{NUM} & \boxed{12} \end{bmatrix} \\
\text{LS} & \begin{bmatrix} \text{LMAX} & \boxed{\text{L13}} \\ \text{LMIN} & \boxed{\text{L13}} \end{bmatrix} \\
\text{CONDS} \ \boxed{6} & \left\{ \begin{bmatrix} \text{LABEL} & \boxed{\text{L13}} \\ \text{REL} & part\_rel \\ \text{DREF} & \boxed{5} \\ \text{ARG1} & \boxed{4} \begin{bmatrix} \text{NUM} & \boxed{12} \, plural \\ \text{ANI} & animate \end{bmatrix} \\ \text{ARG2} & \boxed{2} \end{bmatrix} \right\}
\end{bmatrix}
\end{bmatrix}
$$

Figure 10: "of" as a result of coercion

The projection of this "of" has the options to unify its INDEX value with $\boxed{5}$, whose NUM value is determined by the SPEC|UDRS|INDEX|NUM value of the measure word, or unify its INDEX value with $\boxed{13}$, whose NUM value is determined by the UDRS|NUM value of the object of "of". The later option would admit (4) but reject (5).

5   Extension

The proposal that we have given above can be further extended to cover (2) in a more intuitive way. We call such construction "anaphoric" following Downing (1996)'s work on classifiers. We have confirmed with native speakers that the meaning of (2) is far more often "A quantity of some substance equivalent to three gallons is enough" than "A degree equivalent to three gallons is enough". To capture this, we propose a unary rule that empties the SPEC list of an MP and introduce into the background the *part_rel* and *noun_rel* supplied by the head of a pseudopartitive. This rule, whose representation is given in figure 14 is introduced as an instance of a class of rules for handling a variety of specifiers used anaphorically in the following monotonic constructions:

(13) Too much is wasted

(14) Two million are killed

Given that this paper is about pseudopartitives, we omit the details about the generalization. When compared to Flickinger and Bond (2003)'s rule, our rule has

an appeal from the perspective of the universality of languages. The backbone of the rule given below can be adapted (with all the agreement features removed) to apply to anaphoric constructions of classifier languages like Japanese and Mandarin.
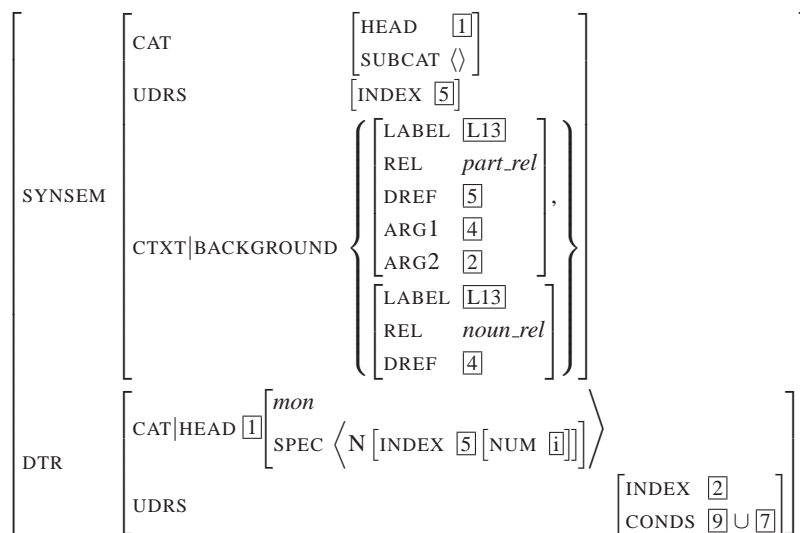
$$
\begin{bmatrix}
\text{SYNSEM} &
\begin{bmatrix}
\text{CAT} &
\begin{bmatrix}
\text{HEAD} & \boxed{1} \\
\text{SUBCAT} & \langle\rangle
\end{bmatrix} \\
\text{UDRS} &
\begin{bmatrix}\text{INDEX } \boxed{5}\end{bmatrix} \\
\text{CTXT}|\text{BACKGROUND} &
\left\{
\begin{bmatrix}
\text{LABEL} & \boxed{\text{L13}} \\
\text{REL} & \textit{part\_rel} \\
\text{DREF} & \boxed{5} \\
\text{ARG1} & \boxed{4} \\
\text{ARG2} & \boxed{2}
\end{bmatrix},
\begin{bmatrix}
\text{LABEL} & \boxed{\text{L13}} \\
\text{REL} & \textit{noun\_rel} \\
\text{DREF} & \boxed{4}
\end{bmatrix}
\right\}
\end{bmatrix} \\[4ex]
\text{DTR} &
\begin{bmatrix}
\text{CAT}|\text{HEAD } \boxed{1}
\begin{bmatrix}
\textit{mon} \\
\text{SPEC } \left\langle \text{N}\begin{bmatrix}\text{INDEX } \boxed{5}\begin{bmatrix}\text{NUM } \boxed{i}\end{bmatrix}\end{bmatrix}\right\rangle
\end{bmatrix} \\
\text{UDRS} &
\begin{bmatrix}
\text{INDEX} & \boxed{2} \\
\text{CONDS} & \boxed{9}\cup\boxed{7}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

Figure 11: anaphoric construction rule

6 Conclusion

We have stuck to our claim that no extra rules is to be created for our analysis of pseudopartitives. Our analysis of pseudopartitives that exhibit the more acceptable agreement pattern only draws on general principles proposed in Pollard and Sag (1994) and Reyle (1995). Our revision of the semantic principle of Reyle (1995) is geared more towards a general approach to the analysis of DET-N combinations than a compositional semantics customized for pseudopartitives. The pursuit for this theoretical economy has a practical motivation. Restricting the number of rules and introducing rule classes rather than specific rules when new rules are needed for increasing coverage go hand in hand with our attempt at restricting the number of features as presented in [author's paper]. Placing these constraints on grammar engineering makes a wide-coverage grammar easy for grammar writers to maintain and developers of NLP systems to use. Our actual implementation of the work presented here in ENJU (Miyao et al., 2004) also comes with a simplified output format (an alternative to the standard AVM format) that captures the gist of our HPSG analysis in Penn Treebank bracketing style such that members of the NLP community can share the fruit of our research with members of the HPSG community.

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