

A Beautiful Four Days in Berlin

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1. The Data

This paper presents an analysis of such noun phrases as in (1) within the framework of Head-driven Phrase Structure Grammar.

- (1) a. a beautiful four days b. a lucky three students

This type of construction is peculiar in several respects. First, an indefinite article co-occurs with a plural noun: the head noun cannot be a singular noun in many cases, as shown in (2) (but see also section 2) and the indefinite article cannot be omitted, as in (3).

- (2) a. *a beautiful four day b. *a lucky three student

- (3) a. *beautiful four days b. *lucky three students

Second, the adjective and the numeral are also obligatory.

- (4) a. *a four days b. *a three students
c. *a beautiful days d. *a lucky students

Third, the order of the numeral and the adjective is reverse of the normal cases. The adjective should be followed by the numeral in this construction.

- (5) a. *a four beautiful days b. *a three lucky students

Finally, when it is a subject, the verb can show either singular or plural agreement. In (6)a *an estimated 3.3 million people* has plural agreement with the verb whereas *an estimated 43,000 people* in (6)b shows singular agreement.

- (6) a. **An estimated 3.3 million people** have died as a result of the war making it the “tragedy of modern times”, according to a report issued by the International Rescue Committee aid agency.

(<http://news.bbc.co.uk/2/hi/africa/2928127.stm>)

- b. **An estimated 43,000 people** has already died since 1979 due to asbestos exposure and thousands more continue every year despite serious efforts from local and federal government to ban and or/limit the use of asbestos. (<http://www.asbestos-attorney-center.com/asbestos-attorney-cancer-mesothelioma>)

Thus, it is clear that this construction has several idiosyncratic properties. In this paper, I will argue that HPSG can provide a satisfactory account of such properties without losing any generalisation.

2. An HPSG account

We assume a lexical entry like the following for a plural count noun.

- (7) *students*: $\left[\begin{array}{l} \text{HEAD } \textit{noun} \\ \text{MKG } [\textit{pl-cn} \\ \text{[AGR|NUM } \textit{pl}] } \\ \text{CONT } [\text{INDEX|NUM } \textit{pl}] \end{array} \right]$

MARKING (MKG) indicates whether the expression involves a determiner or whether it can stand alone without a determiner (Van Eynde 2006, etc.). The MKG feature has a value whose type is *marking*. I assume the following type hierarchy for *marking*.

- (8)
- ```

graph TD
 marking --> unmarked
 marking --> marked
 unmarked --> non-numbered
 unmarked --> numbered
 non-numbered --> incomplete
 non-numbered --> bare
 bare --> pl-cn
 bare --> uncountable-noun[uncountable-noun (ucn)]

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An expression is *marked* if it is a determiner or contains a determiner, and *unmarked* otherwise. The distinction between *numbered* and *non-numbered* is to differentiate between nominals with a numeral and those without a numeral. An expression is *bare* if it can occur as an NP without a determiner. This type has two subtypes: plural countable nouns such as *students* are *pl-cn* (see (7)), and uncountable nouns such as *water* are *ucn*. Nominals such as a singular countable noun *dog* are *incomplete* because they require a determiner. AGR represents morphosyntactic properties of the expression, and NP-internal agreement is based on its value (Kathol 1999, Kim 2004, Wechsler and Zlatić 2000). (7) shows *students* is morphosyntactically plural. We further assume that the feature AGR is a MGK feature (Ellsworth *et al.* 2008: 32).

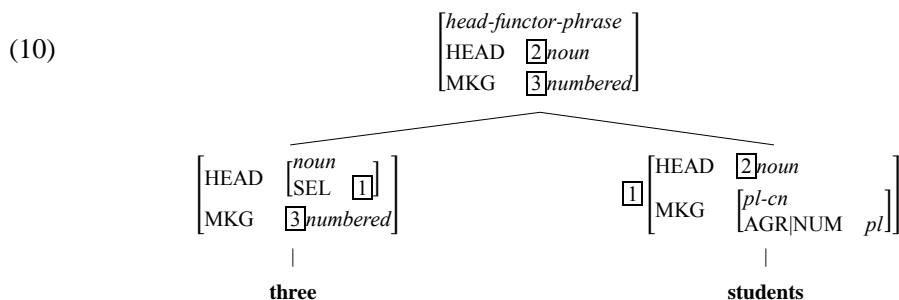
The semantic properties of a sign are represented as a value of the CONTENT (CONT) feature, and the INDEX|NUM value indicates the number of the individual the expression refers to. Therefore, the *pl* value of CONT|INDEX|NUM indicates that *students* refers to multiple students rather than a single student. Subject-verb number agreement is based on the CONT|INDEX|NUM value of the subject and the verb.

We assume the following lexical entry for numerals larger than 1.

$$(9) \quad \textit{three}: \left[ \begin{array}{l} \text{HEAD} \\ \text{MKG} \end{array} \left[ \begin{array}{l} \text{SEL} \\ \text{numbered} \end{array} \left[ \begin{array}{l} \text{HEAD} \textit{noun} \\ \text{MKG} \left[ \begin{array}{l} \textit{pl-cn} \\ \text{AGR|NUM} \textit{pl} \end{array} \right] \end{array} \right] \right] \right]$$

I assume that numerals are functors: non-heads selecting their head (Allegranza 1998; Van Eynde 2006; etc.). SEL(ECT) is a part of the HEAD value, specifying what kind of word/phrase it selects: (9) indicates that *three* selects a plural countable noun.

The above lexical items give the following structure of the NP *three students*.



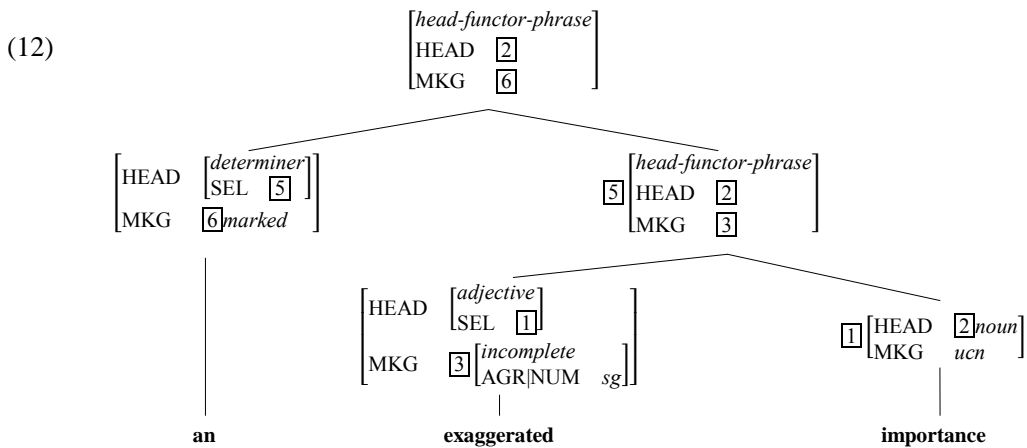
(10) is a structure of a head-functor phrase, where the functor *three* selects and combines with *students* via the feature SEL. The head-functor phrase is a headed phrase, so the HEAD value is inherited from the head daughter. We assume that the MKG value of a head-functor phrase comes from the functor daughter.

Before looking at how the numeral-noun combination discussed above combines with an adjective and an indefinite article, we will focus on a relevant fact: some uncountable nouns need a determiner when they are modified by an adjective (Honda 1984: 104, Higuchi 2003:113). The examples in (11) are from Close (1975: 112).

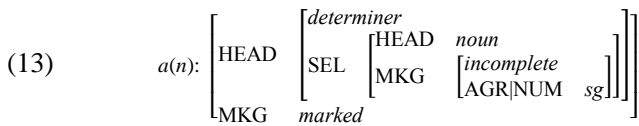
- (11) a. In most countries, education is the responsibility of the state.
- b. Scott received *a very strict education*.
- c. I attach importance to regular exercise; but some people attach *an exaggerated importance* to it.

Uncountable nouns such as *education* and *importance* can occur as an NP without any determiner. Therefore, the fact that they need a determiner when they combine with an adjective leads to the claim that the italicised parts in (11) b,c involve a determiner because the adjective requires it. The NP *an exaggerated importance* in (11)c will be something like (12) (next page). The phrase *exaggerated importance* in (12) inherits the HEAD value (2) from its head daughter *importance*, and the MKG value (3) from its functor daughter *exaggerated*, so *exaggerated importance* becomes a kind of singular nominal: a nominal whose MKG value is *incomplete* and its

AGR|NUM value is *sg*.

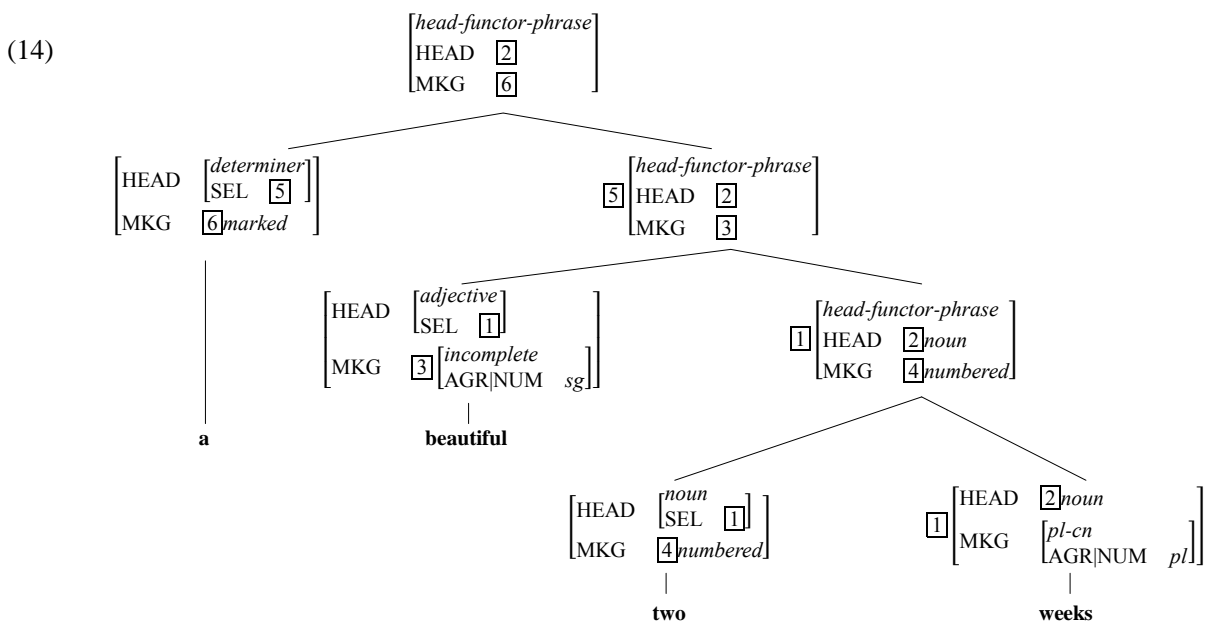


We assume that a lexical information for *a(n)* is something like (13).

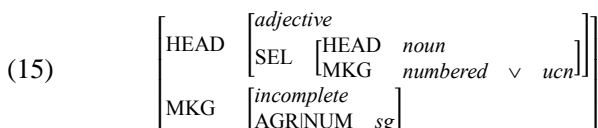


The lexical information for *a(n)* indicates that it selects a noun whose MKG value is *incomplete* and its AGR|NUM value is *sg*. Therefore it can combine with *exaggerated importance*.

The construction like *a beautiful two weeks* has the same basic structure. I propose the following analysis for this construction.



The lexical entry for the adjectives in (12) and (14) are the following.



The adjectives in (12) and (14) select a nominal whose MKG value is either *numbered* or *ucn*: a nominal expression with a numeral or an uncountable nominal. In (14) *beautiful* combines with the former, and *exaggerated* in (12) combines with the latter. The phrase *beautiful two weeks* in (14) requires a determiner because the MKG value of the adjective functor daughter is *incomplete*, as shown in (15). The indefinite article

*a(n)* shown in (13) selects a singular nominal whose MKG value is *incomplete* and the AGR|NUM value is *sg*, so it can combine with *beautiful two weeks* although the latter contains a plural nominal head.

We will now look at how the above analysis can deal with the idiosyncratic properties outlined in Section 1.

We observed in (2) that an indefinite article co-occurs with a plural noun, not a singular noun. In our analysis the indefinite article and the noun do not agree in number because the indefinite article is required by the adjective, not the noun. A plural noun occurs simply because the numeral is larger than 1. This predicts that if the numeral is *one* then a singular noun appears, and it is borne out by the following examples.

- (16) a. a mere one percent  
 b. a further one hour (Ohna 2003: 585)

In the examples in (16) the numeral *one* requires a singular noun.

As illustrated in (3) and (4) the indefinite article, the adjective and the numeral are all obligatory. These facts can be accounted for in terms of the properties of the adjective. First, *lucky three students* inherits the MKG value from *beautiful* and the HEAD value from *two weeks*. Therefore it is a nominal whose MKG value is *incomplete* and its AGR|NUM value is *sg*. In English the indefinite article is obligatory for such a nominal. Second, the numeral is obligatory because the adjective selects a nominal whose MKG value is *numbered*. Finally, the adjective is obligatory because it is the one that requires the indefinite article and selects the numbered nominal.

In our analysis the adjective in this construction selects a nominal whose MKG value is *numbered*. This captures the fact that the order of the numeral and the adjective is reverse of the normal cases, as illustrated by the examples in (5). The adjective in this construction selects a nominal whose MKG is *numbered*. In (5), however, the adjectives *beautiful* and *lucky* select *days* and *students*, respectively, whose MKG value is not *numbered*.

Let us turn to the fact observed in (6): when it is a subject, the verb can show either singular or plural agreement. Plural agreement in (6)a occurs simply because the head of *an estimated 3.3 million people* is a plural noun *people*. As stated in section 2, subject-verb agreement in number is dependent on the CONT|INDEX|NUM value. The CONT|INDEX|NUM value of the head noun *people* is *pl*, so *an estimated 3.3 million people* shows plural agreement with the verb.

What about singular agreement in (6)b, then? Let us observe the fact that in English plural nouns sometimes show singular agreement with the verb.

- (17) a. Five pounds is/\*are a lot of money. (Hudson 1999: 174)  
 b. Most of us can agree that 8 million people *is* too many to be receiving disability payments from the government. (<http://www.startribune.com/printarticle/?id=177023831>)

It is possible to say that *five pounds* and *8 million people* in (17) refer to a group of people conceived as a whole rather than discrete entities (Kim 2003: 1117-1118). Let us assume that *pounds* and *people* in (17) have the following information.

- (18) 
$$\left[ \begin{array}{l} \text{HEAD} \quad [1] \textit{noun} \\ \text{MKG} \quad [2] \left[ \begin{array}{l} \textit{pl-cn} \\ \text{[AGR|NUM} \quad \textit{pl}] \end{array} \right] \\ \text{CONT} \quad [\text{INDEX|NUM} \quad \textit{sg}] \end{array} \right]$$

These nouns are normally countable nouns which are both morphologically and semantically plural, but in (17) they are countable nouns which are morphologically plural but semantically singular. Likewise, the head noun of *an estimated 43,000 people* in (6)b is morphologically plural but semantically singular, and its semantic singularity causes singular agreement with the verb.

### 3. Comparison with other analyses

Jackendoff (1977: 128-130), Honda (1984), Ohna (2003) and Ellsworth *et al.* (2008) claim that the adjective and the numeral make a constituent. However, (19) argues against this view.

- (19) a. the long [2 hours and 14 minutes]  
 b. an amazing [12 performances and 602 rehearsals] (Ionin and Matushansky 2004: 111)

In (19) the adjectives *long* and *amazing* do not make a constituent with the numerals. They clearly combine with the phrase in square brackets. These pieces of data can be easily captured by our analysis where the numeral and the following noun make a constituent.

Gawron (2002), Ionin and Matushansky (2004: 110ff; 2006: 323ff) are earlier analyses claiming that the numeral and the following noun make a constituent. Gawron (2002) argues that the numeral and the following noun make a measure phrase. However, it is not clear if the noun following the plural is always a measure phrase; *badgers* in (20) is clearly not a measure noun.

- (20) To put that number in perspective, an estimated 50,000 *badgers* are victims of road kill every year in the UK. (<http://www.telegraph.co.uk/earth/agriculture/farming/9120975/Battle-of-the-Cotswold-badger-cull.html>)

For Ionin and Matushansky (2004: 110ff; 2006: 323ff) the numeral is the head and the following noun is its complement. They treat numerals as nouns, so this would be an exceptional case where a noun takes a nominal complement without a preposition. Other things being equal, it is preferable not to have such an exception. In our analysis the role of head is dissociated from that of selector; the numeral is a functor, which is a non-head daughter selecting a head sister.

#### 4. Conclusion

I have presented an analysis of noun phrases such as *a beautiful four days* and *a lucky three students* within the framework of Head-driven Phrase Structure Grammar. This type of construction is peculiar in several respects: an indefinite article co-occurs with a plural noun; the indefinite article, the adjective and the numeral are all obligatory; the order of the numeral and the adjective is reverse of the normal cases; and when it is a subject, the verb can show either singular or plural agreement. I have shown that HPSG can provide a satisfactory account of such idiosyncratic properties of this construction without losing any generalisation.

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