

Grammatical number in numeral-noun constructions

A common assumption in current generative literature on cardinal numerals is that, with few exceptions, the structural relation between a numeral and the noun that it combines with is uniform, cross-linguistically as well as language-internally. Thus, the debate whether numerals are heads that select a projection of the noun as their complements (Ionin and Matushansky 2006), or specifiers of an (extended) projection of the noun (Corver and Zwarts 2006), has usually been carried under the assumption that there is just one analysis that applies to (almost) all numerals, with the possible exception of the often-noticed differences between ‘adjectival’ and ‘nominal’ numerals. In a recent paper, Ionin and Matushansky (2006) (henceforth IM) argue convincingly that the case-related properties of (some) numerals in Russian, Finnish and Inari Sami provide strong evidence for viewing them as nominal heads that recursively take another nominal projection as a complement; this analysis is then generalized to all other numerals and other languages. The first goal of this paper is to show that this reasoning is not valid; using data from a variety of languages, I argue that numerals combine with nouns in at least two distinct ways, and that IM’s head-complement analysis is only compatible with *some* numeral-noun constructions. The second goal is to show that the distribution of NUMBER features plays a central role in restricting the choice of structure for numeral-noun constructions.

In Hebrew, cardinal numerals may appear in two distinct forms, which I refer to as *free* and *bound*. Free numerals, as in (1a), are used when there is no overt noun, or with indefinite nouns (with some exceptions to be discussed below); while bound numerals, which resemble heads of construct state nominals, are used mostly with definite nouns, as in (1b):

- (1) a. šloša (sfarim) b. šlošet *(ha-sfarim)
three(free) books three(bound) the-books

Coordination facts provide immediate evidence against a uniform analysis for these two kinds of numerals. The numeral 2, unlike most other simple numerals, is used in the bound form *šney* even with indefinite nouns; nevertheless, it cannot be coordinated with a free numeral like *šloša* (‘three’):

- (2) *šney o šloša sfarim
two(bound) or three(free) books

Further evidence against IM’s uniform analysis comes from Hebrew complex numerals. According to IM, a complex multiplicative numeral like *three thousand* forms a recursive right-branching structure (roughly: [three [thousand [books]]]). In Hebrew, this analysis makes the wrong prediction with respect to the choice of free or bound form for the ‘decimal’ part (‘thousand’ etc) of such numerals. In simple numeral-noun XPs, the decimal numerals 10, 100, 1000 etc must be used in the bound form when pluralized (‘tens’, ‘hundreds’ etc) and followed by a noun, as shown in (3a); nevertheless, in multiplicative numerals the *free* form of the pluralized decimal numeral is required, as in (3b):

- (3) a. alfej / *alafim sfarim
thousands(bound) / thousands(free) books
b. šlošet alafim sfarim
three(bound) thousands(free) books

Thus, according to IM’s analysis, the DP in (3b) contains an embedded XP which is otherwise ungrammatical. The alternative is to assume that the complex numeral forms a constituent that excludes the noun; this, in turn, means that numerals cannot be uniformly analyzed as heads that select a nominal complement. This conclusion is supported by the analysis of phrasal numerals in Corver and Zwarts (2006), and by the fact that numerals *precede* nouns in many head-final languages, such as Amharic, Basque, Hindi and Turkish, and *follow* nouns in many head-initial languages, such as Swahili and Thai.

The hypothesis pursued in this paper is that cross-linguistically, there are at least two types of numeral-noun constructions. Building on the idea proposed specifically for Hebrew in Danon (1998), I argue that UG allows both a recursive embedding construction (as in IM’s analysis), where the numeral serves as the head, and a spec-head construction where the numeral is a specifier (as in many previous analyses). Furthermore, both structures are argued to often coexist in the same language.

Under this proposal, an important question is what determines where each of the two constructions is used. A central observation is that morphological number marking on the numeral gives rise to a different structure from the one used with numerals that lack number morphology. In Hebrew, all (and only) numerals that have plural morphology (such as *alafim* ‘thousands’ or *šnayim* ‘two’) must be used in the bound form when combined with an indefinite noun (Danon 1998). In many other languages, such as English, pluralized numerals like *hundreds*, unlike their unpluralized counterparts, require a partitive construction which involves some sort of prepositional element: *hundreds *(of) books*.

Similar effects appear in numerous typologically unrelated languages. Many languages that allow only a morphologically singular noun in simple numeral-noun constructions use a different construction when either the numeral or the noun is pluralized. For instance, in Welsh, a noun in the plural (unlike a singular noun) can combine with a numeral only in a partitive construction (Hurford 2003), as in (4a); in Hungarian, pluralized numerals like ‘100s’ give rise to a possessive-like genitive construction, where the ‘possessed’ noun is also plural, as in (4b); while in Turkish, a noun may combine with a pluralized numeral only if the latter is ‘denominalized’ by the manner suffix *-ca*, as in (4c):

- (4) a. *naw o ddyinion*
 nine of men(PL)
 ‘nine men’ (Welsh; from Hurford 2003)
- b. *gyerek-ek szaz-a-i*
 child-PL hundred-POSS3SG-PL
 ‘hundreds of children’ (Hungarian)
- c. *on-lar-ca kitap*
 ten-PL-MANNER book
 ‘tens of books’ (Turkish)

These facts all point to the conclusion that availability of a grammatical NUMBER feature on the numeral and/or on the noun plays a central role in restricting the choice between the two numeral constructions. In contrast to IM, who, in order to maintain a uniform syntactic analysis, dismisses many instances of number morphology in numeral-noun constructions as semantic concord with no syntactic significance, I argue for the following generalizations:

- The spec-head construction is not possible if both the numeral and the noun carry a morphosyntactic NUMBER feature, which numerals in many languages carry iff they have plural morphology.
- The recursive embedding construction must involve DP-internal case assignment to a projection of the noun that excludes the numeral.

Under this approach, two major sources of cross-linguistic variation in the form of numeral+noun XPs are in whether or not numerals and nouns can, or must, carry a NUMBER feature; and in the inventory of DP-internal case-assigning mechanisms.

If time permits, I will discuss the possibility of deriving the two proposed generalizations from a requirement that every NUMBER feature has to be licensed by Case, thus establishing a systematic relation between these two features. As an added benefit, this could also provide a coherent theoretical basis for the widespread intuition that pluralized numerals are ‘more nominal’ than other numerals.

References

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