

The syntax of comparative numerals

The standard analysis of comparative numeral DPs adopts a **Complex Determiner** (ComplexD) approach (1) (Barwise&Cooper1981). This talk defends the alternative **Simple Determiner** (SimpleD) approach (2). Although the latter approach is assumed in some work (Bresnan1973, Ionin&Matushansky2006), the literature contains no thorough examination of syntactic arguments in favor of either approach.

- (1) [DP [D more than three] [NP books]] (2) [more than [DP [D three] [NP books]]]

The main claim in SimpleD is that the local dependency (sisterhood) between the numeral D and the NP in simple numeral DPs (e.g. *three books*) is replicated in comparative numeral DPs. Supporting evidence comes from word order restrictions in Hebrew and Basque, number agreement in Spanish and English, and the distribution of *de* ‘of’ and prenominal vowel deletion in Spanish. Potential counterevidence is also discussed, showing that SimpleD provides a natural account for all the data.

1. Word order In Hebrew simple numeral DPs, the numeral D precedes its complement NP (3), with the exception of *exad* ‘one’, which triggers the reverse order (4). These ordering restrictions are preserved in comparative numerals (5–6), which shows that numeral+NP is the same constituent as in simple numerals, as assumed in SimpleD:

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|---|---|
| (3) dani kana shney sfarim Dani bought two books | (4) dani kana sefer exad Dani bought book one |
| (5) dani kana yoter mi- shney sfarim Dani bought more than- two books | (6) dani kana yoter mi- sefer exad Dani bought more than- book one |

ComplexD makes no such predictions, since it does not impose the required local dependency between the numeral and the NP. What is more, this approach is forced to assume a discontinuous D constituent in (6) (*more than ... one*). Relaxing the theory to allow for discontinuous constituents would still not explain the correlation between word order in simple and comparative numeral DPs.

A similar pattern holds in Basque, where numerals above 3 precede the NP (7), but *bat* ‘one’ reverses the order (8) (the behavior of *bi* ‘two’ depends on dialect). The ordering restrictions are preserved in comparative numerals (9–10), as predicted only by SimpleD. (*baino* ‘than’ always follows the standard and precedes *gehiago* ‘more’ and other comparative words in Basque.)

- | | |
|--|---|
| (7) Jonek hiru liburu erosi du. Jon.ERG three book bought has | (8) Jonek liburu bat erosi du. Jon.ERG book one bought has |
| (9) Hiru liburu baino gehiago erosi du. three book than more bought has | (10) Liburu bat baino gehiago erosi du. book one than more bought has |

As with Hebrew, ComplexD is forced to assume a discontinuous constituent in (9).

2. Number In examples involving *more than one*, the NP is marked as singular in Spanish and English:

- (11) más de un libro(*s)
 more than one book(*s)

In ComplexD, the numeral determiner is semantically plural, so it incorrectly predicts plural morphology on the noun. Some special operation would be needed so that the semantic number of the complex D is overridden by the number of the numeral. The facts follow directly in SimpleD, since D is singular, as in the simple numeral DP *un libro(*s)* ‘one book(*s)’.

3. Spanish *de* In simple numeral DPs with *millón* ‘million’, the NP must be preceded by *de* ‘of’ (12). This restriction is replicated in comparative numeral DPs (13):

- | | |
|--|--|
| (12) un millón *(de) libros a million *(of) books | (13) más de un millón *(de) libros more than a million *(of) books |
|--|--|

In SimpleD, this is the result of the same local dependency between the numeral and NP in both structures. ComplexD does not assume the same local dependency in comparative numeral DPs and would thus need additional stipulations. Note that the local dependency is crucial in (12); not any instance of *millón* followed by an NP requires *de*:

- (14) Juan vendió a un millón (*de) libros.
 Juan sold to a million (*of) books ‘Juan sold books to a million (people).’

4. Prenominal vowel deletion in Spanish The final class marker vowel (-o/a/e) in some Spanish Ds is deleted when their complement NP is overt (15–16), but not when followed by an unrelated NP (17) (deletion also applies to some prenominal As; Harris1996). This includes the numeral *uno* ‘one’:

- (15) Juan quiere uno/*un.
 Juan wants one
 (16) Juan quiere un/*uno libro.
 Juan wants one book
 (17) Juan vendió a uno/*un café.
 Juan sold to one coffee ‘Juan sold coffee to someone.’

This deletion is triggered by a local dependency between the numeral and the NP, and as predicted only by SimpleD, it is also obligatory in comparative numeral DPs:

- (18) Juan quiere más de un/*uno libro.
 Juan wants more than one book

5. Nonarguments for ComplexD The string *more than*+numeral can be coordinated, suggesting that it is a constituent, as assumed by ComplexD but not SimpleD:

- (19) I read [more than three] but [fewer than five] books.

SimpleD can account for this as a case of Right Node Raising (RNR), parallel to the following:

- (20) I think Bill bought [more than three], but Sue claims he bought [more than five], books.

The string numeral+NP cannot be wh-moved, suggesting that it is not a constituent, as assumed by ComplexD but not SimpleD:

- (21) *How many books did John buy more than?

Although extraction of its complement is possible (22), *than* introduces a weak island barrier (23), which accounts for (21) under any analysis:

- (22) Who did you buy more books than? (23) *How many feet is John taller than?

Finally, as shown in Krifka1999 and Geurts&Nouwen2007, the semantics of comparative numerals, which motivated the ComplexD analysis in Barwise&Cooper1981, can in fact be better accounted for under SimpleD.

6. Conclusion The available evidence argues for SimpleD over ComplexD. Only SimpleD correctly predicts that numeral+NP is a constituent in comparative numeral DPs, as witnessed by the crosslinguistic parallels with simple numeral DPs. Furthermore, supplemented with independently motivated assumptions, SimpleD can also account for data that only apparently favors ComplexD.

Selected references GEURTS&NOUWEN2007, “At least et al.: The semantics of scalar modifiers”, *Language*. HARRIS1996, “The syntax and morphology of class marker suppression in Spanish”, *Grammatical theory & Romance languages*, John Benjamins. IONIN&MATUSHANSKY2006, “The composition of complex cardinals”, *Journal of Semantics*. KRIFKA1999, “At least some determiners aren’t determiners”, *The semantics/pragmatics interface from different points of view*, Elsevier.