Maximal Interpretation of Nominal Phrases in Russian and its Implication for the NP/DP parameter

Takuya Miyauchi

(Tokyo University of Foreign Studies / Japan Society for the Promotion of Science)

Introduction. The literature on the structure of nominal phrases in articleless Slavic languages splits into two camps: DP vs. NP. Kagan and Pereltsvaig (2012) conclude that the DP layer exists even in Russian by considering the behaviors of adjectival modifiers. The aim of this paper is to show that maximal (exhaustive) interpretation of nominal phrases cannot be used to support the existence of DP in Russian. The maximal interpretation should be dealt with as a semantic problem and can be introduced even without DP.

Russian Possessives. In Russian, adjectival modifiers such as possessives can precede or follow numerals as shown in (1).

(1) a. pjat' Diminyx   knig   b. Diminy   pjat' knig
         five Dima's-GEN books   Dima's-NOM five books
         both: "Dima's five books"   (Kagan and Pereltsvaig 2012: 173)

The unmarked phrase (1a), where the possessive follows the numeral, is not interpreted maximally: Dima may have more than five books. Kagan and Pereltsvaig (2012) pointed out the possible alternative order (1b), where the possessive precedes the numeral. Unlike (1a), this phrase receives a maximal interpretation and presupposes that Dima has exactly five books. Kagan and Pereltsvaig (2012) insist that the maximal interpretation like in (1b) results since a possessive appears in a syntactic high position and that there is a projection responsible for maximality. They conclude that the high position in which the possessive can appear is located in the DP field.

Low Possessors. If the maximal interpretation results from the possessor's high position, the interpretation is predicted not to be found in the phrase where a genitive NP following a head noun is used as a possessor. It is because the adnominal genitives are supposed to be located at a lower position than a head (e.g. Bailyn 2012). The phrase (2) shows this type of configuration.

(2) pjat' knig   Dimy
     five   books Dima-GEN

     "Dima's five books/five of Dima's books"

The phrase (2) can be interpreted either maximally or non-maximally. In other words, it can be paraphrased with both (1a) and (1b). This fact suggests that it is not necessary to relate the maximal interpretation to the syntactic high position of a possessor.

Hypothesis. The maximal interpretation cannot be yielded by the classical semantics of definiteness (Fregean or Russellian definite). However, we can obtain the maximal interpretation of (1b) by using the semantics of definites shown in (3), which invokes maximality (Sharvy 1980).

(3) a. $[\![\text{DEF}]\!] = \lambda P : \exists x \forall y[\text{MAX}(P)(y) \leftrightarrow x = y]. \; \iota x.\text{MAX}(P)(x)$
     b. $\text{MAX}(P) := \lambda x.P(x) \wedge \neg \exists y[P(y) \wedge x < y]$

The LF in (3a) leads to the interpretation of the presupposition in (1b) since it picks up only a maximal plurality as a singleton ("$a \oplus b \oplus c \oplus d \oplus e$," each atom of which is a book in this case) by the function of the max operator (MAX). Thus we hypothesize that the contrast in interpretations between (1a) and (1b) can be reduced to the simple difference in definiteness with no relation to the syntactic position of the possessors.

Tests. To test the above-mentioned hypothesis, we can use the phenomena the "definiteness effect (DE)" and the "genitive of negation (GN)." The DE observed in English *there*

constructions exists also in Russian existential constructions (e.g. Paducheva 2000). As to GN, indefinite/non-specific NPs tend to receive the genitive case (e.g. Harves 2013). As shown in (4) and (5), (1b) cannot occur in either the existential or the GN constructions while (1a) can occur in both constructions with no problem.

(4) V knižnom škafu est' { pjat' Diminyx   knig / # Diminy   pjat' knig }.
    in bookshelf   be   five Dima's-GEN books   Dima's-NOM five books
    "There are five of Dima's books on the bookshelf."

(5) Ivan ne   čital { pjati Diminyx knig   / # Diminyx pjati knig   }.
    Ivan NEG read   [five Dima's books]-GEN   [Dima's five books]-GEN
    "Ivan did not read five of Dima's books."

These facts illustrated in (4) and (5) mean that (1b) is definite (and 1a is indefinite).

Implementation of Definiteness. It is possible to think that definiteness is encoded in semantics and we use a covert semantic operator "DEF" whose LF is (3). Generally, D(P) is assumed to be necessary to implement definiteness in nominal phrases in syntax, as a source of definiteness, since it is implemented through Agree with D (e.g. Koev 2011). However, under the operator analysis, even if the operator DEF exists in (narrow) syntax, nominal phrases can be derived without DP with no problem.

(6) [X [Diminy [Y [pjat' [Z kniga]]]]]

The operator can merge anywhere in syntax; that is, it can be located at X, Y, or Z in (6). However, the meaning is successfully computed only in the case where DEF is located at X. If DEF is at Y or Z, the phrase in question can be derived in syntax but it cannot be interpreted through the interface to semantics. The high position of DEF is caused not by syntax but by semantics. Accordingly, we can conclude that the top node of nominal phrases is different from the projection endowed with the special status in syntax, referred to as "DP."

Conclusion. Accepting the operator DEF on the highest position, the analysis of possessives by Partee and Borschev (1998) and the numeral-as-modifier analysis (e.g. Scontras 2013), the LF of (1b) is following in (7):

(7) $[\![(1b)]\!] = {:}\exists x \forall y [\text{MAX}(R(Dima)(y) \land BOOK(y) \land |y| = 5) \leftrightarrow x = y].$
    $\iota x.\text{MAX}(R(Dima)(x) \land BOOK(x) \land |x| = 5)$

The LF in (7) correctly reflects the maximal presupposition. The contrast in interpretations between (1a) and (1b) can be reduced to the plain difference in definiteness. It is unnecessary to relate the maximal interpretation of (1b) to the possessor's high syntactic position. Thus the maximal interpretation of nominal phrases cannot be used to support the presence of DP in Russian and it remains a semantic matter. In other words, the interpretation can be semantically yielded without the syntactic special projection, DP.

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