

Numeral Phrases in Polish and Estonian

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1. Introduction

The main goal of this paper is to examine the syntax of Polish and Estonian numeral phrases. I will show that cardinals in these languages have a strikingly similar syntactic property. In expressions quantified by a cardinal, the noun which is the semantic nucleus of the phrase becomes syntactically subordinated to the numeral. The numeral does not exhibit agreement with the head noun in case. The substantive assumes a case form which it would not otherwise take (the case is assigned by the numeral). This phenomenon is restricted to the context of so-called structural cases (cf. Babby 1988, Franks 1995). Numeral quantifiers agree with the substantive nucleus in the other case forms of the paradigm.

Any grammatical theory might find it difficult to account for such a complex case assignment pattern. Still, it seems desirable to constrain the types of case assignment that the theory of Universal Grammar allows in principle. On the basis of Polish and Estonian numeral phrases, I will try to support significant cross-linguistic generalisations about case assignment made by Chomsky (1986). I will follow Veselovská's (1997) suggestion that numerals are functional elements inserted into the syntactic derivation at S-structure. She proposes that numerals cannot be syntactically active case-assigners in lexical case environments because lexical case is assigned at D-structure. I will try to show that Polish and Estonian quantified expressions provide support for her analysis.

1. The structural vs. lexical case dichotomy in Polish

Polish has seven morphological cases. A sample declension is given in (1) below:

(1)		Singular	Plural
	Nominative	profesor ‘professor’	profesorowie
	Genitive	profesora	profesorów
	Dative	profesorowi	profesorom
	Accusative	profesora	profesorów
	Instrumental	profesorem	profesorami
	Locative	profesorze	profesorach
	Vocative	profesorze	profesorowie

Nominative forms usually appear in the position of sentential subjects. Accusative forms are objects of typical transitive verbs. The genitive, dative, instrumental, and locative are often referred to as oblique cases. An oblique case is characterised as a lexical case if it is assigned by a particular lexical item. It means that the case assigned by a verb or a preposition must be marked in the lexicon. For instance, the verb *sprzyjać* ‘further’ is a lexical dative assigner since the VP it heads is well-formed only if its complement has dative case marking.

- (2)
- a. ona sprzyja karierze Adama
she furthers career_{Dat} Adam_{Gen}
‘she furthers Adam’s career’
- b. *ona sprzyja karierę Adama
she furthers career_{Acc} Adam_{Gen}

Lexical cases have to be distinguished from structural ones (such as the nominative and the accusative). The lexical/structural case dichotomy in Polish is

explored in recent work by Franks (1995). Structural cases are assigned to a nominal expression in accordance with its overall surface syntactic environment. For example, direct objects are assigned the accusative case by default in Polish when the verbs that govern them are not lexical case assigners (see Babby 1980b).

The morphological realisation of a structural case may change with syntactic environment. It is illustrated in (3-4) below:

- (3) structural case
- a. Marta pije mleko.
 Martha_{Nom} drinks milk_{Acc}
 ‘Martha drinks milk’
- b. Marta nie pije mleka.
 Martha_{Nom} not drinks milk_{Gen}
 ‘Martha does not drink milk’
- (4) lexical case
- a. Marta sprzyja karierze Adama
 Martha_{Nom} furthers career_{Dat} Adam_{Gen}
 ‘Martha furthers Adam’s career’
- b. Marta nie sprzyja karierze Adama
 Martha_{Nom} not furthers career_{Dat} Adam_{Gen}
 ‘Martha does not further Adam’s career’

The difference between the syntactic patterns in (3) and (4) is due to the lexical vs. structural case distinction. In (3) the so-called *Genitive of Negation* is illustrated: the accusative direct object of the transitive verb *pić* ‘drink’ in (3a) changes to genitive under sentential negation (cf. Babby 1980b, Przepiórkowski 1996). Such a change is impossible in (4) since the dative is a lexical case assigned by the element *sprzyjać* ‘further’. It cannot be influenced by a surface syntactic environment.

3. Numeral phrases in Polish

It is obvious that defining word classes is rather difficult. In Polish linguistics, there is a failure of terminological clarity as far as what has been traditionally referred to as numerals is concerned. The source of the difficulty is connected with the fact that it is impossible to define one class of numerals on morphosyntactic grounds. There are two distinct types of cardinals: adjectival numerals (*jeden* ‘one’, *dwa* ‘two’, *trzy* ‘three’, and *cztery* ‘four’) and proper numerals (all the others). I will call them A-numerals and Q-numerals, respectively. A-numerals exhibit case agreement with the head noun. They closely resemble attributive adjectives (in Polish, when nominal expressions do not contain a numeral, the head noun and all its premodifiers have the same case marking). It is shown in (5) below:

- (5) *dwaj* *profesorowie*
 two_{Nom} professors_{Nom}
 ‘two professors’

A-numerals and Q-numerals have often been unified as a semantic word class (numerals have been defined as words denoting quantity). The choice of terms undeniably depends on the purpose of description. This paper is devoted to describing not so much the semantics of numeral expressions, but rather their syntactic behaviour. Since it is not desirable to use one and the same term for denoting different syntactic categories, I will depart from the traditional semantic approach and focus on Q-numerals only.

The most interesting thing about Q-numerals is that they do not have to agree with their head nouns in case. When themselves in the accusative case, they require quantified nouns to stand in the genitive (the so-called *Genitive of Quantification* GEN(Q)).

- (6) a. siedem sióstr
 seven_{Acc} sisters_{Gen}
 ‘seven sisters’
- b. *siedem siostry
 seven_{Acc} sisters_{Acc}

There is independent evidence that a subject consisting of an expression quantified by a Q-numeral must be analysed as intrinsically accusative rather than nominative. The examples in (7) below show that there is no case differentiation as far as quantified subjects and objects are concerned.

- (7) a. [_{Acc} osiem koni] je
 eight_{Acc} horses_{Gen} eat
 ‘eight horses eat’
- b. on kocha [_{Acc} osiem koni]
 he loves eight_{Acc} horses_{Gen}
 ‘he loves eight horses’

This problem need not detain us since it does not influence the analysis outlined in the present paper. It is tackled in greater detail in Franks (1995) and Przepiórkowski (1996).

The GEN(Q) assignment does not take place in structures which are not accusative. It means that the heterogeneous case marking pattern of modifiers and the head does not show up in oblique numeral phrases (cf. Babby 1988).

- (8) on ufa siedmiu koniom / *koni
 he trusts seven_{Dat} horses_{Dat/*Gen}
 ‘he trusts seven horses’

The example in (8) shows that when a nominal construction is assigned lexical case, the numeral fails to govern the genitive case, which means that the noun and its premodifiers (adjectives) take the oblique case of the whole phrase. The case marking in such structures must be homogeneous.

4. Numeral phrases in Estonian

A sample declension pattern of the word *raamat* ‘book’ in (9) below shows that there are fourteen morphological cases in Estonian. (The examples from Estonian quoted in the text are based on the intuitions of Kaarel Kaljurand, confirmed by Katrin Hiietam and Maarika Traat. I am very grateful to them all.)

(9)	Singular	Plural	
Nominative	raamat	raamatud	‘(the) book(s)’
Partitive	raamatut	raamatuid	‘book(s)’ (object)
Genitive	raamatu	raamatute	‘of the book(s)’
Illative	raamatusse	raamatutesse	‘into the book(s)’
Inessive	raamatus	raamatutes	‘in the book(s)’
Elicative	raamatust	raamatutest	‘from the book(s)’
Allative	raamatule	raamatutele	‘to the book(s)’
Adessive	raamatul	raamatutel	‘upon the book(s)’
Ablative	raamatult	raamatutelt	‘from, off the book(s)’
Translative	raamatuks	raamatuteks	‘for, as the book(s)’
Terminative	raamatuni	raamatuteni	‘up to the book(s)’
Essive	raamatuna	raamatutena	‘as the book(s)’
Abessive	raamatuta	raamatuteta	‘without the book(s)’
Comitative	raamatuga	raamatutega	‘with the book(s)’

According to the most generally accepted analysis, the cases like nominative and partitive must be distinguished from illative, inessive, etc. In the literature,

they are often talked about as grammatical (abstract) and semantic (concrete) cases, respectively (see e.g. Nemvalts 1996). They differ first of all as regard the fact that the first ones always mark subject and object phrases, while the latter mark adverbial phrases. The grammatical cases indicate abstract syntactic relations between the components of a sentence. The semantic ones express concrete spatiotemporal and other circumstantial relations. This distinction is parallel to the structural/lexical case dichotomy discussed in Section 2 of this paper.

In Estonian, cardinals assign the partitive case to their complements. I will call it the *Partitive of Quantification* - PART(Q). As (10) shows, the numeral *kaks* ‘two’ makes the noun assume the partitive case form which the noun would not otherwise take.

- (10) a. kaks sõdurit
 two_{Nom} soldier_{Part}
 ‘two soldiers’
- b. *kaks sõdur
 two_{Nom} soldier_{Nom}

However, the PART(Q) assignment is restricted to the context of structural cases. In constructions assigned a lexical case (e.g. the ablative), the numeral agrees with the noun following it (the case spreads throughout the entire phrase). Such structures closely resemble a standard agreement pattern of nouns and adjectives.

- (11) kahelt sõdurilt
 two_{Abl} soldier_{Abl}
 ‘from two soldiers’

The above pattern is parallel to the syntax of Polish numerals – the only difference being the case assigned by the numeral. Since Polish and Estonian belong to different language families (Indo-European and Uralic, respectively), the unusual syntactic behaviour of numerals must be considered either a coincidence or part of Universal Grammar.

It is worth noticing that the word *üks* ‘one’ behaves differently. It fully agrees with the following noun in all the case forms of the paradigm. It does not assign PART(Q).

- (12) a. *üks* *mees*
 *one*_{Nom} *man*_{Nom}
 ‘one man’
- b. **üks* *meest*
 *one*_{Nom} *man*_{Part}

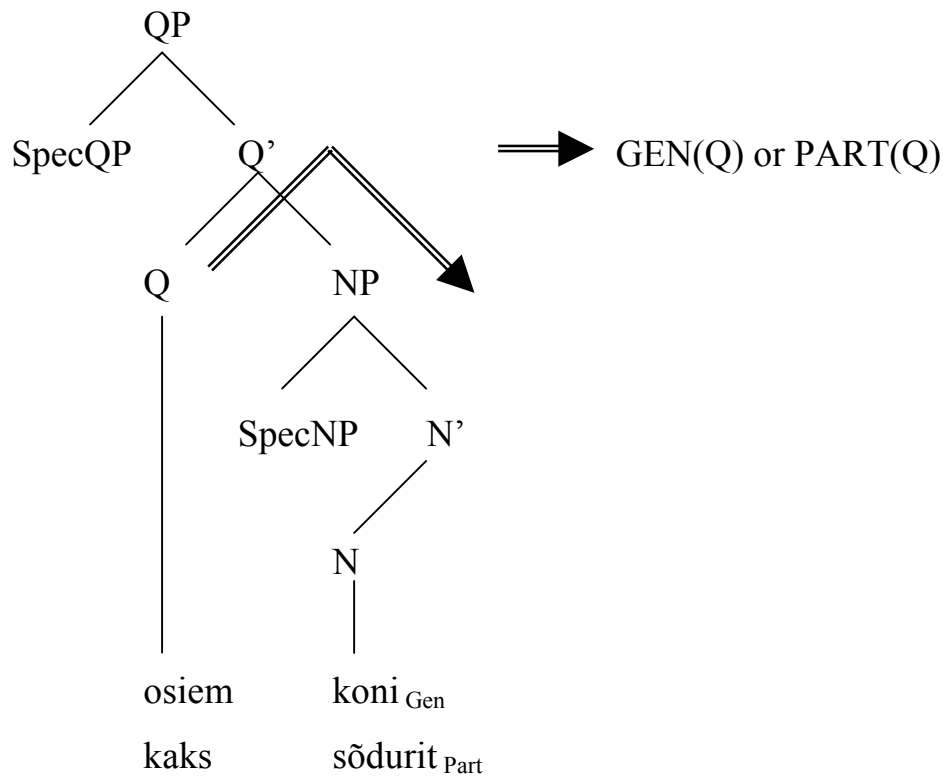
Therefore I consider *üks* an A-numeral.

5. Explanation

In the first part of this paper, I have presented an analysis of the syntax of numeral phrases in Polish and Estonian. It is reasonable at this point to ask why the phenomena described above should exist.

I will follow Abney (1987) in assuming that Noun Phrases project up higher functional categories. I suggest that numerals occupy one of these positions: Q. In quantified structures, Q is the highest syntactic head occupied by a lexical item and it projects its own phrase (QP) which is a complement of the functional head D. NP is a subcategorised complement to the head of QP. Q requires a specific case value from its nominal complement (genitive in Polish and partitive in Estonian), as illustrated in (13).

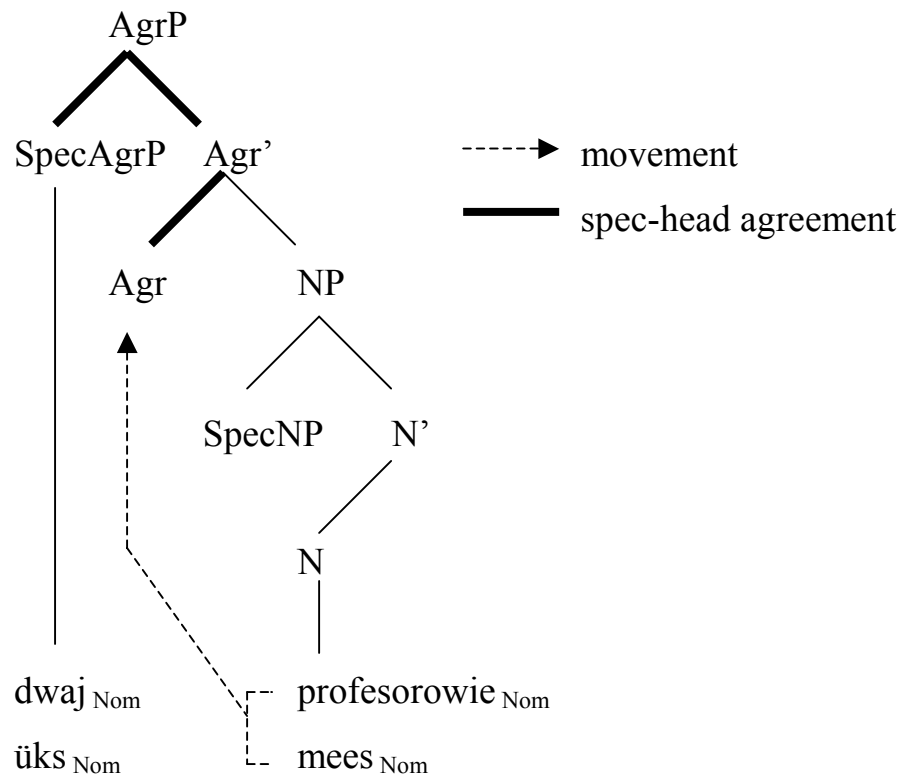
(13)



NP's case marking is exhaustively determined by the head cardinal, and is therefore independent of the case assigned to the DP as a whole by a verb or a preposition which dominates it.

A-numerals are prenominal modifiers that manifest agreement with the head noun with respect to all features. It suggests a type of specifier-head agreement configuration. Following Cinque (1995), I assume that adjectival phrases agreeing with the noun are specifiers in functional phrases projected by the nominal head. I will represent these functional phrases as AgrPs. In order to check its features with the adjectival specifier, the noun moves to the Agr position.

(14)



Veselovská (1997) similarly explains the difference between Q-numerals and A-numerals in Czech. A-numerals cannot be case assigners since they are located in the Spec position.

Payne (1993) and Nemvalts (1996) do not consider Slavic and Balto-Finnic numerals in nominal structures as syntactic heads. They argue that a head's ability to govern case must not depend upon its own inflectional form (which means that there should be no difference between structural and lexical environments). Nemvalts uses the term *Quantifier Phrase* to refer to constructions such as *vähemalt viis* 'at least five' and *rohkem kui sada* 'more than a hundred'. However, neither Payne nor Nemvalts offers any explanation for the fact that Polish and Estonian cardinals show the properties of heads in structural case patterns but not in lexical case patterns. I suggest that the unusual syntax of numerals follows from independently motivated principles of generative syntax.

Following the most widely accepted analysis (see, for example, Franks 1995), I consider the accusative, partitive, and nominative as structural cases. Veselovská (1997) suggests that Q-numerals are functional elements and as such they are inserted into the syntactic derivation as late as at S-structure. It results in a specific agreement pattern in structural case positions. Consistent with the claim (Chomsky 1986) that the lexical case is assigned at D-structure, whereas the structural case is assigned at S-structure, I assume that the insertion of a Q-numeral precedes the structural case assignment. The Q-numeral acts as a case-assigner since the noun has not been assigned any case at D-structure.

Q-numerals are not present at D-structure, when the lexical case is assigned. The head noun and all its premodifiers are in the path of percolation of the lexical case. The lexical case is assigned to the DP as a whole and then percolates down to the first syntactic head available. Since the Q head is not active the case is assigned to the next lexical head of the phrase, i.e. to the noun.

There are good reasons to treat numerals as functional elements (they form a closed class and their semantic content might be claimed to be limited to the notion of plurality). It would appear to be saying too much to claim that this characteristic holds cross-linguistically. Still, if we adopt a particular version of generative syntax - the framework of Principles and Parameters, we can postulate a special parameter which distinguishes languages that permit functional numerals from languages that prohibit them.

6. Summary

I have tried to show that there are intriguing syntactic similarities between Polish and Estonian numeral phrases. They do not conform to the usual pattern of case assignment. Unlike adjectives, numerals do not agree in case with the semantic nucleus of the phrase (the noun) in the structural case positions. Instead, they assign case to the substantive. Referring to the independently motivated principle of late insertion of functional elements into the syntactic derivation, I

have argued that Polish and Estonian cardinals should be analysed as functional elements. I have made some general statements about case assignment that apply to Polish and Estonian. I believe I have contributed to the understanding of case assignment systems in natural languages.

I do not think that the syntactic behaviour of numerals described in this paper should be considered to be particularly rare or unusual. It seems to have a wide distribution, with possible areal factors (similar constructions are found throughout Western Slavic and Baltic-Finnic languages). This should raise questions about whether the phrase QP is projected universally. Since Polish and Estonian are not related genetically, the data from these languages seem to provide support for the existence of a QP category in Universal Grammar. Alternatively, we could try to find an explanation for the syntactic similarities between Polish and Estonian in the idea of a Circum-Baltic Sprachbund.

References

- Abney, Steven. 1987. *The English noun phrase in its sentential aspect*. PhD Dissertation. Cambridge, Mass.: MIT
- Babby, Leonard H. 1980a. The syntax of surface case marking. In: *Cornell Working Papers in Linguistics I*. Ed. W. Harbert and J. Herschensohn. Ithaca: Department of Modern Languages and Linguistics, Cornell University
- Babby, Leonard H. 1980b. *Existential Sentences and Negation in Russian*. Ann Arbor: Karoma
- Babby, Leonard H. 1988. Noun Phrase internal case agreement in Russian. In: *Agreement in natural language. Approaches, theories, descriptions*. Ed. M. Barlow and C. A. Ferguson. Stanford: Center for the Study of Language and Information, Stanford University. 287-304
- Chomsky, Noam. 1986. *Barriers*. Cambridge, Mass.: MIT Press
- Cinque, Guglielmo. 1995. On the evidence for partial N-movement in the

- Romance DP. In: *Paths Towards Universal Grammar*. Ed. G. Cique, J. Koster, J.-Y. Pollock, L. Rizzi, and G. Zanuttini. Washington D.C.: Georgetown University Press. 85-110
- Emonds, Joseph E. 1997. *Grammar & Lexicon: the English Syntacticon*. Ms. University of Durham
- Franks, Steven. 1995. *Parameters of Slavic Morphosyntax*. New York, Oxford: Oxford University Press
- Nemvalts, Peep. 1996. *Case marking of subject phrases in modern standard Estonian*. Acta Universitatis Upsaliensis. Uralica Upsaliensia 25. Uppsala: Uppsala University
- Payne, John. 1993. The headedness of noun phrases: slaying the nominal hydra. In: *Heads in grammatical theory*. Ed. G. G. Corbett, N. M. Fraser, and Scott McGlashan. Cambridge: Cambridge University Press. 114-139
- Przepiórkowski, Adam. 1996. Case assignment in Polish: Towards an HPSG analysis. In: *Edinburgh Working Papers in Cognitive Science*. Vol.12: *Studies in HPSG*. Ed. C. Grover and E. Vallduví. Edinburgh: University of Edinburgh. 191-228
- Veselovská, Lída. 1997. *Agreement patterns of group nouns and quantifiers (in Czech)*. Ms. University of Olomouc