On the syntax of functional elements:
numerals, pronouns and expressions indicating approximation

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Introduction

It is a well-known fact that in Polish cardinal numerals above *cztery* 'four' and indefinite numerals such as *dużo* 'a lot' or *trochę* 'a few' exhibit a mixed pattern of noun- and adjective-like behaviour (cf. Franks 1995, Przepiórkowski 1996). In the subject and direct (accusative) object positions they assign genitive case to the nouns following them, while being in agreement with the nouns in other syntactic contexts.

As has been noted by, e.g., Kopcińska (1997) and Przepiórkowski (2000a), the pronoun *coś* 'something' behaves in an identical way in structures such as *coś generatywnego* 'something generative' (the pronoun + AP). The aim of this paper is to provide an explanation for the agreement / non-agreement pattern. We claim that this behaviour is not at all idiosyncratic to the numerals or the word *coś*, as there are further pronouns like *cokolwiek* 'whatever' or *nic* 'nothing' and expressions indicating approximation like *około* 'about' or *do* 'up to' which form constructions in the same way. Assuming the general model of nominal structures first outlined in Abney (1987), we suggest that a special category of functional elements heading their own phrases (FPs) should be introduced. This is supported with evidence from other languages unrelated to Polish.

Structural versus lexical cases

The distinction between structural and lexical cases has its roots in the work of traditional grammarians (it is parallel to the traditional direct/oblique case dichotomy) and continues within the generative framework. As has been argued in the literature (Franks 1995, Przepiórkowski 1996), this distinction has to be postulated for Polish. *Structural* cases are those assumed by an element in the subject or direct object syntactic position. They are most often realised morphologically as nominative and accusative, respectively. All other cases are usually considered *lexical*. Structural cases depend on particular syntactic environments, whereas lexical cases are specified in the lexical entry of a given word or preposition and they cannot be influenced by any syntactic phenomena (for an extensive discussion, see, e.g., Belletti and Rizzi 1981, Babby 1988, Heinz and Matiasek 1994). According to the GB literature, structural and lexical cases are assigned at different levels in the derivation process (Chomsky 1981, 1986). Structural case is assigned at S-structure (thus, it is based on the position of a nominal phrase in the surface syntax), and lexical (often referred to as *inherent*) is assigned by a lexical case assigner at D-structure. This distinction is the key concept in the present paper.

Patterns of behaviour

Cardinal numerals

Polish cardinal numerals can be divided into three categories according to their behaviour with respect to the nouns they quantify. Numerals from *jeden* 'one' to *cztery* 'four' agree in case with the noun following them in every context. This behaviour is characteristic of adjectives and therefore Rutkowski (2001) calls them *A-numerals*. Numerals denoting very high cardinalities, like *tysiąc* 'thousand' or *milion* 'million' always assign genitive to the nouns following them, and thus behave like nouns; we shall call them *N-numerals*. All other numerals, called *Q-numerals* and being of most interest in this paper, exhibit a mixed pattern of behaviour, assigning genitive (the so-called *Genitive of Quantification* – GEN(Q)) in the subject and direct object positions and agreeing with the noun in all other contexts. It is easily noticeable that this pattern reflects the structural/lexical case distinction mentioned above.

The above observations are illustrated with relevant declension paradigms in the table in (1), which can be compared with those of adjectives and nouns in the table in (2).

(1) Three classes of numerals

Case Context	A-numerals	Q-numerals	N-numerals
Nom	trzy:NOM psy:NOM	(pięć:ACC psów:GEN)	tysiąc:NOM psów:GEN
Gen	trzech:GEN psów:GEN	pięciu:GEN psów:GEN	tysiąca:GEN psów:GEN
Dat	trzem:DAT psom:DAT	pięciu:DAT psom:DAT	tysiącowi:DAT psów:GEN
Acc	trzy:ACC psy:ACC	pięć:ACC psów:GEN	tysiąc:ACC psów:GEN
Instr	trzema:INSTR psami:INSTR	pięcioma:INSTR psami:INSTR	tysiącem:INSTR psów:GEN
Loc	trzech:LOC psach:LOC	pięciu:LOC psach:LOC	tysiącu:LOC psów:GEN
	'three dogs'	'five dogs'	'one thousand dogs'

The Q-numeral form in the nominative row is put in brackets because there is independent evidence that Polish subjects containing Q-numerals must be analysed as intrinsically accusative rather than nominative. Space limitations prevent a full discussion of this issue here. It is extensively justified in Franks (1995), Przepiórkowski (1996) and Rutkowski (2000).

(2) Adjectives and nouns

Case Context	Adjectives	Nouns
Nom	różowe:NOM psy:NOM	grupa:NOM psów:GEN
Gen	różowych:GEN psów:GEN	grupy:GEN psów:GEN
Dat	różowym:DAT psom:DAT	grupie:DAT psów:GEN
Acc	różowe:ACC psy:ACC	grupę:ACC psów:GEN
Instr	różowymi:INSTR psami:INSTR	grupą:INSTR psów:GEN
Loc	różowych:LOC psach:LOC	grupie:LOC psów:GEN
	'pink dogs'	'a group of dogs'

The sentences in (3) below demonstrate the contrast in the way case is assigned in a structural vs. lexical context.

(3)   (a)   on   widział   [pięć   lemingów/*lemingi]
                he   saw   five:ACC   lemmings:GEN/*ACC
                'he saw five lemmings'

        (b)   on   sypiał z   [pięcioma   lemingami/*lemingów]
                he   slept with   five:INSTR lemmings:INSTR/*GEN
                'he slept with five lemmings'

Indefinite numerals

Also indefinite numerals such as *mało* 'few', *trochę* 'a few', *sporo* 'quite a few' and *dużo* 'a lot' assign genitive to the noun following them when in the subject or direct object position. This is illustrated in (4).

(4) Indefinite numerals such as *trochę* 'a few'

Case Context	Indefinite numerals			
Nom	(mało:ACC psów:GEN)	(trochę:ACC psów:GEN)	(sporo:ACC psów:GEN)	(dużo:ACC psów:GEN)
Gen	-	-	-	-
Dat	-	-	-	-
Acc	mało:ACC psów:GEN	trochę:ACC psów:GEN	sporo:ACC psów:GEN	dużo:ACC psów:GEN
Instr	-	-	-	-
Loc	-	-	-	-
	'few dogs'	'a few dogs'	'quite a few dogs'	'a lot of dogs'

3

The above table has blank spaces because indefinite numerals occur only in subject and accusative object positions. It means that they have no morphological form for the genitive, dative, instrumental and locative cases. It is demonstrated for *dużo* in the examples (5a-b).

(5) (a) on   przytulił   [dużo   kangurów/*kangury]
         he   cuddled   a lot:ACC kangaroos:GEN/*ACC
         'he cuddled a lot of kangaroos'

     (b) on   sypiał z   *[dużo   kangurami/kangurów]
         he   slept with *a lot:?   kangaroos:INSTR/GEN
         'he slept with a lot of kangaroos'

Semantically vacuous pronouns

By semantically vacuous pronouns we mean indefinite pronouns conveying bare existence or non-existence like: *coś* 'something', *cokolwiek* (or old fashioned: *cośkolwiek*) 'whatever' and *nic* 'nothing'. Here the pattern is identical to that of Q-numerals: in subject and object positions genitive is assigned to the noun following the pronoun while agreement occurs in other contexts.

(6) Semantically vacuous pronouns such as *coś*

Case Context	Semantically vacuous pronouns			
Nom	(coś:ACC)	(cokolwiek:ACC)	(nic:ACC)	(generatywnego:GEN)
Gen	czegoś:GEN	czegokolwiek:GEN	niczego:GEN	generatywnego:GEN
Dat	czemuś:DAT	czemukolwiek:DAT	niczemu:DAT	generatywnemu:DAT
Acc	coś:ACC	cokolwiek:ACC	nic:ACC	generatywnego:GEN
Instr	czymś:INSTR	czymkolwiek:INSTR	niczym:INSTR	generatywnym:INSTR
Loc	czymś:LOC	czymkolwiek:LOC	niczym:LOC	genaratywnym:LOC
	'something	whatever	nothing	generative'

The examples in (7) demonstrate that, in the lexical context, it is impossible to assign genitive to the adjective following the pronoun.

(7) (a) on   widział   [coś   miłego/*miłe]
         he   saw   something:ACC   nice:GEN/*ACC
         'he saw something nice'

     (b) on   sypiał z [czymś   miłym/*miłego]
         he   slept with something:INSTR nice:INSTR/*GEN
         'he slept with something nice'

Expressions indicating approximation

In this group elements such as *około, koło* 'around, round' and *do* 'up to' are to be found. With respect to the case-assignment/agreement pattern, the first two behave exactly like Q-

numerals and semantically vacuous pronouns such as *coś*. The third behaves like indefinite numerals, as it does not occur in contexts other than the nominative and accusative. This is illustrated in table (8).

(8) Expressions indicating approximation

Case Context	Indefinite numerals	
Nom	około tysiąca:GEN	do tysiąca:GEN
Gen	około tysiąca:GEN	
Dat	około tysiącowi:DAT	
Acc	około tysiąca:GEN	do tysiąca:GEN
Instr	około tysiącem:INSTR	
Loc	około tysiącu:LOC	
	'around one thousand'	'up to one thousand'

Words such as *około* express approximation and consequently they are usually followed by numerals. In the above paradigm it is an N-numeral (*tysiąc*), but it is interesting to see whether the pattern is disturbed if a Q-numeral or an A-numeral follows. Examples in (9) provide sufficient evidence to conclude that the pattern is the same. Examples (a), (c) and (e) demonstrate an approximation expression followed by an A-, a Q- and an N-numeral (respectively) in the accusative context: all the numerals are assigned genitive by the word *około*. Examples (b), (d) and (f) show how the same expressions behave in an instrumental context: both the numerals and the nouns that follow them occur in the instrumental case.

(9) (a) on   zabił   [około trzech/*trzy   szympansów]
          he   killed   about three:GEN/*ACC   chimps:GEN
          'he killed about three chimps'

     (b) on   dowodził   [około trzema/*trzech   szympansami]
          he   commanded   about three:INSTR/*GEN   chimps:INSTR
          'he commanded about three chimps'

     (c) on   kochał   [około pięciu/*pięć   psów]
          he   loved   about five:GEN/*ACC   dogs:GEN
          'he loved about five dogs'

     (d) on   sypiał z   [około pięcioma/*pięciu   kotami]
          he   slept with   about five:INSTR/*GEN   cats:INSTR
          'he slept with about five cats'

     (e) on   miał   [około setki/*setkę   wielbłądów]
          he   had   about hundred:GEN/*ACC   camels:GEN
          'he had about one hundred camels'

     (f) on   ufał   [około setce/*setki   myszy]
          he   trusted   about hundred:INSTR/*GEN   mouses:INSTR
          'he trusted about one hundred mouses'

The Functional Category

We would like to suggest that all the above-mentioned elements should be held to belong to the same category. For the purposes of this paper we shall simply call it the *Functional Category* and its members *functionals*. All functionals then exhibit the same mixed pattern of noun-like behaviour in structural contexts and adjective-like behaviour in lexical contexts, even if some of them might not have morphological forms in the latter cases.

There are very good reasons to introduce such a category since their members share a number of significant properties. Firstly, they are all semantically unsubstantive (like numerals, indicating only cardinality) or even empty (like the pronoun *coś*, indicating bare existence and essentially only introducing an adjective). It is worth mentioning that, although for different reasons, numerals are described as semantically vacuous also in other syntactic frameworks (cf. Przepiórkowski 2000b). Secondly, each of the groups introduced in the previous section forms a closed class.
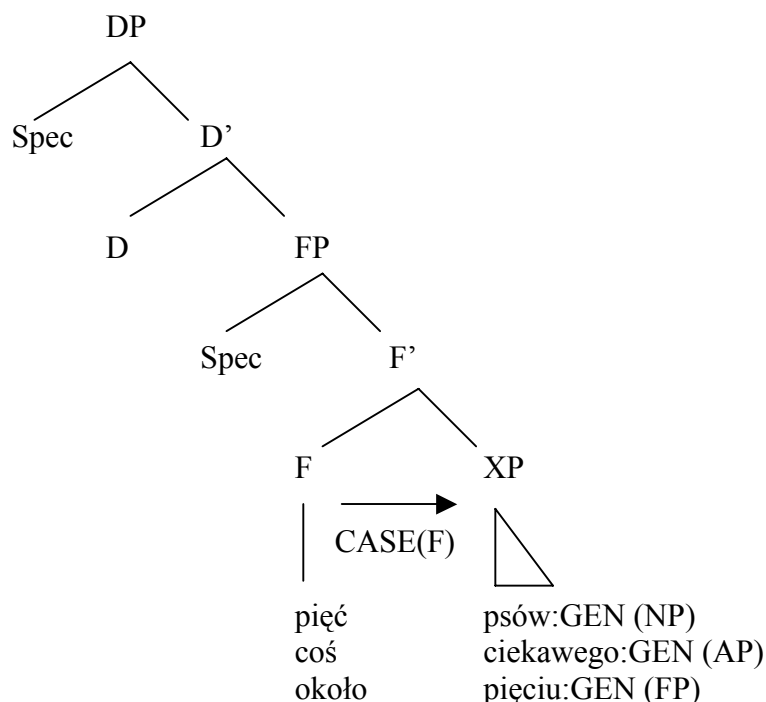
However, the name *functional* is only arbitrarily assumed, as functionality, in our understanding, is a property marked in the lexicon. It might (but it does not have to) be possessed by different linguistic elements fulfilling the above conditions (see Szczegot 2001 for an account of why the lower numerals from *jeden* 'one' to *four* 'cztery' are not functionals). Thus the two conditions mentioned should be held as necessary but not sufficient for an element to be a functional. In fact, as we should demonstrate later, an element can be a functional in one language even if its counterpart in another language is not. It seems therefore that functionality is a binary parameter.

Analysis in terms of D-structure vs. S-structure

According to Emonds (1997), if an element is semantically unsubstantive and belongs to a closed class (i.e. if it fulfils our two necessary functionality conditions) it might be inserted into the syntactic derivation as late as at S-structure. Furthermore, the analysis of Polish and Estonian numeral expressions in Rutkowski (2000) (which builds on Veselovská 1997) asserts that the insertion of a Q-numeral precedes structural case assignment, which also takes place at the S-structure level. As the latter analyses do not crucially depend on the Q-numerals being numerals but rather on the Q-numerals fulfilling our two conditions, this last conclusion can be extended to cover all functionals. We suggest that the insertion of functionals at S-structure explains the mixed pattern of behaviour they exhibit. In other words, belonging to the Functional Category is a sufficient condition for Emonds' mechanism to work.

If we assume that a functional is inserted at S-structure the fact that it acts as a case-assigner in structural cases follows since the noun has not been assigned any case at D-structure. This is exactly what happens with functionals in these contexts: in Polish they assign genitive to the noun following them. (But the case may vary from one language to another – cf. Rutkowski, 2001). It is schematically shown in (10).

6

(10)

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                        DP
                      /    \
                   Spec     D'
                          /    \
                         D      FP
                              /    \
                           Spec     F'
                                  /    \
                                 F      XP
                                 |  CASE(F)→  ▽
                               pięć        psów:GEN (NP)
                               coś         ciekawego:GEN (AP)
                               około       pięciu:GEN (FP)
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We assume that the functional projects its own phrase (which is a complement of DP). It could be said to be parallel to the Number Phrase (NumP) posited by Ritter (1991) but, for reasons to be specified below, we do not want functionals to be dependent on any relation to grammatical number or quantification.

On the other hand, the functional is not present at D-structure, when lexical case is assigned. Lexical case is assigned to the DP as a whole and then percolates down to the first available syntactic head. Since the functional is not present, the case is assigned to the next lexical head of the phrase, i.e. to the noun. Therefore, since the functional is late inserted it can only agree in case with the noun. And this is again precisely what happens to functionals in lexical contexts.

Further evidence from other languages

Some researchers have suggested that the syntax of expressions such as 'something' + AP should be considered a particular instantiation of the general pattern connected with the numeric expressions (cf. Grepl and Karlík 1986, Włodzimierz Gruszczyński p.c.). Our analysis claims that the elements discussed should not all be considered as belonging to the numeral category. This is because, as we have already mentioned, an element can be a functional in one language while not in another. In fact, even cardinals are not functionals in some languages (just like the lower numerals in Polish. The following sub-sections will deal with evidence from other languages to support the model presented in this paper. We shall use data from languages unrelated or loosely related to Polish, namely Estonian (Finno-Ugric) and Lithuanian (Baltic, Indo-European). This should improve the credibility of our claims since in Polish, Estonian and Lithuanian the Functional Category is different in its scope. We should illustrate it by comparing the behaviour of numerals and what we call semantically vacuous pronouns in these languages. As we already know, part of the former (i.e. Q-numerals) and all the latter are functionals in Polish.

The Functional Category in Estonian

In Estonian all cardinal numerals above *üks* 'one' behave in a way analogous to that of the Q-numerals in Polish, i.e. exhibit a mixed pattern of behaviour. They assign a specific case value, which is partitive, to the noun following them when in structural context (which in this language means nominative or partitive). Rutkowski (2001) describes this process as the Partitive of Quantification (PART(Q)) assignment. In lexical contexts numerals above *üks* 'one' behave like adjectives. It means that they agree with the noun in all cases, except in the so-called "last" four – terminative, essive, abessive and comitative – when they occur in genitive (it is a standard pattern of adjectival agreement in Estonian). This is illustrated with the paradigm of *kaks sõdurit* 'two soldiers' in the table in (11).

(11)   Estonian numerals

Case Context	'two'	'soldiers'
Nominative	kaks	sõdurit:PART
Genitive	kahe	sõduri:GEN
Partitive	kahte	sõdurit:PART
Illative	kahesse	sõdurisse:ILL
Inessive	kahes	sõduris:INESS
Elative	kahest	sõdurist:ELA
Adessive	kahel	sõduril:ADESS
Allative	kahele	sõdurile:ALL
Ablative	kahelt	sõdurilt:ABL
Translative	kaheks	sõduriks:TRANS
Terminative	kahe	sõdurini:TERM
Essive	kahe	sõdurina:ESS
Abessive	kahe	sõdurita:ABESS
Comitative	kahe	sõduriga:COM

The examples in (12) below show that there is no possibility of having the PART(Q) assignment in lexical contexts, whereas it is the only option in structural contexts.

(12)   (a)   kaks   sõdurit/*sõdurid   lähevad
               two:NOM   soldier:PART/*NOM   go
               'two soldiers go'

        (b)   kahelt sõdurilt/*sõdurit
               two:ABL   soldier:ABL/*PART
               'from two soldiers'

However, semantically vacuous pronouns, like *mingi* 'something', do not behave like numerals at all. They agree with the adjective following them in both structural and lexical contexts, as illustrated in (13).

(13) The semantically vacuous pronoun *mingi*

Case Context	'something interesting'
Nominative	mingi:NOM huvitav:NOM
Genitive	millegi:GEN huvitava:GEN
Partitive	midagi:PART huvitavat:PART
Illative	millessegi:ILL huvitavasse:ILL
Inessive	milleski:INESS huvitavas:INESS
Elative	millestki:ELAT huvitavast:ELAT
Adessive	millelegi:ADESS huvitavale:ADESS
Allative	millelgi:ALL huvitaval:ALL
Ablative	milleltki:ABL huvitavalt:ABL
Translative	millekski:TRANS huvitavaks:TRANS
Terminative	millegi:GEN huvitani:TERM
Essive	millegi:GEN huvitavana:ESS
Abessive	millegi:GEN huvitavata:ABESS
Comitative	millegi:GEN huvitavaga:COM

Thus, we can conclude that, in Estonian, the property of functionality is possessed by cardinal numerals (apart from *üks* 'one') but not by words such as *mingi*. This is not only perfectly understandable but also, in some sense, anticipated once our explanation of the phenomenon is adopted.

The Functional Category in Lithuanian

The situation is reversed in Lithuanian. Here all numerals behave like A-numerals in Polish, i.e. they agree in case with the noun following them in both structural and lexical positions. This is demonstrated in (14) with the paradigm of *penki kariai* 'five soldiers'.

(14) Lithuanian numerals

Case Context	'five soldiers'
Nom	penki:NOM kariai:NOM
Gen	penkių:GEN karių:GEN
Dat	penkiems:DAT kariams:DAT
Acc	penkis:ACC karius:ACC
Instr	penkiais:INS kariais:INS
Loc	penkiuose:LOC kariuose:LOC

However, semantically vacuous pronouns, exemplified here with *kažkas* 'something' exhibit a mixed pattern of behaviour. Like in Polish, they assign genitive to the noun following them

in structural cases while agreeing with it in the lexical ones. This is illustrated with a complete paradigm of *kažkas įdomaus* 'something interesting' in (15).

(15) The semantically vacuous pronoun *kažkas*

Case Context	'something interesting'
Nom	kažkas:NOM įdomaus:GEN
Gen	kažko:GEN įdomaus:GEN
Dat	kažkam:DAT įdomiam:DAT
Acc	kažką:ACC įdomaus:GEN
Instr	kažkuo:INS įdomiu:INS
Loc	kažkame:LOC įdomiame:LOC

The two kinds of behaviour with respect to the case value of the adjective are further contrasted as in (16).

(16) (a) Adomas   matė   kažką   įdomaus/*įdomus
            Adam   saw   something:ACC   interesting:GEN/*ACC
            'Adam saw something interesting'

      (b) ši gitara   priklauso   kažkam   įdomiam/*įdomaus
            this guitar belongs   something:DAT   interesting:DAT/*GEN
            'this guitar belongs to something interesting'

With the above data we have all the facts to conclude that in Lithuanian semantically vacuous pronouns belong to the Functional Category while numerals do not. This is again perfectly understandable and presents no problem within our explanation.

Conclusion

We hope to have presented an alternative explanation of the mixed pattern of noun- and adjective-like syntactic context-dependent behaviour of numerals, pronouns and expressions indicating approximation in Polish, Lithuanian and Estonian. Introduction of the notion of Functional Category containing all these elements in a single category provides a new and hopefully fruitful insight into the distribution of morphological case with respect to these elements. On the other hand, the fact that the concept of functionality must be considered to be arbitrary let us explain certain cross-linguistic variation.

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