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Aspects of morphosyntactic constraints on
quantification in English and Polish

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Oświadczam również, że egzemplarz pracy dyplomowej w formie wydruku komputerowego jest zgodny z egzemplarzem pracy dyplomowej w formie elektronicznej.

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List of Abbreviations

ACC	Accusative Case
AUX	auxiliary
DAT	Dative Case
DIST	distributive <i>po</i>
FEM	feminine
FUT	future (future)
GEN	Genitive Case
INF	infinitive
INST	Instrumental Case
NEUT	neuter
NONVIR	non-virile
NOM	Nominative Case
MASC	masculine
MASC. PER	masculine personal
MASC. IMPER	masculine impersonal
ModP	Modern Polish
MPol	Middle Polish
OPol	Old Polish
PAST	past (tense)
PDE	Present-Day English
PL	plural
PRES	present (tense)
P-SI	Proto-Slavic
REF	reflexive
SG	singular
VIR	virile

Introduction

Numerically quantified phrases have received a well-deserved attention in the literature due to their properties related to case distribution and patterns of agreement with verbal predicates. Genitive of quantification and case congruency between the numeral and the noun, as well as the position and case of demonstratives found in phrases with numerals have posed problems for the available accounts irrespective of the framework or the proposal. In the numerous attempts to explain peculiarities of the syntax of numerals usually the compromise has to be made either to retain a common structure of phrases with agreeing (the so-called lower) and non-agreeing (the so-called higher) numerals or to preserve a uniform mechanism of case assignment/distribution within phrases with different numerals. These idiosyncrasies have naturally led to a division within numerals according to which they have been placed along with other parts of speech, i.e. adjectives and nouns. Moreover, a debate over the status of other lexemes denoting quantity has not been settled with an explicit description of elements constituting one class as distinct criteria, i.e. morphological, syntactic or semantic, have been used to establish their membership. Therefore, despite the abundance of accounts exploring this topic, it does not seem to be superfluous to embark upon the discussion of numerically quantified phrases, especially in the light of the new proposal conducive to maintaining the same structure for phrases containing lower and higher numerals along with the same mechanism responsible for case values attributed to each element in the nominal structure. Thus, considering all the aspects of numerically quantified phrases, the purpose of this work is threefold: i. to provide new criteria that would help to verify members belonging to one category (chapter 1), i.e. quantifiers, ii. to prove that numeral lexemes in different languages do share common features and, hence, must constitute

one class and what follows be subject to the same analysis, and iii. to propose a solution based on the theory of movement of how to reconcile different case patterns within a numerically quantified phrase with its unchanging structure. As a material for a discussion I use data from inflectional languages, i.e. Old English and Polish, with frequent references to other languages (confined to chapter 1). In some parts of the work, for clarity and the abundance of linguistic data, I resort mainly to Polish.

In chapter 1 I introduce numerals, present definitions and provide examples of different types of numerals and constructions in which they appear. Chapter 1, to a large extent, consists of data from Modern Polish and whenever it is possible from Modern English. Definitions, in the prevailing parts, are also drawn from Polish as Modern English being an analytic language does not represent nominal grammatical categories such as case or gender through morphology and therefore English numerals do not constitute a source of morphosyntactic variation found in Slavic languages. In the final part of the chapter I formulate a definition of numerals with the emphasis on the fact that, contrary to numerous accounts, they do form a separate group, i.e. quantifiers.

In chapter 2 I deal with Old English and Old Polish focusing on numerals and properties of constructions in which they occur. The purpose of this chapter is to show that numerals, as a separate part of speech, function not only in Polish but also in English, despite lack of evidence due to the demise of any morphological exponents in the nominal domain. Their historical development in both languages indicate that in spite of differences in Modern English and Polish numerals in these languages should be analyzed as the same category, i.e. quantifiers, due to their common features, i.e. division into lower numerals agreeing in case with the modified noun and higher numerals requiring Genitive, similarities between lexeme *one* determining cardinality or indefiniteness, a widespread syncretism of Nominative and Accusative and distinction in forms of numerals in masculine as opposed to feminine and neuter as well as common directions of development of numerals in these two languages, i.e. a noticeable tendency in the unification of inflection on numerals in Polish manifested by the spread of the *-u* ending and expanding syncretism together with the complete decline of morphological endings in English and formation of complex numerals in both languages proceeding in the same manner. Although currently numerals in both languages share very few properties, i.e. they modify a noun by defining the cardinality of a set which is reflected in the plural morphology of a noun and a verbal predicate,

they have a common background which can be easily noticed when one analyzes them in particular periods in the history of these languages. For these reasons, it is difficult to abide by the traditional division of numerals, deeply rooted in the linguistic tradition, that numerals, depending on their morphological properties, are simply either adjectives or nouns.

In chapter 3 I focus on how numerals are represented in the syntactic structure and how to reconcile the homogenous and heterogeneous syntax of numerals with the fact that they belong to the same part of speech. In what follows, I start with a general discussion of the architecture of a Noun Phrase concentrating on a debate on the DP versus NP status of a nominal projection. After a presentation of different approaches to this problem cross-linguistically as well as particularly in Old English and Polish I opt for a uniform account of nominals advocating a DP irrespective of a presence or absence of any morphological exponent placed in the D head. My stance is supported not only with the arguments commonly voiced in the literature but also through the structure and model I propose to account for the properties of phrases with numerals. The chapter also includes a number of various analyses in which different structures with numerals are presented yet without a success in reaching a common ground as either numerals must be split into two different categories or the structure containing them can no longer be uniform. In my proposal, I resort to a novel approach to grammar utilizing the idea that features can be represented in the syntactic tree as terminal nodes, which not only allows to propose a uniform structure of nominal phrases with numerals but also to account for case patterns featured by lower and higher numerals. The essence of the analysis is that the variety in case distribution results from movement operations and examples of well-known discrepancies in this area, i.e. Genitive of Quantification in structural case positions and agreement in case in oblique case positions, are results of some restrictions of movement. The major idea behind it is that case assignment within numerically quantified phrases proceeds through movement of particular elements building the phrase within a dedicated region in the extended projection of the noun, i.e. within the so-called *Kase Phrase* which is split into projections representing particular cases. In what follows, the syntax of nominal phrases is based on the theory of movement which is demonstrated on data from Old English and Modern Polish, specifically on the core examples with numerals subsequently complemented with some additional aspects such as adjectival modification and subject-verb agreement from Polish.

Chapter 1: What does it mean to be a numeral - characteristics of numerals as a separate part of speech

1.1. Defining a numeral

Among commonly known parts of speech traditional grammars recognize between nouns, adjectives, verbs and adverbs. These categories are considered to be four major parts of speech. Additionally, grammars also distinguish between pronouns, particles, prepositions, conjunctions, interjections, complementizers and determiners encompassing articles, demonstratives, quantifiers, numerals (cf. e.g. Carnie 2006 for English and Nagórko 1996 for Polish).¹ This generally accepted classification is based on the morphological criteria, i.e. the inventory of affixes attaching to a particular part of speech, along with syntactic considerations, i.e. distributional criteria describing their positions within phrases and clauses and relations they bear with respect to other elements building the unit they appear in. The third factor taken into account is semantics, i.e. meaning of a particular word which enables assigning it to a particular group. Although the relevance of the last aspect in determining parts of speech has been frequently understated, it has still been used in descriptions of some words belonging to one category, e.g. numerals.

Generally, numerals have been defined as inflected parts of speech indicating the number of entities, the amount of substance or the place of elements in a particular system or set (*Słownik poprawnej polszczyzny* (henceforth *SPP*); Jadacka 2000). They

¹ For a more detailed discussion of parts of speech see e.g. Wróbel (2001), Saloni and Świdziński (1998, 2012).

inflect for case and gender as well as select for nouns in singular or plural depending on the type of a numeral. Their primary function is to modify a noun. On the basis of semantic criteria they are divided into several groups, i.e. cardinal, collective, ordinal, fractional, indefinite², distributive, and multiplicative with frequentative, which are briefly discussed in the following subsections.

1.1.1. Cardinal numerals

Cardinal numerals are defined as a “set of numerals used in attributive quantification of nouns (Stoltz and Veselinova 2005: 218), determine the number of entities by means of whole numbers (Strutyński 2005: 184), e.g.:

- (1) a. *cztery samochody*
four cars
b. *piętnaście skarpetek*
fifteen socks

In Slavic languages cardinal numerals present peculiar inflectional paradigms and patterns of agreement within the phrase they appear or with a predicate with which they are expected to agree when they occur as subjects. In Polish, cardinal numerals, on the basis of inflectional properties, can be divided into lower numerals, i.e. 1-4, and higher numerals, i.e. 5 onwards.

Lower numerals in Polish, depending on gender, have three distinct forms; masculine personal, masculine impersonal and animate, feminine and neuter. This distinction, however, is only present with numeral 2. With numeral 3 and 4, different forms are found with masculine personal as opposed to masculine impersonal or inanimate, feminine and neuter. Gender distinction and declensional paradigms are presented in Table 1 and Table 2 respectively.

²In Polish grammars from different periods we encounter slightly different divisions of numerals, e.g. Doroszewski (1957: 101) or Klemensiewicz ([1952] 2001: 59f.) do not recognize distributive and indefinite numerals, instead indefinite numerals are classified as numeral pronouns. Similarly *Słownik terminologii językoznawczej* (henceforth *STJ*) treats indefinite numerals like numeral pronouns. Laskowski (1984: 283f.) distinguishes only between cardinal, collective and partitive numerals. Indefinite numerals belong to cardinal and fractional to partitive.

Table 1. Declensional paradigm of numeral *dwa* (two).

	<i>GENDER</i>		
<i>CASE</i>	<i>MASC.PER</i>	<i>NEUT/MASC.IMPER</i>	<i>FEM</i>
NOM	dwaj, dwu /dwóch	dwa	dwie
ACC	dwu /dwóch	dwa	dwie
GEN	dwu /dwóch		
DAT	dwu /dwom /dwóm		
INST	dwu /dwoma		dwoma/dwoma
LOC	dwu /dwóch		

Table 2. Declensional paradigm of numeral *trzy* (three) and *cztery* (four).

	<i>GENDER</i>		
<i>CASE</i>	<i>MASC.PER</i>	<i>NEUT/MASC.IMPER</i>	<i>FEM</i>
NOM	trzej, cztery/ trzech czterech	trzy, cztery	
ACC	trzech czterech	trzy, cztery	
GEN	trzech czterech		
DAT	trzem, czterem		
INST	trzema, czterema		
LOC	trzech, czterech		

As Table 1 and Table 2 show, both numeral 2 and 3 along with 4 present case syncretisms in structural case positions, i.e. in Nominative and Accusative.³ Additionally, in masculine personal not only forms *dwaj*, *trzej*, *cztery* are available in Nominative, but also Nominative-Accusative-Genitive syncretism occurs. In all genders, the identity of Genitive-Locative forms is present as well. Numerals 2-4 select for nouns in plural.

A special attention should be devoted to lexeme *jeden* (one) which, on the one hand, belongs to the arithmetic progression, but on the other hand is frequently excluded from numerals as a separate part of speech because of its properties

³ Nominative-Accusative syncretism and gender distinction are also features of other Slavic languages, e.g. Czech or Serbo-Croatian. For declensional paradigms see Fischer (1970) for Czech and Kunzmann-Müller (1994) for Serbo-Croatian (as quoted in Stoltz 2002: 363f.).

Table 3. Declensional paradigm of numeral *jeden* (one).

CASE	GENDER		
	MASC.PER /MASC.IMPER	NEUT	FEM
NOM	jeden	jedno	jedna
ACC	jednego	jedno	jedną
GEN	jednego		jednej
DAT	jednemu		jednej
INST	jednym		jedną
LOC	jednym		jednej

First of all, *jeden* is the only numeral that modifies singular nouns. Although gender distinction is found, case syncretisms do not exactly follow patterns found with numerals 2-4, i.e. Nominative-Accusative syncretism is found only in neuter, with feminine there is Genitive-Dative syncretism and there is no Nominative-Accusative-Genitive syncretism for masculine personal. The only repetitive pattern found with *jeden* is Genitive-Locative syncretism but only with feminine. Another aspect that distinguishes *jeden* from other numerals is the fact that it has a plural form, e.g. *jedni ludzie* (some people), *jedne panie* (some women). In that case, however, *jedni/jedne* is treated as a different lexeme meaning *pewni* (some) (cf. Nagórko 1996: 151). Another property of *jeden* is that whenever it is a part of a complex numeral it never inflects, contrary to other numerals, and its form is invariably *jeden* irrespective of the gender of a modified noun or the externally assigned case to the numeral complex and the quantified noun. Examples of complex numerals containing non-inflecting *jeden* and other inflecting numerals in structural and oblique case positions contrasted with inflecting *jeden* as a simple numeral are given below.

- (2) a. *Widzę dwieście pięćdziesiąt jeden kaczek.*
 see-1SG.PRES [two.hundred fifty]-ACC one ducks-FEM.GEN.PL
 ‘I can see two hundred fifty one ducks.’
- b. *Widzę dwieście pięćdziesiąt dwie kaczki*
 see-1SG.PRES [two.hundred fifty two-FEM ducks-FEM.PL]-ACC
i czterdzieści dwa żurawie .
 and [forty two-MASC cranes-MASC.PL]-ACC
 ‘I can see two hundred fifty two ducks and forty two cranes.’
- c. *Widzę jedną kaczkę i jednego żurawia.*
 see-1SG.PRES [one duck-SG]-FEM.ACC and [one crane-SG]-MASC.ACC

- ‘I can see one duck and one crane.’
- (3) a. *z trzysta sześćdziesięcioma jeden uczniami.*
 with [three.hundred sixty]-INSTR one pupils- MASC.INSTR.PL
 ‘with three hundred sixty one pupils’
- b. *z trzysta sześćdziesięcioma trzema chłopcami*
 with [three.hundred sixty three boys-MASC.PL]-INSTR
i trzydziestoma dwiema/dwoma dziewczynkami
 and [thirty two girls]-INSTR
 ‘with three hundred sixty three boys and thirty two girls’
- c. *z jednym chłopcem i jedną dziewczynką*
 with [one boy-SG]-MASC.INSTR and [one girl-SG]-FEM.INSTR
 ‘with one boy and one girl’

Other Slavic languages present varied patterns of number agreement and a form of numeral 1 as a constituent of complex expressions. In Russian, Ukrainian, Serbo-Croatian and Czech a noun quantified by a complex consisting of 10 and 1 is singular. The singularity of a noun is accompanied by case and gender agreement with the leftmost element of a complex numeral, i.e. the digit and a noun (Stoltz 2002: 378), e.g.:⁴

- (4) *dwa-deset i jedna marka* (Serbo-Croatian; Schmaus 1978:75)
 two-ten and one- FEM.NOM mark-FEM.SG
 ‘twenty-one marks’

In Czech, the form of a noun depends on the order of constituents in a complex expression. When a digit precedes 10, a noun is always in plural Genitive (Stoltz 2002: 377), e.g.:

- (5) *jeden-a-dvacet knih* (Fischer 1970: 59)
 one-and-two-ten books-GEN.PL
 ‘twenty-one books’

⁴ Examples (4) - (7) and (9) - (10) are taken from Stoltz (2002).

Case, gender and number agreement, including singular, are found when a digit directly precedes the noun, e.g.:

- (6) *dvacet jedna kniha* (Fischer 1970: 59)
 two.ten one-FEM.NOM book-FEM.NOM
 ‘twenty-one books’

Slovak, Slovenian, Bulgarian, on the other hand, conform to the pattern found in Polish, i.e. the noun is always plural with complex numerals. Moreover, in Slovak and Slovenian digits are indeclinable.⁵ The only exception is Bulgarian in which, although 21 forces plurality of a modified noun, the digit is prone to gender distinction, e.g.:

- (7) a. *dva-deset i edin stola*
 two-ten and one-MASC chairs-MASC.PL
 ‘twenty-one chairs’ (Bulgarian, Walter and Karvanbasieva 1987: 391)
- b. *dva-deset i edna masi*
 two.ten and one-FEM table-FEM.PL
 ‘twenty-one tables’ (Bulgarian, Walter and Karvanbasieva 1987: 391)

In English, cardinal numerals are indeclinable which remains in a line with other attributive modifiers. Interestingly, in other Germanic languages, i.e. Scandinavian and German, at least one cardinal numeral displays gender distinction. Usually, it is numeral 1 (Stoltz 2002: 359).⁶ There is no other idiosyncrasies regarding the grammatical number of nouns modified by numerals, i.e. numeral 1 selects for singular and numeral 2 onwards accompanies nouns in plural. A more varied pattern is found with complex numerals containing 1. In German, for instance, depending on the presence of a conjunction, a linker between hundreds, decades and digits, the noun can be singular or plural, e.g.:

- (8) a. *Einhundert und ein Kind saßen im Palast.* (Stoltz 2002: ft. 7)
 one.hundred and one child-SG sit in palace

⁵ In Slovak two orders are possible, i.e. digit and ten or ten and digit. Only in the former case ten declines (Stoltz 2002: 376) (for examples see Stoltz (2002) and references cited therein).

⁶ In mainland Scandinavian languages, Low German and German gender distinction is found only with 1, whereas in Frisian, Faroese and Icelandic numerals 1-4 are gender sensitive (Stoltz 2002: 359).

‘One hundred and one children were sitting in a palace.’

- b. *Einhundertein Kinder saßen im Palast.* (Stoltz 2002: ft. 7)
one.hundred.one children-PL sit in palace
One hundred and one children were sitting in a palace.’

Despite the fact that the composite meaning of the complex numeral is plural and the verb in both cases is plural as well the form of the noun depends on whether numeral 1 is separated from the rest of the numerical expression or not. Consequently, it can either form a syntactic unit with a noun (cf. 8a) or with the decades or hundreds in which case the form of the noun is contingent on the whole complex (cf. 8b). A similar pattern is found in Icelandic in which a complex numeral with 1 requires a singular noun, e.g. (9a), but with higher numerals plural, e.g. (9b).

- (9) a. *tuttugu og eins árs gamall* (Fridjónsonn 1978: 116)
twenty and one-GEN year-GEN old- MASC.NOM
‘twenty-one years old’
b. *Þrjátíu og tveggja ára gamall* (Fridjónsonn 1978: 116)
thirty and two-GEN year-GEN.PL old-NOM.MASC
‘thirty-two years old’

In Faroese, on the other hand, 21 invariably takes nouns in plural⁷, e.g.:

- (10) *eitt ot tjúgu børn /*barn* (Lockwood 1980: 65)
one and twenty children/*child
‘twenty-one children’

Higher numerals, i.e. 5 onwards, similarly to 3 and 4 have different forms for masculine personal on the one hand and masculine impersonal and inanimate, neuter and feminine on the other. They also display Nominative-Accusative syncretism in all genders, and

⁷ Plurality of nouns with complex numerals containing 1 is also a requirement in Swedish, Danish and both variants of Norwegian (Stoltz 2002: 375). In other language families such as Romance Italian and Rheto-Romance numeral 1 in complex expressions governs singular nouns, *ventuna ragazza-SG* (twenty-one girls) (Stoltz 2002: 376).

specifically Nominative-Accusative-Genitive syncretism for masculine personal.⁸ The exemplary declension of higher numerals on the basis of numeral 5 is shown in Table 4.⁹

Table 4. Declensional paradigm of numeral *pięć* (five).

	<i>GENDER</i>		
<i>CASE</i>	<i>MASC.PER</i>	<i>NEUT/MASC.IMPER</i>	<i>FEM</i>
NOM	pięciu	pięć	
ACC	pięciu	pięć	
GEN	pięciu		
DAT	pięciu		
INST	pięciu/pięcioma		
LOC	pięciu		

Finally, in the introduction of cardinal numerals it is crucial to discuss lexemes such as *tysiąc* (thousand) and *milion* (million) which not only do not recognize between different genders, but also, contrary to other numerals, have singular and plural.

Table 5. Declensional paradigm of *tysiąc* (thousand) and *milion* (million).

	<i>NUMBER</i>	
<i>CASE</i>	<i>SINGULAR</i>	<i>PLURAL</i>
NOM	tysiąc, milion	tysiące, miliony
ACC	tysiąc, milion	tysiące, miliony
GEN	tysiąca, miliona	tysięcy, milionów
DAT	tysiącowi, milionowi	tysiącom, milionom
INST	tysiącem, milionem	tysiącami, milionami
LOC	tysiącu, milionie	tysiącach, milionach

These properties along with the fact that they share a declensional paradigm of masculine impersonal nouns frequently juxtapose them with the group of nouns and not numerals. Yet, after a careful examination of other features of these lexemes, especially with regard to their relations with quantified nouns, other modifiers and predicates, the

⁸ In the declension of numeral 5 we can observe case syncretism in the whole paradigm of masculine personal, yet, only the identity of Nominative-Accusative-Genitive is a historically developed feature characteristic of masculine personal.

⁹ In numerals from 500 to 900 only the atomic numeral, i.e. the first element of a compound, inflects, e.g. *pięćset*-*FEM.NOM/ACC* versus *pięciuset* in all cases for masculine personal and in oblique cases for the remaining genders. In compound numerals containing *dwa* (2), *dwanaście* (12), *dwadzieścia* (20), *dwieście* (200), both elements, i.e. the atomic numeral and the lexicalized teen, decade or hundred, have inflectional affixes, e.g.:

- (1) a. *dwanaście/dwadzieścia/dwieście*-*NOM*
 b. *dwunastu/dwudziestu/dwustu*-*GEN*
 c. *dwunastoma/dwudziestoma/dwustoma*-*INSTR*
 ‘twelve/twenty/two hundreds’

conclusion will be drawn that there is no conclusive evidence to remove them from the class of numerals.

1.1.1.1. Complex numerals

Cardinal numerals do not only quantify nouns as atomic numerals or compounds with lexicalized teens and decades but also, due to arithmetic operations such as addition or multiplication, create an infinite number of combinations of complex numerical expressions. When such an expression modifies a noun its every element should be inflected according to the selectional properties of the governing element. In practice, however, it is admissible to leave certain parts of the expression not inflected. It may happen when a complex numeral consists of at least three elements, but even though, there are always parts which must have morphological exponents whenever required, for instance, decades and atomic numerals regardless of their position in a formation, e.g. (11a), as well as two last elements, e.g. (11b). Moreover, whenever the preceding numeral has already been declined, every next that follows must be also declined, e.g. (11c), (Jadacka 2000: 1675).

- (11) a. *Rozmawiali o dwudziestu tysiącach /*tysiące*
 talked-3PL.PAST about [twenty thousand]-LOC /*thousand-NOM
*/*dwadzieścia tysięcy pięciuset dwudziestu żołnierzach.*
 /*twenty-NOM thousand-GEN [five.hundred twenty soldiers-PL]-LOC
 ‘They talked about twenty thousand five hundred twenty soldiers.’
- b. *Zobaczyli dwustu trzydziestu trzech rolników.*
 saw-3PL.PAST [two.hundred thirty three farmers-PL]-MASC.ACC
 ‘They saw two hundred thirty three farmers.’
- c. *Zabrakło nam pięć tysięcy*
 run.out.of-3SG.NEUT.PAST we-DAT.PL five-NOM thousand-GEN
*sześciuset dwudziestu /*dwadzieścia czterech gwoździ*
 six.hundred-GEN twenty-GEN /*twenty-NOM four-GEN nails-MASC.GEN.PL
 ‘We run out of five thousand six hundred twenty four nails.’

The only exception to this rule is numeral *jeden* (one) which despite being an atomic numeral is never declined and is used in a frozen form as it is commonly referred to.

In English, complex numerals behave in the same way as simple numerals, i.e. they occur to the left of the modified noun, select for plural and do not feature any inflectional suffixes. Addition might be manifested by means of conjunctive *and* but it is more typical of higher numbers and depends on the value of a lower conjunct (Hurford 2003: 49), e.g. *two thousand five hundred, two thousand and fifty four*.

1.1.1.2. Syntax of cardinal numerals in Polish

One of the most controversial aspects of cardinal numerals, not only in Polish, but also in Slavic languages in general, as well as in other languages, is their syntax, i.e. their relations with the noun they modify and with the predicate when together with this noun they occupy the subject position. The starting point for the analysis of numerals is their division into lower and higher owing to their behavior when accompanied by a noun. Lower numerals, 1-4, agree in gender and case with the noun they modify.¹⁰ Due to their ability to become congruent with the modified noun they are frequently analyzed or grouped together with adjectives, e.g.:

- (12) a. *jedna wysoka brunetka* *i* *dwie pulchne*
 [one tall brunette-SG]-FEM.NOM and [two chubby
 blondynki
 blonds-PL]-FEM.NOM
 ‘one tall brunette and two chubby blonds’
- b. *trzy mądre kobiety* */o* *trzech mądrych*
 [three smart women-PL]-FEM.NOM /about [three smart
 kobietach
 women-PL]-FEM.LOC
 ‘three smart women/ about three smart women’

¹⁰ Term ‘agree’ is theory neutral here and means unanimity in forms of a modifier and head as well as between the subject and the predicate.

When phrases in the subject position contain lower numerals, the predicate always agrees with respect to number and gender with the quantified noun, e.g.:

- (13) *Cztery harcerki trzymały wartę.*
 four-FEM.NOM girl.scouts-FEM.NOM.PL kept-3PL.FEM.PAST guard-FEM.ACC.SG
 ‘Four girl scouts kept guard.’

Although, these properties, i.e. congruency with the noun and subject-verb agreement, used to be cited in the literature as the major factor for the adjectival status of lower numerals, a masculine personal form of a numeral runs counter this assumption. The numeral preceding a masculine personal noun does not only select for Genitive in structural case positions, that is, in positions where Nominative or Accusative are assigned, but also the expected agreement with the verb is no longer found. Instead, the verb assumes third person singular neuter¹¹, e.g.:

- (14) *Dwóch/trzech/czterech mężczyzn weszło do sklepu.*
 [two /three/four men]-MASC.GEN.PL entered-3SG.NEUT.PAST to
 shop-MASC.GEN.SG
 ‘Two/three/four men entered the shop.’

Similarly, the singular form of a verb is acceptable when the numeral determines the unit of measure (Doroszewski 1957: 298), e.g.:

- (15) a. *Ubyły /ubyło cztery centymetry wody.*
 diminished-3PL.FEM.PAST/diminished-3SG.NEUT.PAST four-MASC.IMPER.NOM
 centimeters-NOM.PL water-FEM.GEN
 ‘Four centimeters of water diminished.’
- b. *Zostały /zostało nam dwie godziny.*
 remain-3PL.FEM.PAST /remain-3SG.NEUT.PAST us-DAT.PL two-FEM.NOM

¹¹ Third person singular neuter is a default form rather than the result of any agreement relation.

hours-FEM.NOM.PL

‘We have two hours.’

The same forms of nouns and verbs, i.e. Genitive and third person singular neuter respectively, are found with higher numerals in all genders, i.e. 5 onwards, e.g.:

- (16) a. *Pięć kobiet przygotowywało przyjęcie.*
five-FEM.NOM women-FEM.GEN.PL prepared-3SG.NEUT.PAST party-NEUT.ACC.SG
‘Five women prepared a party.’
- b. *Siedmiu mężczyzn myło samochody.*
seven-MASC.GEN men-MASC.GEN.PL washed-3SG.NEUT.PAST cars-MASC.ACC.PL
‘Seven men washed the cars.’
- c. *Osiem taksówek czekało przed hotelem.*
eight-FEM.NOM taxes-FEM.GEN.PL wait-3SG.NEUT.PAST in.front.of
hotel-MASC.INST.SG
‘Eight taxes waited in front of the hotel.’

Yet, nouns feature Genitive only when the phrase occupies the subject or direct object position, so when Nominative or Accusative are assigned. In other cases, i.e. in oblique case positions, when a verb or a preposition selects for a particular case, both the numeral and the noun assume the case of the governor, e.g.:

- (17) a. *Podczas akcji ratunkowej strażacy poszukiwali siedmiu osób.*
during [rescue operation]-GEN.SG firefighters-MASC.NOM.PL
search.after-3PL.PAST seven-GEN people-GEN.PL
‘During the rescue operation firefighters still searched after seven people.’
- b. *Sąsiadka szła z pięcioma pudłami.*
neighbor-FEM.NOM.SG went-3SG.FEM.PAST with five-INST
poodles-MASC.INST.PL
‘A neighbor went with seven poodles.’

- c. *Rozmawialiśmy o sześciu uczniach.*
 talked-1PL.PAST about six-LOC pupils-MASC.LOC.PL
 ‘We talked about six pupils.’

When a numerically quantified phrase is accompanied by a non-verbal predicate, its form depends on what part of speech it represents. A noun predicate occurs in Instrumental, e.g. (18a), and an adjective predicate in Genitive, e.g. (18b), or Nominative, e.g. (18c), with the reservation that Nominative can be used when the subject is non-virile and the verb precedes a quantified noun, e.g. (18d), (Jadacka 2011: 1602), e.g.:

- (18) a. *Pięciu uczniów zostało lekarzami.*
 five-MASC.GEN pupils-MASC.GEN.PL became-3SG.NEUT.PAST
 doctors- MASC.INSTR.PL
 ‘Five pupils became doctors.’
- b. *Zostało zjedzonych pięć bułek.*
 was-3SG NEUT.PAST eaten-GEN.PL five-FEM.NOM buns-FEM.GEN.PL
 ‘Five buns were eaten.’
- c. *Zjedzone zostało pięć bułek.*
 eaten-FEM.NOM.PL was-3SG NEUT.PAST five-FEM.NOM buns-FEM.GEN.PL
 ‘Five buns were eaten.’
- d. **Zabici /zabitych zostało dziesięciu żołnierzy.*
 killed-NOM/killed-GEN was-3SG NEUT.PAST ten-MASC.GEN
 soldiers-MASC.GEN.PL
 ‘Ten soldiers were killed.’

Finally, within the higher numerals we recognize *tysiąc* (thousand), *milion* (million) and *miliard* (billion) which, contrary to other numerals, have singular and plural which affects the form of the verb when the numerically quantified noun is in the subject position. One of the most common contexts in which *tysiąc* is found is when it quantifies the noun. Then it is juxtaposed with other higher numerals requiring the noun to be marked with Genitive and the verb to be in third person singular neuter form, e.g.:

- (19) *Tysiąc kibiców przyszło na mecz.*
 thousand supporters-MASC.GEN.PL came-3SG.NEUT.PAST on
 match-MASC.ACC.SG
 ‘A thousand supporters came to the match.’

Still, there are some contexts, in which a verb can have a different form, e.g. (Jadacka 2011: 1602):¹²

- (20) a. *Zamieszkał tu tysiąc emigrantów z Kurdystanu*
 take.up.residence-3SG.MASC.PAST here thousand emigrants-MASC.GEN.PL
 from Kurdistan- MASC.GEN.SG
 ‘A thousand emigrants from Kurdistan took up residence here.’
- b. *Zginął / (zginęło) tysiąc żołnierzy.*
 died-3SG.MASC.PAST / died-3SG.NEUT.PAST thousand soldiers-MASC.GEN.PL
 ‘A thousand soldiers died.’
- c. *Tysiąc /million /miliard ton węgla został przewieziony do fabryki*
 thousand /million/milliard tons-FEM.GEN.PL coal-MASC.GEN
 [was transported]-3SG.MASC.PAST / [was transported]-3SG.NEUT.PAST
 to factory-FEM.GEN.SG
 ‘Thousand/million/milliard tons of coal was transported to the factory.’
- d. *Trzy tysiące poddanych czekały na swojego króla.*
 three thousands-PL servants-GEN.PL waited-3PL.FEM.PAST
 waited-3PL.FEM.PAST on their king-MASC.ACC.SG
 ‘Three thousand servants waited for their king.’
- e. *Tysiące ludzi wyszło*
 thousands-PL people-GEN.PL came.out-3SG.NEUT.PAST

¹² In brackets I give alternative forms.

/(wyszły) *na ulice.*
 /came.out-3PL.FEM.PAST on streets-FEM.ACC.PL
 ‘Thousands of people came out on streets.’

In examples (20a) and (20b), the verb can be used in third person singular masculine being congruent with *tysiąc*. Such a form is permissible when the verb precedes the numeral (Jadacka 2011: 1602). Similarly, when *tysiąc* or its multiples quantifies the unit of measure the verb may assume the form congruent with the numeral, e.g. (20c). Moreover, when *tysiąc* is preceded by other numerals then the verb might be plural, e.g. (20d), implying that the agreement relation occurs between the element represented by a numerals lexeme and the verb. Finally, *tysiąc* used in plural is accompanied by the verb in third person singular neuter, e.g. (20e), which displays resemblance, both in meaning, i.e. multitude and multiplicity, and syntax, to indefinite numerals.

1.1.2. Collective numerals

Collective numerals determine the number of entities by means of whole numbers but they are used with nouns denoting people of different gender (21a), non-adults or offspring (21b), pluralia tantum (21c), i.e. nouns appearing only in plural, or nouns customarily used in pairs (21d), (Strutyński 2005: 184).

- (21) a. *dwoje ludzi*
 ‘two people’
 b. *troje dzieci/troje szczeniąt*
 ‘children/three puppies’
 c. *czworo nożyczek*
 ‘four scissors’
 d. *dwoje oczu*
 ‘two eyes’

Collective numerals are found in Polish in examples (21a) - (21d). In English, on the other hand, the same nouns, with the exception of plurale tantum, are modified by cardinal numerals. As there is no morphological gender distinction on modifiers (or any

other part of speech apart from pronouns and some human nouns), the function of collective numerals is carried out by cardinal numerals. For nouns that do occur only in plural, the strategy to use various measure phrases is applied, e.g. (22).

(22) *a pair of pants*

Measure phrases are used in both languages with uncountable nouns, i.e. different substances, abstract nouns or nouns with which in a particular languages.¹³

1.1.3. Ordinal numerals

Ordinal numerals are numerals which “identify the position a given member of a set occupies relative to other members of the same set” (Stoltz and Veselinova 2005: 218), designate positions in a sequence, e.g.:

- (23) a. *pierwszy nauczyciel*
first teacher-MASC.NOM.SG
'a first teacher'
- b. *piąty dzień*
fifth day-MASC.NOM.SG
'fifth day'

Despite the fact that the function of ordinal numerals, i.e. to demonstrate the order of objects or phenomena, seems to be one of the basic ones in presenting relative relations, languages of the world display a wide differentiation regarding the presence of ordinal numerals or their forms. Some languages have been reported to lack ordinal numerals and instead to feature temporal and local adverbs. In other languages, e.g. Indonesian, the function of the ordinal numeral is taken over by cardinal numerals and the distinction between the two is signaled by the word order (Stoltz and Veselinova 2005: 218). Yet another group of languages is found in which only *one* has a form of an

¹³ For reasons of space I do not discuss measure phrases here, but cf. Chachulska (2003) for Polish. For English and a general discussion of measure phrases see e.g. Higginbotham (1994) and literature on pseudopartitives.

ordinal numeral and numerals above share forms with cardinal numerals, e.g. in an Arawakan language spoken in Venezuela (Stoltz and Veselinova 2005: 218). Considering other possibilities of encoding relative order languages in which all ordinal numerals are derived from cardinals are worth mentioning, e.g. in Hunzib, one of the Caucasian languages spoken in Russia, in which there is a combination of suppletive forms and forms derived from cardinal numerals.¹⁴

In Polish, ordinal numerals seem to conform to the group of languages in which *one* as a cardinal numeral has a suppletive form (*pierwszy*) whereas *two* upwards resemble cardinal numerals featuring stem alternations, e.g. *dwa* (two)/*drugi* (second), *trzy* (three) /*trzeci* (third). With respect to their morphological properties, Polish cardinal numerals inflect for case, number and gender, although gender distinction in plural is found only with first four numerals, e.g.:

- (24) a. *pierwsze kobiety / pierwsi mężczyźni*
 ‘first women /first men.’
- b. *Panie z miasta przybyły jako*
 women-FEM.NOM.PL from city-NEUT.GEN.SG came-3PL.FEM.PAST as
trzecie a panowie jako czwarcí a nie
 third-FEM.PL and men-MASC.NOM.PL as fourth-MASC.PL and not
**piąci czy *szóści.*
 fifth-PL or sixth-PL
 ‘Women from the city came as third and men as fourth and not as fifth or sixth.’

In cases when 5 and above are to be used as ordinal numerals periphrastic forms such as *na piątym/szóstym miejscu* are utilized, e.g.:

- (25) *Drużyna z Tajlandii była na*
 team-FEM.NOM.SG from Thailand-FEM.GEN.SG was-FEM.GEN.SG on
piątym miejscu.
 [fifth place]-LOC
 ‘A team from Thailand was fifth.’

¹⁴ For reasons of space I will not develop the topic of ordinal numerals cross-linguistically. For a more detailed discussion see Stolz and Veselinova (2005) and sources cited therein.

When a complex numeral expresses the position in a series, then only the last two numerals are ordinal numerals. The rest of the complex is formed by cardinal numerals, e.g.:

- (26) *Zawodnik* *ukończył* *wyścig* *jako*
 contestant-MASC.NOM.SG finished-3SG-MASC.PAST race-MASC.ACC.SG as
tysiąc *dwieście* *pięćdziesiąty drugi*.
 thousand two.hundred fifty-MASC second-MASC
 ‘The contestant has finished the race as thousand two hundred fifty
 second.’

Although ordinal numerals are traditionally defined as numerals due to their semantic properties (e.g. Nagórko 1996: 155), in some classifications of parts of speech they are determined to be adjectives due to their morphological and syntactic resemblance to adjectives (e.g. Laskowki 1984: 284). As varied views on classification of numeral types are subject to a wider discussion and thus deserve proper attention I will postpone comments on this issue until section 1.2.3.

English ordinal numerals, apart from first three which have suppletive forms, i.e. *first*, *second* and *third*, are derived from cardinal numerals by means of adding *th* affix, e.g. *sixth*, *seventh* etc. In complex formations, contrary to Polish, only the last numeral occurs in a form of a cardinal numeral, e.g. *two hundred twenty ninth*, *one thousand five hundred sixty third*.

1.1.4. Fractional numerals

Fractional numerals determine the number of entities by means of fractions. The most common fractional numerals in Polish are *ćwierć* (one fourth), *pół* (half) and its composites such as *półtora* (one and a half), *półtrzecia* (two and a half), *półczwarta*

(three and a half).¹⁵ Other fractional numerals are formed by means of a cardinal and ordinal numeral, e.g.:

- (27) a. *jedna piąta chleba*
one fifth bread-MASC.GEN.SG
'one fifth of bread'
- b. *ćwierć arbuza*
one.fourth/quarter watermelon-MASC.GEN.SG
'one fourth of a watermelon'
- c. *półtora jabłka*
one.and.a.half apple-NEUT.GEN.SG
'one and a half apples'

Fractional numerals in English display similar patterns, i.e. they are words indicating one of two equal parts or the quantity/amount equal to such a part (*Webster's Unabridged Dictionary*, hence *WUD*), i.e. *half*, or one fourth, i.e. *quarter*. Other are formed via a juxtaposition of a cardinal and ordinal numeral, e.g.:

- (28) a. *one third of all students*
b. *one fifth of the department*

In case of *half* and *quarter*, however, it is worth mentioning that their morphological and syntactic properties indicate a double status of these lexemes. First of all, *half* has its plural equivalent, i.e. *halves*, e.g. *two halves of the heart*, which immediately suggests that it is a noun. Yet, its syntax implies that it is a numeral as it determines a fractional part but both as an attributive modifier, e.g. (29a), or as an element of the partitive construction, e.g. (29b).

- (29) a. *He spent half a day watching TV.*
b. *Mary ate half of their cake.*

¹⁵ The last two forms *półtrzecia* (two and a half), *półczwarta* (three and a half) are mentioned in a dictionary *SPP* from 1973 but are described as rarely used. They do not appear in *Wielki słownik poprawnej polszczyzny* (hence *WSPP*).

Quarter, despite being classified as a noun in dictionaries and having numerous lexical entries, e.g. meaning “a coin equal to one fourth of the dollar of the United States and Canada”, “one fourth of an hour”, “one fourth of a year”, “an academic term lasting approximately three months”, “one fourth of the period of the moon's revolution around Earth” (*The Free Dictionary*, hence *TFD*) is used as a fractional numeral denoting a fourth part. Similarly to *half* it can either occur attributively as in *a quarter mile* or in partitive constructions, e.g. *a quarter of households*, *a quarter of all neighbors*. Furthermore, both *half* and *quarter* are found in expressions with other cardinal numerals, e.g.:

- (30) a. *one and a half pints*
 b. *one and a quarter miles*

Their numeral status can be confirmed not only by the fact that they can appear with other numerals but that they are juxtaposed with them via *and*, which means that as one of the conjuncts they must be of the same category as the other one. Additionally, when these lexemes are part of a complex expression, the noun they modify is always plural similarly to the verb that follows,¹⁶ e.g.:

- (31) a. *One and a half apples are rotten.*
 b. *One and a half years have passed since we met.*

This is a surprising property, especially when compared with Polish fractional numerals which invariably take nouns in singular (cf. examples and discussion below).

When it comes to morphological and syntactic properties of fractional numerals in Polish there is no unity in the group. Numeral *ćwierć* (one fourth) has three distinct forms, i.e. *ćwierć* for Nominative and Accusative, *ćwierci* for Genitive, Dative and Locative as well as *ćwiercią* for Instrumental. It also possesses a plural form *ćwierci* but being feminine itself it does not distinguish between different genders.

¹⁶ In structures *one + noun + a half* the verb that follows is singular, e.g. *A year and a half has passed*, or when the amount is treated as a singular entity, e.g. *One and a half cups is enough sugar* (*The American Heritage Book of English Usage*, hence *TAHBEU*).

Numeral *pół* does not decline for case nor gender. In examples (32a) and (32b) phrases with *pół* occur in structural case positions, i.e. in places where Nominative or Accusative are assigned.

- (32) a. *Pół chleba spleśniało.*
 half bread-MASC.GEN.SG molded-3SG.NEUT.PAST
 ‘Half a bread molded’
- b. *Zjedliśmy pół chleba.*
 ate-1PL.PAST half bread-MASC.GEN.PL
 ‘We ate half of bread.’

In sentences where the phrase with the fractional numeral in oblique case positions would be used, instead of *pół* the noun *połowa* is chosen, e.g.:

- (33) a. *Rozdali darmowe książki połowie szkoły.*
 distributed-3PL.PAST [free books]-ACC.PL half-FEM.DAT
 school-FEM.GEN.SG
 ‘They distributed free books to half a school.’
- b. *Janek przywiózł nowe komputery i sprzedał je *pół /połowie szkoły.*
 John-MASC.NOM.SG brought-3SG.MASC.PAST [new computer]-ACC.PL and
 sold-3SG.MASC.PAST them-3PL.ACC *half-NOM/ACC/half-DAT
 school-FEM.GEN.SG
 ‘John has brought new computers and sold them to half of a school.’
- c. *Janek sprzedał pół/półowę szkoły.*
 John-MASC.NOM.SG sold-3SG.MASC.PAST half-ACC school-FEM.GEN.SG
 ‘John sold half of a school.’

In example (33b) the phrase with the fractional numeral is found in a position when Dative is assigned and there only *połowa* can appear. In (33c), on the other hand, both options are possible but the phrase occurs in the Accusative context. The same pattern is

recognized with Instrumental, e.g. (34a), and Locative, e.g. (34b), i.e. whenever these cases are selected for by the verb the phrase contains *połowa* and not *pół*, e.g.:

- (34) a. *Rozmawiałem z *pół /połową drużyny.*
 talked-1SG.PAST with *half-NOM/ACC /half-INSTR team-FEM.GEN.SG
 ‘I talked to the half of a team.’
- b. *Rozmawiali o *pół /połowie spadku.*
 talked-3PL.PAST about *half-NOM/ACC /half-LOC inheritance-MASC.GEN.SG
 ‘They has talked about a half of inheritance.’
- c. *Przepisał pół/półowę spadku na*
 made.over-3SG.PAST half-ACC inheritance-MASC.GEN.PL on
sąsiadkę.
 neighbor-FEM.ACC.SG
 ‘He has made half of his inheritance over the neighbor.’

Sentences (34a) - (34c) show that the choice of *połowa* over *pół* is not a matter of a collocation or a tendency of a given noun to occur with one or the other but a matter of case, precisely Nominative/Accusative versus oblique ones.¹⁷ Yet, when the phrase occupies positions where Genitive is assigned both options, i.e. with *pół* and *połowa* seem to be legitimate, e.g.:

- (35) a. *Nie ma pół/półowy grupy /pół/półowy*
 no have half group-FEM.GEN.SG/half
obiadu.
 dinner- MASC.GEN.SG
 ‘There is not half of a group/half of dinner.’

¹⁷ Although syntactic contexts seem to be decisive in the choice of *pół* or *połowa* their meaning cannot be entirely neglected as when the noun denotes a set rather than a single object then *połowa* is chosen, e.g.

- (2) a. *Pół samochodu zostało zniszczone.*
 half car-MASC.GEN.SG was-3SG.NUET.PAST damaged
 ‘Half of a car was damaged.’
- b. *Półowa samochodów została odesłana do fabryki*
 half cars-MASC.GEN.SG were-3SG.FEM.PAST sent to factory
 ‘Half of the cars were sent to the factory.’

- b. *Strażnicy pilnują tego budynku /pół/połowy*
guards-NOM.PL watch-3PL.PRES this building-MASC.GEN.SG/half
budynku.
building- MASC.GEN.SG
‘Guards watch this building/half of a building.’
- c. *Maria przetłumaczyła zdanie*
Maria-FEM.NOM.SG translated-3SG.FEM.PAST sentence-NEUT.GEN.SG
/pół/połowę zdania.
/half-ACC sentence-NEUT.GEN.SG
‘Maria translated a sentence/half of a sentence.’
- d. *Maria nie przetłumaczyła zdania*
Maria-FEM.NOM.SG not translated-3SG.FEM.PAST sentence-NEUT.GEN.SG
/pół/połowy zdania.
/half sentence-NEUT.GEN.SG
‘Maria did not translate a sentence/ half of a sentence.’
- e. *Próbowano mu przerwać w pół słowa/*
try-3SG.NEUT.PAST him-3SG.MASC interrupt-INF in half word-NEUT.GEN.SG
**słowie /*słowo (WSPP)*
*word-NEUT.LOC.SG /word-NEUT.NOM/ACC.SG
‘They tried to cut him short.’

In above examples, i.e. in a negative existential construction (35a), in sentences with an inherent (35b) and structural Genitive (35c), (35d) or in a structure in which the preposition precedes the phrase with the numeral (35e)¹⁸, *pół* seems to be a legitimate option which shows that its use is extended to Genitive contexts. Moreover, in

¹⁸ Yet, in phrases with *godzina* (hour) the modified noun is governed by the preposition and not by the numeral, e.g. (4), but only with this noun. As example (5) shows, *tydzień* (week) receives case from the numeral and not the preposition.

- (3) a. *To się stało po godzinie /po pół godzinie /*pół*
this REF happened-3SG.NEUT.PAST after hour-LOC/after half hour-LOC/*half
godziny. (WSPP)
hour-GEN
‘This happened after half an hour.’
- b. *Maria wróciła do pracy po tygodniu/pół*
Mary-FEM.NOM.SG came.back-3SG.FEM.PAST to work after week-LOC/half
*tygodnia /*pół tygodniu.*
week-GEN /*half week-LOC
‘Mary came back to work after a week/half a week.’

one.and.half hour-FEM.GEN.SG /hour-FEM.LOC.SG

‘The team won the match after an hour and a half.’

b. *Maria wyjeżdża za półtora tygodnia.*

Maria-FEM.NOM.SG leave-3SG.FEM.PRES in one.and.half week-MASC.GEN.SG

‘Maria is leaving in a week and a half.’

Although there are some differences among fractional numerals regarding their inflection, the common feature of these numerals is the form of the noun they modify, i.e. Genitive, e.g.:

(39) *Janek zjadł ćwierć /jedną trzecią /pół*

John-MASC.NOM.SG ate-3SG.MASC.PAST quarter/one third /half

/półtora jabłka.

/one.and.half apple-NEUT.GEN.SG

‘John has eaten a quarter/one third/half/one and a half of an apple.’

When a noun phrase with a fractional numeral functions as a subject, the verb occurs in singular, e.g.:

(40) a. *Pół arbuza zepsuło się.*

half watermelon-MASC.GEN.SG went.bad-3SG.NEUT.PAST REF

‘Half of a watermelon went bad.’

b. *Dwie trzecie pracowników ogłosiło*

two third employers-MASC.GEN.PL declared-3SG.NEUT.PAST

strajk.²¹

strike-MASC.ACC.SG

‘Two third of employers declared strike.’

²¹ With *dwie trzecie*, the verb can occur in feminine plural, e.g. *Dwie trzecie pracowników ogłosiły strajk* (Two third of employees declared strike). Yet, with other fractional numerals such as *trzy czwarte* (three fourths), *cztery piąte* (four fifths), *pięć szóstych* (five sixths) and other fractions the verb found in third person neuter singular is a more felicitous choice, e.g. *Trzy czwarte/cztery piąte/pięć szóstych pracowników ogłosiło/*ogłosiły strajk* (Three fourths/four fifths/five sixths of employees declared-3SG.NEUT /*declared-3PL.FEM strike).

Although above examples suggest that establishing a grammatical number of a predicate is fairly transparent, the form of a verb regarding gender (or any other predicate) does not seem to be such an obvious issue, e.g.:

- (41) a. *Ćwierć kalafiora zepsuła się/*
quarter cauliflower-MASC.GEN.SG went.bad-3SG.FEM.PAST REF
*zepsuło się /*zepsuł się.*²²
went.bad-3SG.NEUT.PAST REF /went.bad-3SG.MASC.PAST REF
‘Quarter of a cauliflower went bad.’
- b. *Ćwierć kalafiora została zjedzona/*
quarter cauliflower-MASC.GEN.SG was-3SG.FEM.PAST eaten-FEM
*zostało zjedzone /*został zjedzony.*
was-3SG.NEUT.PAST eaten-NEUT /was-3SG.MASC.PAST eaten-MASC
‘A quarter of a cauliflower was eaten.’
- (42) a. *Pół melona *zepsuła się/*
half melon-MASC.GEN.SG went.bad-3SG.FEM.PAST REF
*zepsuło się /*zepsuł się.*
went.bad-3SG.NEUT.PAST REF /went.bad-3SG.MASC.PAST REF
‘Half of a melon went bad.’
- b. *Pół melona zostało zjedzone /*została*
half melon-MASC.GEN.SG was-3SG.NEUT.PAST eaten-NEUT/was-3SG.FEM.PAST
*zjedzona /*został zjedzony.*
eaten-FEM /was-3SG.MASC.PAST eaten-MASC
‘Half of a melon was eaten.’
- (43) a. *Półowa brokuła zepsuła się/*
half broccoli-MASC.GEN.SG went.bad-3SG.FEM.PAST REF
*/*zepsuło się /*zepsuł się.*

²² When a demonstrative pronoun is added only one form of a verb is possible, e.g.

- (5) a. *Ta ćwierć kalafiora została zjedzona /*zostało*
this-FEM quarter cauliflower was-3SG.FEM eaten-FEM / was-3SG.NEUT
zjedzone.
eaten-NEUT
‘This quarter of a cauliflower was eaten.’
- b. *To ćwierć kalafiora *została zjedzona / zostało zjedzone.*
this-NEUT quarter cauliflower was-3SG.FEM eaten-FEM / was-3SG.NEUT eaten-NEUT
‘This quarter of a cauliflower was eaten.’

- /*went.bad-3SG.NEUT.PAST REF /went.bad-3SG.MASC.PAST REF
‘Half of broccoli went bad.’
- b. *Półowa brokuła została zjedzona/*
half broccoli-MASC.GEN.SG was-3SG.FEM.PAST eaten-FEM
**zostało zjedzone /*został zjedzony.*
*was-3SG.NEUT.PAST eaten-NEUT /*was-3SG.MASC.PAST eaten-MASC
‘Half of broccoli was eaten.’
- (44) a. *Półtora salcesonu *zepsuła się /*
one.and.half headcheese-MASC.GEN.SG *went.bad-3SG.FEM.PAST REF/
*zepsuło się /*zepsuł się.*
went.bad-3SG.NEUT.PAST REF / *went.bad-3SG.MASC.PAST REF
‘One and a half of headcheese went bad.’
- b. *Półtora salcesonu *została zjedzona /*
one.and.half headcheese-MASC.GEN.SG *was-3SG.FEM.PAST eaten-FEM/
*zostało zjedzone /*został zjedzony.*
was-3SG.NEUT.PAST eaten-NEUT / *was-3SG.MASC.PAST eaten-MASC
‘One and a half of headcheese was eaten.’
- c. *Półtorej truskawki *zepsuła się /*
one.and.a.half strawberry-FEM.GEN.SG *went.bad-3SG.FEM.PAST REF
zepsuło się.
went.bad-3SG.NEUT.PAST REF
‘One and a half of a strawberry went bad.’
- d. *Półtorej truskawki *została zjedzona /*
one.and.a.half-FEM strawberry-FEM.GEN.SG *was-3SG.FEM.PAST eaten-FEM
zostało zjedzone.
was-3SG.NEUT.PAST eaten-NEUT
‘One and a half of a strawberry was eaten.’
- (45) a. *Dwie trzecie ludzi przyszło.*
two third people-GEN.PL came-3SG.NEUT.PAST
‘Two third of people came.’
- b. *Dwie trzecie mandarynki zostało zjedzone/*
two third tangerine-FEM.GEN.SG was-3SG.NEUT.PAST eaten-NEUT
**została zjedzona.*
was-3SG.FEM.PAST eaten-FEM

‘Two third of a tangerine was eaten.’

- c. *Dwie trzecie ludzi zostało zaproszonych/*
 two third people-GEN.PL WAS-3SG.NEUT.PAST invited-GEN
 **zostali zaproszeni.*
 *were-3PL.PAST invited-NOM
 ‘Two third people was invited/were invited.’

The picture that emerges from presented data is that in structures with *połowa* verbal or adjectival predicate is feminine singular, the presence of *ćwierć* in phrases occupying subject positions triggers either feminine or neuter singular and the rest of lexemes, i.e. *pół*, *półtora/półtorej* and composites of the cardinal and ordinal numerals permit only the predicate being neuter singular. Although such a variance in syntax may point to their different status, I claim that they are all, with the exception of *połowa*, representatives of one class, i.e. numerals. *Ćwierć*, on the other hand, allowing for a feminine predicate, thus being in the agreement relation with the verb or adjective, as well as having a plural form *ćwierci* may seem to be a noun. Yet, the fact that it also occurs with neuter singular predicate, which is a characteristic syntax of numerals, as well as that its plural form is limited to either set phrases such as *trzy ćwierci do śmierci* (have a brush with death) or time descriptions such as *w pierwszej/ostatniej ćwierci wieku/XVIII wieku* (in the first/ last quarter of the century/the 18th century), which nowadays sound rather old-fashioned, suggests the decaying status of this lexeme as a noun or rather a transitory stage between a noun and numeral. The numeral status of discussed lexemes is advocated by Gruszczyński and Saloni (1978: 22), who also pinpoint the fact that despite their varied morphological patterns, i.e. *półtora* with gender distinct forms, *ćwierć* with different case forms and *pół* without any inflectional suffixes or alternate forms, they form one grammatical category. What is more, their presence with other numerals confirms the statement that they are numerals, e.g.:

- (46) a. *Anna przeczytała trzy i pół rozdziału.*
 Ann-FEM.NOM.SG read-3SG.FEM.PAST three and half chapter-MASC.GEN.SG
 ‘Ann read three and a half chapter.’
- b. *trzy i ćwierć mili /milion Polaków*
 three and quarter mile-GEN.SG/million Poles-GEN.PL
 ‘three and a quarter miles/million Poles’

The numeral character of lexemes determining a fractional part of the set is also argued by Przepiórkowki (2006b), who attempts to prove that these elements, in spite of modifying nouns in singular, are, in fact, inherently plural which place them next to other numerals. The idea for the inherent plural number of fractional numerals is based on examples with demonstratives such as *te*, *owe* (these) and *tamte* (those) preceding *pół*, *ćwierć* or *półtora*, e.g.:²³

- (47) a. *Zaczną się niebawem prace polowe, więc te pół kilometra jest konieczne.*
begin REF soon works field thus these-PL half
kilometer-MASC.GEN.SG is-3SG.PRES necessary
‘Field works will begin soon, thus this half kilometer is necessary.’
- b. *I nikt jakoś nie pyta, czy te półtora miliona było wydane sensownie.*
and nobody somehow not ask if these-PL one.and.half
million-GEN.SG was-3SG.NEUT.PAST spent reasonably
‘And somehow nobody asks if this one and a half million was spent reasonably.’
- c. *[G]dyby nie owe ćwierć wieku dowartościowania miasta, nie byłoby tu dziś mostu 700-lecia.*²⁴
if not these-PL quarter century-MASC.GEN.SG appreciation
city not were here today bridge seventieth-anniversary
‘But for that quarter of the century of city appreciation, the seventieth-anniversary bridge would not be here.’
- d. *[..] wspomina tamte pół roku swego życia*
recall-3SG.PAST those-PL half year-MASC.GEN.SG his life
‘[He] recalls that half year of his life.’

Yet, there are also examples in which abovementioned lexemes occur with singular neuter pronouns, which is also indicated by Przepiórkowski (2006b), e.g.:²⁵

²³ Examples (47a) - (47d) are from Przepiórkowski (2006b: 81). Glosses and translations are mine.

²⁴ Actually in *IPI PAN Corpus* there are only two examples of *owe* + *ćwierć*, one of them used by Przepiórkowski (2006b).

- (48) a. *Jest owo pół prawdy*
 is this-SG half truth-FEM.GEN.SG
 ‘It is partially true.’
- b. *i doczekać się nie mogę kiedy minie owo pół godziny*
 and wait REF not can when pass this-SG half hour-FEM.GEN.SG
 ‘and I cannot wait when this half an hour passes.’
- c. *zajęło nam owo pół dnia*
 took-3SG.PAST us this-SG half day-MASC.GEN.SG
 ‘it took us half a day’
- d. *Kluczowym dla mnie jest owo półtora roku*
 pivotal for me is this-SG one.and.half year-MASC.GEN.SG
śledztwa.
 investigation
 ‘This one and a half years of investigation is pivotal form me.’
- e. *zostałem wciągnięty na owo półtorej godziny*
 was engaged on this-SG one.and.half hour-FEM.GEN.SG
 ‘I was engaged for one and a half hour.’
- f. *Jakby wymazać tamto pół roku*
 as.if erase that-SG half year-MASC.GEN.SG
 ‘What if erased that half year.’

When it comes to pronoun *to*, although there are numerous examples with all fractional numerals, both on the Internet and in *IPI PAN Corpus*, in the majority of cases in strings *to + pół/półtora + noun*, *to* is either a pronoun *it* as in sentences (49a) and (49b), or a part of predicative constructions such as (50a) and (50b).

- (49) a. *Wydali na to pół miliona dolarów.*
 spent-3PL.PAST on it-3SG half million-GEN.SG dollars-GEN.PL
 ‘They spent on this half a million dollars.’
- b. *Stało się to półtora miesiąca temu*

²⁵ Examples (48a) - (51) are from the Internet.

happened-3SG.PAST REF it-3SG one.and.half month-MASC.GEN.SG ago
w Bremie.

in Brema

‘It happened one and a half month ago in Brema.’

- (50) a. *Uśmiech to pół pocałunku.*
 smile- MASC.NOM.SG this half kiss-MASC.GEN.SG

‘A smile is half a kiss.’

- b. *Dobry plan to pół sukcesu.*
 [good plan]-MASC.NOM.SG this half success-MASC.GEN.SG

‘A good plan is half a success.’

With *ćwierć*, on the other hand, there are sentences with *to* functioning as an indicative demonstrative, e.g.:

- (51) *Proszę państwa, to ćwierć mld zł z ubiegłego*
 ladies gentlemen this-SG quarter milliard-GEN.SG zł from last
roku jeszcze do dzisiaj nie zostało ściągnięte.
 year yet till today not was-3SG.NEUT.PAST collected
 ‘Ladies and Gentlemen, this quarter milliard zł from the last year hasn’t
 been collected yet.’

The Internet and *IPI PAN Corpus* search have revealed that actually both variants of demonstratives, i.e. singular and plural, are possible with fractional numerals. According to Przepiórkowski (2006b) this implies that there might be two types of lexemes; one of them being inherently plural numerals supported by the presence of plural pronouns and selecting for singular nouns. Nevertheless, even admitting quoted data with plural pronouns as correct and neglecting the fact that they might be just instances of improper use of pronouns transferred from plural contexts and preserved in singular, in some cases to disambiguate between other uses of pronoun *to*, it is difficult to maintain the view on the inherent plural number of fractional numerals considering that the noun selected is singular. Although for Przepiórkowski (2006b) the availability of plural pronouns is an argument for selective plural number of lexemes *pół*, *ćwierć* and *półtora* just like in case of other numerals (cf. Laskowski (1984: 285) or Kopcińska (1992: 21), it does not explain why the noun is singular, which all in all, becomes a

completely new feature of numerals, i.e. selective plural number realized on modifiers but not on the category modified. Therefore, I reject Przepiórkowski's (2006b) proposal and claim that *ćwierć*, *pół* and *półtora* are fractional numerals selecting for singular nouns, similarly to numeral *jeden*, which is in accordance with their function of indicating not the number of elements in the set but its part.

1.1.5. Indefinite quantifiers

Another group of numerals that determines the quantity of a modified noun consists of numerals which specify only an approximate number of elements. These numerals constitute a very specific group as its members are not only descendants of different parts of speech but they also feature slightly different properties. Numerals such as *dużo* (a lot), *mało*, *trochę* (few, little) do not inflect and thus they can only appear in positions in which Nominative, e.g. (52a), Accusative, e.g. (52b), or Genitive, e.g. (52c) are assigned.

- (52) a. *Dużo/mało, trochę ludzi przyszło na koncert.*
a.lot/few people-GEN.PL came-3SG.NEUT.PAST on concert-MASC.ACC.SG
‘A lot of /few people came to the concert.’
- b. *Widzieliśmy dużo/mało, trochę ludzi na koncercie.*
saw-1PL.PAST a.lot/few people-GEN.PL on concert-MASC.LOC SG
‘We saw a lot of /few people at the concert.’
- c. *Nie było dużo ludzi na koncercie.*
not was-3SG.NEUT.PAST a.lot people-GEN.PL on concert-MASC.LOC.SG
‘There weren't a lot of people at the concert.’

In context where oblique cases are assigned *dużo*, *mało*, *trochę* are infelicitous, e.g. (53a). Instead, *wiele* is used, e.g. (53b).

- (52) a. *Poszliśmy razem z *dużo/*mało, *trochę ludzi.*
went-3PL.PAST together with a.lot /few people-GEN.PL

z *ludźmi*.

with people- INSTR.PL

‘We went to the square together with many people.’

b. *Razem z wieloma ludźmi poszliśmy na plac.*

together with [many people]-INSTR.PL went-3PL.PAST on square

‘We went to the square together with many people.’

Kilka (a few), *kilkanaście* (a dozen), *kilkadziesiąt* (a few dozen) and *wiele* (many), just like *dużo* (a lot), *mało*, *trochę* (few, little), display features of other higher numerals, i.e. select for a noun in Genitive in structural case positions and third person singular neuter verb, e.g.:

(54) *Kilka /kilkanaście/kilkadziesiąt /wiele studentów*

a.few /a dozen /a few dozen/many students-GEN.PL

zrezygnowało ze studiów.

quitted-3SG.NEUT.PAST from studies

‘A few/a dozen/a few dozen/many students quitted their studies.’

When these expressions are in oblique case positions, contrary to *dużo* (a lot), *mało*, *trochę* (few, little), they inflect together with a noun according to properties of their governor, e.g.:

(55) a. *Poszliśmy z kilkoma osobami.*

went-1PL.PAST with [a.few people]-INSTR.PL

‘We went with a few people.’

b. *Wystaliśmy prezenty kilku podopiecznym domu dziecka.*

sent-1PL.PAST presents-ACC.PL [a.few residents]-DAT.PL home children’s

‘We sent presents to a few residents of the children’s home.’

Finally *masa* (masses), *moc*, *szereg* (a number) being originally nouns are in transition between nouns and numerals which means that they present features typical of the syntax of nouns or both nouns and numerals. In sentence (56), the verb agrees in person and gender with *masa* which points to the nominal status of the expression.

- (56) *Masa ludzi kupiła bilety.*
 mass-FEM.NOM.SG people-GEN.PL bought-3SG.FEM.PAST tickets-ACC.PL
 ‘Masses of people bought tickets.’

Szereg, on the other hand, exemplifies a transitory stage between a noun and a numeral as it is found in contexts where it is accompanied by third person singular masculine verbs indicating agreement with *szereg*, e.g. (57a),²⁶ or third person singular neuter verbs, e.g. (57b), just like in case of other numeral quantifiers.

- (57) a. *Pierwszy szereg żołnierzy zajął miejsca*
 first row-MASC.NOM.SG soldiers-MASC.GEN.PL took-3SG.MASC.SG seats
naprzeciwko trybuny honorowej.
 in.front.of seats honor
 ‘The first row of soldiers sat down in front of seats of honor.’
- b. *Szereg osób nie umiało/*
 a.number.of-MASC.NOM.SG people-GEN.PL not could-3SG.NEUT.PAST
 **umiał dostosować się do nowej sytuacji*
 could-3SG.MASC.PAST adjust REF to [new situation
ekonomicznej.
 economic]-GEN.SG
 ‘A number of people could not adjust to a new economic situation.’

The transition stage between nouns and numerals is also found with *część* or *wiekszość* which allow for both forms of a verb, i.e. third person singular neuter or agreeing with a verb, e.g.:

- (58) *Część/wiekszość ludzi przyszła/*
 Part /majority-FEM.NOM.SG people-GEN.PL came-3SG.FEM.PAST
przyszło na zebranie.
 came-3SG.NEUT.PAST on meeting
 ‘A part of people came to the meeting.’

²⁶ For a discussion of *szereg* and a list of other nouns undergoing numeralization see Schabowska (1962).

In English, indefinite quantifying expressions have the same semantic functions as those in Polish and their syntactic properties are similar to those of English cardinal numeral, i.e. they select for plural nouns and require the verbal predicate to be plural, but slightly differ with respect to morphological properties. The typical indefinite numerals in English are *several*, *many*, (*a*) *few* and an expression *a lot of*. Whereas *many* and *few* seem to share properties with adjectives in that that they gradate, e.g. *many*, *more*, *the most*, and *few*, *fewer* and *the fewest*, *several* does feature this characteristic. Moreover, *many* and *few* can be preceded by degree modifiers such as *too* or *so*, (cf. Kayne 2005, 2007), e.g.:

(59) *There were too/so few spectators to start a movie.*

Although the morphological aspect seems to draw a dividing line between *several* and *many* together with *few*, when some predication facts are taken into account, these lexemes can be lined together, i.e. they not only appear in attributive positions as modifiers, e.g. (60a), but also as predicates²⁷, e.g. (60b):

- (60) a. *The many/ several/ twenty/ numerous boys I know.* (Giusti 1991: 444)
 b. *The boys I know are many/several/twenty/numerous.* (Giusti 1991: 444)

This property, i.e. both attributive and predicative function, distinguishes them from quantifiers such as *all* or *every* as they cannot be predicates, but at the same time also displays some common grounds with adjectives.

Other aspects in which *several*, *few* and *many* can be compared to adjectives are sentences with empty nominals, i.e. structures in which numerals are not followed by nouns (Giusti 1991: 444), e.g.:

- (61) a. *I had already met *the many/*the nice you introduced to me last night.*
 (Giusti 1991: 444)
 b. *I have already met many/*nice.* (Giusti 1991: 444)

²⁷ These facts serve as an evidence used by Giusti (1991) to show that some quantifiers share properties with adjectives.

In sentence (61a), the presence of the article and lack of the phonologically overt noun render structures with quantifiers and adjectives ungrammatical, which, according to Giusti (1991) is conclusive when it comes to treating *several*, *many* and *few* on a par with adjectives. On the other hand, example (61b) indicates a different status of *many* as what is possible for a quantifier, i.e. an ellided noun, is not felicitous for adjectives.

A similar conclusion can be drawn from partitive constructions which are only permissible with quantifiers and not adjectives, e.g. Giusti (1991: 445).

- (62) a. *many of the boys*
b. **the many of the boys/ *the nice ones of the boys*

Thus, even though *several*, *few* and *many* present intricate properties because, on the one hand, morphologically *few* and *many* can be classified as adjectives, and on the other hand they all share some features with adjectives, there is this fundamental difference that makes them unique in comparison to other parts of speech, namely, they are able to form partitive constructions, and this feature single them out as compared to other grammatical categories.

1.1.6. Distributive numerals

A distributive numeral is defined as “a numeral which expresses a group of the number specified” (Pei and Gaynor 1954). It is used in adnominal contexts to determine the distributive relations²⁸, e.g.

- (63) a. *John and Mary bought two chocolate cakes.*
b. *John and Mary bought two chocolate cakes each/apiece.*

In sentence (63a), the cardinal numeral determines the total number of objects purchased by two buyers together. In example (63b), however, the presence of a quantifier *each* changes the relation between the arguments of the verb, namely, it is stated that the numeral describes the number of elements bought by each person

²⁸ As this subsection aims only at a brief presentation of a numeral type, no thorough discussion or analysis of distributive numerals from a diachronic perspective will follow. For further reading cf. Gil (1988) and sources cited therein.

separately, i.e. presence of two sets of cakes is asserted of which one set can be ascribed to John and the other to Mary (cf. Gil 2005: 222). In languages of the world distributive numerals are not always present in the inventory of numerals but the required meaning, i.e. distributive, is obtained by means of other elements.

Distributive numerals, when they occur in a language, are formed by means of various morphological processes affecting cardinal numerals, i.e. they are formed from cardinal numerals (Gil 2005: 222). In a cross-linguistic analysis of distributive numerals it has been established that these numerals may be created by means of reduplication, affixation (prefixation or suffixation), by adding an extra word which either precedes or follows the cardinal numeral or by a combination of morphosyntactic and syntagmatic strategies. There are also languages which do not have distributive numerals at all, although they are able to express a desirable meaning with the use of the cardinal numeral, yet the numeral does not form a constituent with the additional word or phrase, e.g. in English (Gil 2005: 222).

The reduplication strategy²⁹, as described by Gil (1988, 2005), is present in Georgian, where *sami* meaning *three* when accompanied by the reduplicated morpheme carries a distributive meaning³⁰, e.g. (example from Gil 2005).

- (64) *Romanma da Zurabma sam-sami čanta caiyo*
 Roman-ERG and Zurab-ERG three-DIST suitcase-ABS carry-3SG-PAST
 ‘Roman and Zurab carried three suitcases each/apiece.’

Affixation, either prefixation or suffixation, is used in the Austronesian languages and Basque along with Korean respectively. The additional word preceding the numeral, on

²⁹ Reduplication strategy is said to be the most common way of presenting distributive meaning with the use of cardinal numerals. In the survey of 250 languages it constitutes approximately one third of available strategies (Gil 2005: 222). Reduplication is a typical strategy in languages of sub-Saharan Africa, the Caucasus, the South Asian subcontinent, Indonesia and North America (Gill 2005: 223).

³⁰ In Georgian not only numerals but also adjectives can reduplicate. Reduplication of adjectives means that a modifier distributes over a head noun (Gil 1988: 1043). Moreover, in a sentence with a reduplicated numeral more than one interpretation is possible, e.g. (Gil 1988: 1044).

- (6) *Orma k'acma sam-sami čanta c'aiyo.*
 two-ERG man-ERG three-DIST.ABS suitcase-ABS carried-3SG
 ‘Two men carried three suitcases.’

The above example can be interpreted as 1) *Two men carried three suitcases each* and 2) *Two men carried suitcases three at a time* where *three suitcases* distributes over *two men*, or as 3) *Two men carried sets of three suitcases* where the numeral distributes over a modified noun *suitcase*, just like in the case of reduplication of adjectives (Gil 1988: 1044f.).

the other hand, appears in European languages such as German, Russian or Modern Greek (Gill 2005: 223), e.g. from German:

- (65) *Die Kinder haben je zwei Karotten gegessen.*
children have DIST two carrots eaten
'Children have eaten two carrots each.'

The extra word following the numeral is featured by such languages as, for instance, Malagasy spoken in Madagascar, or Ainu, i.e. language of a Japanese island Hokkaido.

The final case of strategies entails combining the abovementioned means which is a characteristic of Uto-Aztecan languages and languages spoken in various parts of Russia (Gill 2005: 223 and sources cited therein). Examples of distributive meaning with the use of numerals, however, are of the biggest interest, for the purpose of this thesis, in reference to English and Polish. As it has been already mentioned, English does not possess a distributive numeral, it does not comply with any of the discussed strategies of deriving it from a cardinal numeral. Instead, the distributive meaning is obtained via the operator *each*, e.g.:

- (66) a. *Each child won a prize.*
b. *John and Mary drank two glasses of milk each.*

Although, at first sight, the English sentence seems to conform to the option in which an additional word is introduced, the operator does not form a constituent with the numeral. Therefore, English is classified as a language without distributive numerals.³¹ In Polish, on the other hand, the distributive reading is obtained via the use of the distributive preposition *po* which immediately precedes the numeral³², e.g.:

³¹ Gil (2005: 222) mentions *three by three* which might be analyzed as an example of a distributive numeral, yet when the relation between the expression containing the numeral and the so-called distributive key is considered, it turns out that it is a relation between that phrase and the verb and not an NP, e.g. a number of objects/entities per an activity and not per other objects/individuals (Gil 2005: 222). For that reason, *three by three* does not provide any ground to place English among languages with distributive numerals.

³² Distributive *po* occurs with cardinal and collective numerals, e.g. *po pięć osób* (five people each), *po pięcioro dzieci* (five children each). Ordinal and multiplicative numerals in phrases with *po* behave like adjectival modifiers, i.e. they do not select for plural nouns, and the case of a noun is the same as when it is not modified by any numeral form, i.e. Locative, e.g.

- (7) *Uczniowi otrzymali po drugim ostrzeżeniu /po podwójnej*

- (67) a. *Zwycięscy dostali po (jednej) książce.*
 winners received DIST (one) book-FEM.LOC.SG
 ‘Each winner received a book.’
- b. *Uczniowie dostali po dwie nagany.*
 students received DIST two reprimands-FEM.ACC.PL
 ‘Students received two reprimands each.’

Phrases with distributive *po* may occur in positions of subjects, where Nominative is typically assigned, e.g. (68a) and (68b), objects with the assignment of Accusative, e.g. (68c), and positions where structural Genitive may be found, e.g. (68d).

- (68) a. *Na moich drzewach dojrzewają wspaniałe owoce.*
 on my trees ripen-3PL.PRES [great fruit]-NOM.PL
 ‘Great fruit ripen on my trees.’
- b. *Na moich drzewach dojrzewa dziennie po kilka owoców.*³³
 on my trees ripen-3SG.PRES everyday DIST several-ACC
 fruit-GEN.PL
 ‘Everyday several fruit ripen on my trees.’
- c. *Wysłałam dzieciom zabawki /po kilka zabawek.*
 sent-1SG.PAST children-DAT.PL toys-ACC.PL/ DIST several-ACC toys-GEN.PL
 ‘I sent each child several toys.’
- d. *W tym roku pracownicy nie dostali po paczce na święta.*
 in this year employers-NOM.PL not received-3PL.PAST DIST
 package-LOC.SG on holidays
 ‘This year none of the employers receive a holiday package.’

students received DIST second warning-LOC.SG /DIST double
paczce /po dwie paczki.
 pack-LOC.SG /DIST two packs-ACC.PL
 ‘Each student received a second warning/ a double pack/ two packs.’

³³ Example is from Łojasiewicz (1979: 154). Glosses and translation are mine.

The well-known constraint of Polish distributive *po* is that its argument is either marked with Accusative or Locative^{34,35}, e.g.:

- (69) a. *Dzieci zjadły po gruszce.*
 children ate DIST pear-LOC.SG
 ‘Each child ate a pear.’
- b. *Dzieci zjadły po dwie gruszki.*
 children ate DIST two pear-ACC.PL
 ‘Each child ate two pears.’

The differentiation in case of the noun following the distributive *po* seems to result from the number category of the noun, i.e. Locative for singular nouns and Accusative for plural. Yet, Przepiórkowski (2006a, 2008) determines the interrelation between case and the argument of *po* in reference to the type of the phrase following the distributive

³⁴ Phrases with lower numerals are Accusative, with 5 onwards only the numeral is Accusative and the noun is Genitive.

³⁵ Yet, the availability of a Nominative masculine personal form *dwaj* seems to run counter the type of arguments selected by distributive *po*, e.g. *Oplaty z targowiska zbierać będą po dwaj przedstawiciele dwóch gminnych klubów (IPI PAN Corpus)* (Market fees will be collected by two representatives from two local clubs). Although, initially forms such as *po dwaj mężczyźni* are viewed as improper, the Internet query has revealed that *po + dwaj* is quite a frequent option, e.g.: (emphasis is mine).

- (8) a. *Awans do półfinałów wywalczą po dwaj najlepsi zawodnicy.*
 promotion to semi-finals win DISTR two-MASC.NOM [best competitors]-MASC.NOM.PL
 ‘Two best competitors from each team will win a promotion to semi-finals.’
- b. *Do Samorządu wchodzi po dwaj przedstawiciele każdej klasy.*
 to government enter DIST two-MASC.NOM representatives-MASC.NOM.PL each class
 ‘Two representatives from each class enter the school government.’
- c. *wyłonieni zostaną po dwaj zwycięzcy z każdej tabelki*
 chosen will.be DIST two-MASC.NOM winners-MASC.NOM.PL from each table
 ‘Two winners from each table will be chosen.’
- d. *W skład komisji wchodzi po dwaj reprezentanci poszczególnych instytutów.*
 in makeup committee enter DIST two-MASC.NOM representatives-MASC.NOM.PL particular institutes
 ‘The committee consists of two representatives from particular institutes.’
- e. *Do Senatu wybierani są po dwaj senatorzy z każdego stanu.*
 to Senate chosen are DIST two-MASC.NOM Senators-MASC.NOM.PL from each state
 ‘Two senators from each state are chosen to Senate.’

Łojasiewicz (1979: 158) provides an example *Stańcie tu, po dwaj z każdej strony* (Stand here, two on each side) stating that the use of *po* and *dwaj* is acceptable in some contexts. Przepiórkowski (2006a: 171), on the other hand, rules out form *dwaj* from phrases with distributive *po*. His example, however, **dałem im po dwaj ochroniarze* (each of them got two guards), is an instance of *po*-phrase in an object position, thus Nominative form is particularly flagrant. In examples from the corpus and the Internet, *po* with *dwaj* is invariably in positions where subjects would be placed and, in consequence, Nominative assigned. Therefore, the level of their acceptability is higher.

preposition and not the grammatical number of the noun, i.e. Locative is assigned to noun phrases and Accusative to numeral phrases (Przepiórkowski 2006a, 2008: 12)³⁶. Moreover, Przepiórkowski (2008) narrows down the type of the argument selected by the distributive preposition to cardinal quantifiers showing that non-intersective quantifiers such as *all* and *every* render sentences with *po* ungrammatical, e.g.:^{37,38}

- (70) a. *Przesłałem im /każdemu po pięć/kila /tuzinie wiadomości.*
 sent-1SG.PAST them/each DIST five/several/dozen messages
 ‘I sent each of the them five/several/dozen messages.’
- b. **Przesłałem im /każdemu po wszystkich wiadomościach.*
 *sent-1SG.PAST them /each DIST all messages
 ‘I sent each of the them all messages.’
- c. **Przesłałem im /każdemu po każdej wiadomości.*
 sent-1SG.PAST them/each DIST every message
 ‘I sent each of the them every message.’

Additional restriction on arguments of *po* relates to bare nouns which in spite of being plural lack an overt cardinal and, therefore, do not meet the requirement on the argument type with *po*, e.g.:

- (71) **Dałem im po jabłkach.*
 gave-1SG.PAST them DIST apples-LOC.PL
 ‘I gave the apples to each of them.’

The interesting example constitutes conjoined phrases following *po*. When numerals are juxtaposed, the first one determines the form of the noun irrespective of the value of the second numeral, i.e. when the first numeral is *one* imposing singular on the noun and

³⁶ A similar observation is made by Łojasiewicz (1979: 156) who, although does not distinguish between numeral and nominal phrases, notices that mere plurality of the noun is not a sufficient requirement on the argument of *po* and plural nouns must be accompanied by numeral lexemes. This claim is based on the ungrammaticality of inherently plural nouns (plurale tantum) following *po*, e.g. *?Do plecaka spakowali po spodniach* (Each of them pack trousers to their backpacks) (Łojasiewicz 1979: 156). Interestingly, Przepiórkowski (2006a: 174) allows plural tantum nouns as arguments of distributive *po*.

³⁷ Examples (70a) – (71) are from Przepiórkowski (2008: 18, 20, 25).

³⁸ Examples with *wiele* in phrases selected by *po* may be less acceptable as the reading available is of a proportional quantifier or a contextual cardinal and only in the former case *wiele* is allowed in phrases following a distributive preposition (Przepiórkowski 2008: 23f. and examples therein).

consequently Locative, the noun immediately preceded by a higher numeral also occurs in Locative instead of expected Accusative (Franks 1995: 163), e.g. Franks (1995: 163).

- (72) *Dostaniecie po jednym, dwóch jabłkach /po dwa jabłka.*
 get.will-2PL.FUT DIST one-LOC, two-LOC apples-LOC.PL/DIST two-ACC
 apples-ACC.PL
 ‘You will get one, two apples each/ two apples each.’

Similarly, when two quantified phrases are conjoined, the form of the first one determines the form of the second conjunct³⁹, e.g. Franks (1995: 163):

- (73) *Dostaniecie po jednym jabłku, dwóch gruszkach.*
 get.will-2PL.FUT DIST one-LOC apple-LOC.SG, two-LOC pears-LOC.PL
 ‘You will get one apple, two pears each.’

Distributive *po* functions in other Slavic languages as well, yet in each case it has different case assigning properties. In Serbo-Croatian, *po* does not govern any particular case. The case of its arguments depends on the external case assigner, e.g. preposition preceding *po* and its argument, e.g. (74a), or a verb, e.g. (74b), (Franks 1995: 157), e.g. Franks (1995: 157):

- (74) a. *Svako razgovara sa po jednim kandydatom.*
 everyone speaks with DIST one-INST candidate-INST
 ‘Everyone is speaking with one candidate each.’
 b. *Kupio sam tri knjige po učeniku*
 bought AUX-1SG three books DIST student-DAT
 ‘I bought three books for each student.’

In Czech, on the other hand, phrases accompanying distributive *po* invariably appear in Locative, e.g. (Franks 1995: 164):

³⁹ Here a distinction has to be made between conjoined phrases with different quantified objects such as *po jednym jabłku i pięciu śliwkach* (DIST [one apple]-LOC and [five plums]-LOC) and a phrase containing a fractional numeral such as *po dwa i pół chleba* in which the case value of the quantified object depends on the adjacent numeral just like with complex numerals, e.g. *dwadzieścia dwa krzesła* (twenty two chairs-NOM/ACC), *dwadzieścia pięć krzesel* (twenty five chairs-GEN).

- (75) *Dali nám po jednom novém kapesníku /pěti nových*
 gave us DIST one-LOC new-LOC handkerchief-LOC.SG/five new-LOC
kapesnicích.
 handkerchiefs-LOC.PL
 ‘Each of us was give a new handkerchief/five new handkerchiefs.’

A more complex case is found in Russian. In this language distributive *po* assigns Dative to singular noun phrases, e.g. (76a), and, in some cases to numerals, e.g. (76b).

- (76) a. *Otec dal detjam po (odnoj) grušě.*
 father-NOM gave-MASC.PAST children-DAT.PL DIST (one-DAT) pear-DAT
 ‘A father gave each of his children a pear.’ (Franks 1995: 140)
- b. *po tysjače /po millionu* (Franks 1995: 142)
 DIST thousand-DAT /DIST million-DAT
 ‘a thousand each’
- c. *po dva rubla* (Franks 1995: 141)
 DIST two ruble-GEN.SG
 ‘two rubles each’
- d. *po pjat’ rublej* (Franks 1995: 141)
 DIST five ruble-GEN.PL
 ‘five rubles each’
- e. *po mnogu* (Franks 1995: 142)
 DIST many-DAT
 ‘many each’

In structures (76c) and (76d) the form of a numeral is not marked as Dative. In example (76c) there is a paucal numeral which, according to Franks (1995: 144) being an adjective cannot be directly assigned case⁴⁰. In the case of higher numerals, however, it

⁴⁰ Harves (2003) demonstrates that Russian *po*, irrespective of its function, i.e. distributive or non-distributive preposition indicating location or path, assigns Dative. Even though distributive *po* does not mark lower numerals with Dative, it is not because of the status of these numerals or their inability to be directly marked by *po* because as an example below shows *dva* can be Dative in a nominal phrase, e.g. (Harves 2003: 236).

- (9) *Anna xodila po dvum pustym ulicam*

is shown that they bear Dative. This Dative assignment, yet, is not unanimous in the whole group of higher numerals. Although *thousand* and *million* are Dative, numeral *five* may be found in either Dative or Accusative, e.g. *pjati*-DAT or *pjat'*-ACC. Even though at this point it can be claimed that *thousand* and *million* are not numerals but nouns and their Dative form is tantamount to a case of a singular noun preceded by a distributive *po*⁴¹, case of the indefinite numeral in (76e), i.e. Dative, indicates that numerals can, in fact, be assigned Dative. Additionally, every numeral component in complex numerals ending with *one* is assigned Dative, e.g.:

- (77) *po tysjače dvesti odnomu rublju*
 DIST thousand-DAT two.hundred-DAT one-DAT ruble
 ‘a thousand two hundred and one rubles each’ (Franks 1995: ft. 18)

The above data analysis suggests that Russian distributive *po* is an invariable Dative assigner to noun phrases without numerals. When the numeral is added to the nominal phrases, case assigning properties of *po* changes depending on the numeral, i.e. whether a lower or higher numeral quantifies a noun. Moreover, even within higher numerals there are some discrepancies regarding case assignment because, as it has been shown, Dative does not occur with paucal numerals, with numeral *five* is optional⁴², and obligatory on *thousand*, *million* and indefinite numerals.⁴³

1.1.7. Multiplicative and frequentative numerals

Finally, the last group of lexemes traditionally classified as numerals are multiplicative and frequentative. This group comprises expressions determining multiples, how many folds and how many times something happens. Examples in Polish and English are given below.

Anna walked along [two empty streets]-DAT
 ‘Anna walked along two empty streets.’

⁴¹ The same remark about the nominal status of *thousand* and *million* is made by Franks (1995: ft. 22).

⁴² Harves (2003) claims that Dative on *five* in Russia distributive phrases is only a literary or archaic variant.

⁴³ According to Harves (2003), both distributive and non-distributive *po* assigns Dative and the source of variation in case is a result of a shape of a phrase with *po* accompanied by a noun or a noun with a numeral, where in the latter case the numeral is the head of phrase obtaining its case from the external assigner.

- (78) a. *Zamówiłem podwójny deser.*
 ordered-1SG.PAST [double dessert]-MASC.ACC.SG
 ‘I ordered a double dessert.’
- b. *Omawiany problem jest dwójakiej natury.*
 discussed problem is-3SG.MASC.PRES twofold
 ‘A discussed problem is twofold.’
- c. *Umyłem okna dwa razy.*
 cleaned-1SG.PAST windows-NEUT.ACC.PL two times/twice
 ‘I cleaned the windows twice.’
- d. *For many years he has lead a double life.*
- e. *The racial intolerance has increased fourfold.*
- f. *I did it only once/ twenty times.*

Presented lexemes are undoubtedly related to numerals via their semantics. They determine, e.g. the amount or number of repetitions, yet, neither of them fall under the definition of cardinal numerals or indefinite, i.e. they do not assume the existence of any objects in their extension either by determining their exact or approximate number. Therefore, I claim, that these lexemes are not part of numerals and classify them as modifiers of the adjectival type.

1.2. Where does the numeral belong to? – the categorical status of numeral lexemes and expressions determining the quantity

Numerals, and generally expressions defining the properties of sets and not individuals, have been widely discussed in the literature with regard to their properties according to which they are assigned to a particular group, part of speech. Although the task is much more impeded by the mere fact that in different languages these elements present different features, there are some aspects which bring these expressions together and allow to find one common label encompassing all the attributes. Starting from a general discussion of properties of numerals, we subsequently narrow it down to focus only on problems with their classifications in Polish and English. As the scope of the topic is very broad and it is not possible to deal with all its facets, our attention will be drawn to cardinal numerals and corresponding expressions specifying the quantity.

On the basis of morphological and distributional criteria grammars distinguish between different parts of speech (cf. Carnie 2006). Cardinal numerals and quantifiers, e.g. *every, some, many, most, few, all, each, any, less, fewer*, are put together under the category of determiners which are placed in front of the noun and at the beginning of the noun phrase (Carnie 2006: 44-45). In that sense, they can be juxtaposed with adjectives as they occupy the same position in relation to the noun, e.g.:

- (79) a. *The two dogs waited.*
 b. *The little dogs waited.*
 c. *The many dogs waited.*

Yet, at the same time some other characteristics distinguish them from quantifiers and adjectives (Bloom 2000: 221), for example, cardinal numerals appear only with count nouns similarly to quantifiers such as *a, another* and *many* but contrary to *much*. Secondly, they do not appear with modifiers such as *very, too, somewhat* which are common with adjectives (Bloom 2000: 222), e.g.:

- (80) a. *very/too/somewhat nice*
 b. **very/too/somewhat five*

On the other hand, number words can be accompanied by such phrases as *exactly, less than* or *almost*, e.g. (81a), which are not appropriate in contexts with quantifiers, e.g. (81b), and some adjectives, e.g. (82c), (Hurford 1975: 3).

- (81) a. *exactly/less than/almost eight*
 b. **[exactly/less than/almost] many*
 c. **exactly fat but less than smart and almost beautiful*

Moreover, in a string with an adjective and a noun, the numeral precedes the adjective and the noun. The other order in which the numeral follows the adjective is not grammatical, e.g. *five blue cars, *blue five cars*. Finally, only numerals and not adjectives can form partitive constructions (Bloom 2000: 223), e.g. *five of them, *good of them*.

The status of number words, in this work referred as cardinal numerals, has been a topic of numerous debates and analyses for decades. Their varied morphosyntactic properties, especially with regard to Slavic languages, have given rise to a stance that number words functioning as nominal attributive modifiers can be classified either as adjectives or nouns, putting aside their semantics. Such an approach has emerged to address intricate patterns of agreements with numerals found in Slavic languages such as Polish, Russian or Serbo-Croatian in which various numerals, i.e. lower 2-4 and 5 onwards, have been treated differently on the basis of their relations with the noun and verbal predicates when a numerically quantified noun phrase occupies a subject position. Moreover, some points of resemblance of lexemes meaning *hundred*, *thousand* or *million* to nouns have additionally strengthened the belief that the higher the numeral the more noun-like it becomes. In the following subsections, a closer look will be given to the adjectival and noun status of number words, then some approaches to numerals together with the outlook on other numerical expressions will be presented. The final parts of this discussion will be devoted to showing that number words do form a separate category other than adjectives and nouns along with some expressions not belonging to the numeral system of a given language. Subsequently, an attempt will be made to demonstrate that expressions which do not specify but approximate the quantity of a given set, i.e. indefinite numerals, due to their properties are also unquestionable members of a numeral class.

1.2.1. Caught between two extremes: on adjectival and nominal status of number words

In the study of numerals special attention should be given to contemporary inflectional languages, e.g. Slavic languages, as they feature interesting properties in reference to their relations with nouns and other elements of the nominal phrase, i.e. determiners and adjectives. The basic distinction that arises is between lower, i.e. 2-4, and higher numerals, i.e. 5 onwards, including *hundred*, *thousand* and *million*. The line of division is drawn on the basis of a relation with a quantifying noun. In the case of lower numerals, number words are congruent with a noun resembling in their behavior adjectives, whereas higher numerals govern the case of a noun, which makes them closer to the category they modify. Such an approach has become a customary description of Slavic numerals in numerous analyses elaborating on this topic.

Higher numerals, on the other hand, assign Genitive case to nouns (but only in direct case positions), thus they are viewed as nominal in nature (cf. examples with higher numerals in Polish and Russian below):

- (84) a. *Siedem samochodów nie dojechało do mety.*
 seven cars-MASC.GEN.PL not arrive-3SG.NEUT.PAST to finish
 ‘Seven cars have not finished the race.’
- b. *Ivan kupił pięć masin.* (Franks 1994: 600)
 Ivan-NOM bought five-ACC cars-GEN PL
 ‘Ivan bought five cars.’

The nominal character of numerals is also frequently brought up with reference to lexemes denoting *hundred*, *thousand* or *million* which in some aspects might resemble nouns. The fact that they may be pluralized, they do not inflect for gender or that their presence with a noun in a subject position does not disrupt subject-verb agreement may serve as evidence for their different status. The relevant examples can be found in English, e.g. (85a) and Polish, e.g. (85b).

- (85) a. *Thousands/millions of American citizens watched the championships.*
- b. *Tysiące /miliony ludzi przyszło na spotkanie.*
 [thousands/millions]-NOM.PL people came-3SG.NEUT.PAST on meeting.’
 ‘Thousands/millions of people came to the meeting.’

The possibility of pluralization and their role as measure nouns in expressions such as *hundreds/thousands/millions of flowers*, *masses/tons of flowers* seem to attest to the claim that higher numerals are nouns (Hurford 1975: 51). The additional support for nominal status of higher numerals is provided by Reinhardt (1991) who does not only discuss pluralization in Present-Day English but also tries to prove that complex expressions such as *two hundred/thousand* are actually examples of a numeral quantifying a noun conforming to the view that numerals actually split into two different categories.

This bipartite approach to number lexemes, however, cannot be maintained as a deeper insight into their properties reveals that the adjectival-nominal dichotomy does not actually address many issues and fails to account for other data from different

languages. First of all, numerals cannot be adjectives as after a closer examination they do not show their typical properties. In Polish, for example, numerals (lower) despite being congruent with a noun with respect to gender and case, do not inflect for number as it is in case of adjectives, e.g.:

- (86) *Dwie ładne dziewczyny przyszły na przyjęcie.*
 two-FEM.NOM [pretty girls]-FEM.NOM.PL came-3PL.FEM.PAST on party
 ‘Two pretty girls came to the party.’

Secondly, it is only numerals that select for a noun in plural and not adjectives. The property of affecting the grammatical number of a modified noun is exclusively shared by numerals and not adjectives, e.g. (87a) and (87b).^{44,45} Moreover, numerals are never subject to gradation as it is with adjectives⁴⁶, e.g. (87c).

- (87) a. *five tables-PL vs wooden table-SG*
 b. *dwie sukienki vs. ładna sukienka*
 two dresses-PL vs. nice dress-SG
 ‘two dresses vs. nice dress’
 c. *młody młodszy najmłodszy*
 young-POS young-COMP young-SUPERLAT
 ‘young, younger, the youngest’

⁴⁴ Yet, there are languages, e.g. Hungarian, in which a numeral does not impose plural number on a noun. Although such an option is possible this is only a unilateral property, i.e. nouns modified by numerals may not have an overt exponents of plurality but there are no adjectives which assign plural number to nouns. Moreover, numerals and adjectives, although in general terms, both modify the noun, they have different functions, i.e. numerals describe the property of the set of nominal referents while the adjective describes the nominal referent itself. Therefore, lexeme *one* (*jeden* in Polish) although does not select for plural number on a noun is a numeral because it still determines the number of elements in a given set.

⁴⁵ Apart from selecting for plural, there are also other properties of numerals featured by different languages, e.g. only in numeral-noun constructions in Russian the attributive expression, i.e. the numeral, assigns Genitive singular case, in Mandarin the classifier is present and in Modern Hebrew the attributive expression preceding the noun is exclusively in numeral-noun structures (Gil 2001: 1285f.).

⁴⁶ Obviously, there are some adjectives which do not gradate at all, still looking at the whole category gradation is a feature of adjectives (and adverbs as well) but not numerals.

It is not possible either to gradate cardinal or indefinite numerals such *kilka*, *kilkanaście*, *kilkadziesiąt*.⁴⁷

The nominal status of numerals, on the other hand, advocated in the case of numerals from 5 onwards, is based on the fact that they assign Genitive to the modified noun, thus they seem to possess a property typical of noun-noun constructions. However, considering other characteristics of these elements it is hard to maintain this view. The most conspicuous argument against this claim is the fact that cardinal numerals do not take plural forms like nouns, and none of the nouns is able to assign plural to other nouns.⁴⁸

Although such a characteristic is a well-established description of numerals up to 999 when it comes to *hundred*, *thousand* and *million* their affiliation to the class of numerals has been questioned.⁴⁹ The major argument for describing above mentioned lexemes as nouns is the fact that they present singular-plural dichotomy both in English e.g. (88a), (88b), and Polish, e.g. (88c), (88d).

- (88) a. *A hundred/thousand/million dollars were sent to help children in Africa.*
 b. *Hundreds/thousands/millions of people were protesting against a new legislation.*
 c. *Sto /tysiąc /milion dolarów zostało*
 hundred/thousand/million dollars-GEN.PL WAS-3SG.NEUT.PAST
przeznaczone na cele charytatywne.
 allocated on charity
 ‘A hundred/thousand/million dollars were allocated for charity.’
 d. *Setki /tysiące /miliony fanów czekało*
 [hundreds/thousands/millions]-PL fans-GEN.PL were.waiting-3SG.NEUT.PAST

⁴⁷ It should be mentioned that there are comparative and superlative forms of *wiele/dużo* (*many/a lot*) or *mało* (*little*), i.e. *więcej* (*more*), *najwięcej*, (*the most*) and *mniej* (*fewer/less*) *najmniej* (*the least/the fewest*) but this fact is related to their origin, process of numeralization they have undergone and, in consequence, a twofold status as adverbs and numerals.

⁴⁸ Numerals do not inflect for number but there are lexemes which actually are nouns, e.g. *trójka* (*three*), *czwórka* (*four*), *piątka* (*five*), *szóstka* (*six*). Then they have plural forms. Such examples are found both in English, e.g. (10a), and Polish, e.g. (10b).

- (10) a. *He threw two sixes (playing dice).*
 b. *Szóstka ludzi przyszła*
 six-FEM.NOM.SG people come-3SG.FEM.PAST
 ‘A group of six came.’

⁴⁹ Laskowski (1984) and Mieczkowska (1994) contrary to Topolińska (1984) along with Gruszczyński and Saloni (1978), classify *tysiąc* and *milion* as nouns.

na przyjazd piosenkarza

for arrival singer

‘Hundreds/thousands/millions of fans were waiting for the singer’s arrival.’

Although plural variants of *hundred*, *thousand* and *million* in English and *tysiąc* (thousand) and *milion* (million) in Polish along with the agreement patterns in Polish indicating that the plural form of the verb has been established in a relation with the numeral lexeme, e.g. *Tysiące ludzi przyszły na demonstrację* (Thousands-FEM.NOM.PL of people-GEN.PL came-FEM.PL to the demonstration), suggest that they should be classified as nouns, after a deeper insight into their syntactic properties, their grammatical status ceases to be so obvious. First of all, they form complex numerals, e.g. *two million two thousand people*, *dwa miliony trzysta pięćdziesiąt sześć tysięcy* (two million three hundred fifty six thousand) which is possible only for the representatives of the same class, i.e. numerals. Secondly, in Polish they show patterns of agreement typical of other numerals, i.e. the verbal predicate occurs in third person singular neuter form, e.g. (89a), which is not found with phrases containing nominal expressions of quantity, e.g. (89b).

- (89) a. *Trzy tysiące /dziesięciu studentów otrzymało*
three thousands/ten students-MASC.GEN.PL received-3SG.NEUT.PAST
nagrody.
prizes
‘Three thousand/ten students received prizes.’
- b. *Grupa studentów otrzymała/*
group-FEM.NOM.PL students-MASC.GEN.PL received-FEM.NOM.PL
**otrzymało nagrody.*
received-3SG.NEUT prizes
‘A group of students received prizes.’

In English, on the other hand, when they are part of the complex numeral, they preserve a singular form, e.g. *two hundred*, *two thousand* and *two million*, which demonstrates that they are not simply nouns quantified by a numeral which triggers plural on

countable nouns.⁵⁰ Considering all these aspects, attributes characteristic of nouns, i.e. plural forms and agreement with the verb, as well as those of numerals, i.e. the ability to form complex numerals and a default agreement with a verb, the conclusion can be drawn that these lexemes are in the transitory stage between nouns and numerals. Bearing in mind that higher numerals in Proto-Slavic languages stem from nouns and that we have already witnessed the transition of lexeme *sto*, which as a noun used to have dual and plural forms, e.g. *ście* and *sta* respectively, and its multiples were expressed by means of a cardinal numeral and a plural form *sta*, e.g. *trzy sta* (three hundreds-PL), which subsequently has become a lexicalized compound, e.g. *trzysta*, it may be the case that lexemes *tysiąc* and *milion* still being in the process of becoming numerals show this discrepancy of features found both with nouns and numerals.⁵¹

1.2.2. Other views on the status of numerals

Apart from the most frequently quoted analyses of numerals as belonging either to adjectives or nouns, there are also some other postulates regarding their classification. In Lipczuk (1978), for example, what is traditionally viewed as numerals is treated as a non-existent category. Instead various numerals are assigned to different parts of speech, i.e. nouns (90a), (90b), pronouns (90c), (90d), adjectives (90e) - (90g), adverbs (90h), particles (90i), (examples from Lipczuk 1978: 250).

- (90) a. *Półowa drogi za nami.*
 half way-FEM.GEN.SG behind us-INST.PL
 ‘We are half way through.’
- b. *Zdał egzamin na pięć.*
 took-3SG.PAST exam-MASC.ACC.SG on five
 ‘He got A from the exam.’
- c. *Widziałem wiele i wielu.*
 saw-1SG.PAST many-MASC.IMPER.ACC and many-MASC.PER.ACC
 ‘I saw a lot.’

⁵⁰ The presence of an article in *a million dollars/pounds* may suggest the nominal status *hundred/thousand* or *million* but then *of*-element would be necessary to mediate between two adjacent nouns. Instead, the article *a* is read as *one*, i.e. *one million dollars*.

⁵¹ The historical development of numerals is discussed in chapter 2.

- d. *Dwa plus trzy jest pięć.*
two and three is-3SG.PRES five
'Two and three is five.'
- e. *Czekał pół godziny.*
waited-3SG.MASC.PAST half hour-FEM.GEN.SG
'He waited half an hour.'
- f. *Widziałem pięć osób*
saw-1SG.PAST five people-GEN.SG
'I saw five people.'
- g. *Mam dużo pracy.*
have a.lot.of work
'I have a lot of work.'
- h. *Wiele podróżował.*
a.lot. traveled-3SG.MASC.PAST
'He traveled a lot.'
- i. *Pracuję dużo więcej od ciebie.*
work-1SG.PRES much more-COMP than you
'I work much more than you.'

What is the most striking aspect of this division is that one lexeme is assigned to different classes depending on its syntactic function, e.g. *pięć* or other numerals preceding the noun are treated as adjectives because they have the same distribution as adjectives. *Wiele* can be either a pronoun or an adverb and *dużo* an adjective or a particle. Although some observations about *dużo* or *wiele* are not far from being true, cardinal numerals juxtaposed with adjectives on the bases of distributional criteria are far-fetched simplifications.⁵² When it comes to indefinite numerals, however, their different status is, in fact, related to their origin, e.g. the primary category of *dużo* is adverb which with time started to occur with nouns. *Wiele*, on the other hand, originated as an adjective but finally in both cases they have undergone the process of numeralization becoming indefinite numerals. What makes these expressions numerals are the case of the quantified noun, i.e. Genitive and third person singular form of the verb. Features that attest their original status are the impossibility of inflection in the

⁵² Interestingly, what Lipczuk (1978) classifies as adjectives in most studies is regarded as nouns (cf. a previous section).

case of *dużo* which is also a characteristic of adverbs, and availability of forms in all case paradigms with *wiele*. These all aspects, i.e. the primary classifications of lexemes and their transition to the category of numerals, seem to account for their present properties and the fact that they form a heterogeneous group.

A radically different approach to numerals is taken by Honowska (1974) who postulates that historically developed category of numerals moves toward adverbs. The interchangeability of numerals with adverbs such as *dużo* or *wiele*, the tendency of numerals to inflectionlessness manifested in the expansion of *-u* ending in the inflectional paradigm as well as the adverbial function of distributive *po + numeral* are mentioned as support for the hypothesis advocating the adverbial nature of numerals.

1.2.3. The final say on numerals

After investigating properties and constructions of numerals in various languages, though with a special emphasis on English and Polish, I would like to draw a conclusion that lexemes that determine the number of elements of a given set are classified as one grammatical category, i.e. quantifiers. Although this is only a very general statement and does not entirely describe lexemes with quantifying functions, it seems to be a promising starting point for a further examination of numerals. Another issue that has been discussed here is formation of complex numeral expressions, i.e. creating numeral structures consisting of more than one number word by means of arithmetic functions of addition or/ and multiplication. Finally, it has been highlighted that the feature that distinguishes quantifiers from other grammatical categories is their ability to mark modified nouns with plural, which is a unique characteristic possessed by members of this class. Despite the fact, that survey of different languages has shown that numerals/quantifiers are an extremely varied group due to their properties not only within one language but also between different languages, there are some other aspects, which among various intricate and exclusive features of numerals, make them a distinct part of speech. In Polish, an inflectional language in which nominal and pronominal elements inflect for case, number and/or gender, this would be instantiated by a separate declensional paradigm with a morphological exponent typical only of numerals. Consequently, on the basis of forms of simple numerals declined by cases, the following pattern emerges; Nominative-Accusative syncretism as opposed to forms in oblique

cases, Nominative-Accustaiive-Genitive syncretism for masculine personal numerals, the Genetive *-u* ending, as well as *-oma/ema* as the exponent of Instrumental. For clarity and distinctness of a numeral declension other declensional types are presented in a table below⁵³:

Table 6. Morphological exponents of selected cases in declensional paradigms of nouns, adjectives and numerals (adapted from Doroszewski 1957: 237).

	NOMINAL DECLENSION	ADJECTIVAL DECLENSION	NUMERAL DECLENSION
NOMINATIVE SG	- a, -i, -o	-y, -i, -a, -e	
GENITIVE PL	-e, -ę	-ych, -ich	-u
INSTRUMENTAL PL	-ów, -i (-y) -ami, -mi	-ymi, imi	-oma, -ema

Now recapitulating a discussion on numerals in Polish, English and other languages, I will piece together their described features and provide a uniform criteria for distinguishing numerals from other parts of speech. Contrary to a well-established but highly unsuccessful approach to numerals assuming either semantic, syntactic or morphological bases for selecting numerals from other grammatical categories I propose that a lexeme, in order to be classified as a numeral/quantifier, must fulfill at least two out of given conditions, out of which the first one, i.e. *semantic condition on sets*, is obligatory.⁵⁴

- (91) SEMANTIC CONDITION ON SETS: Quantifiers, numeral and indefinite, must determine the exact or approximate number of elements in a set or its part
- (92) SYNTACTIC REQUIREMENTS:
- i. Numeral quanifiers are able to form complex numeral expressions
 - ii. Quantifiers are found in partitive constructions

⁵³ As this chapter contains a general discussion of numerals in various languages, in the final characteristics I focus on data from Polish because due to its inflectional nature differences between numeral lexemes and other parts of speech are more conspicuous. In chapter 2, where I elaborate on historical development of numerals, Old English, as a synthetic language is discussed and similarities between Polish and English numeral lexemes are highlighted contributing to the overall argumentation for separating them from other parts of speech.

⁵⁴ The semantic factor is not enough to distinguish numerals/quantifiers from other elements as what discriminates these elements from other categories is a combination of semantic, syntactic and morphological factors which may be different for various languages.

iii. In Polish, when a numerically quantified noun phrase occupies a subject position a special, non-agreeing form (third person singular neuter) of a verbal predicate may occur

(92)

MORPHOLOGICAL REQUIREMENTS:

- i. Only quantifiers can select for a plural form of a noun
- ii. Nominative-Accusative syncretism of numeral forms is observed
- iii. In Polish, quantifiers assume Genitive *-u* ending

Table 7. Presentation of quantifiers and conditions they satisfy.^{55,56}

CONDITION	QUANTIFIERS					
	CARDINAL	COLLECTIVE (for Polish)	FRACTIONAL	INDEFINITE	ORDINAL	MULTIPLICATIVE AND FREQUENTATIVE
1	✓	✓	✓	✓	-----	-----
2i.	✓	✓	✓	-----	✓	✓
2ii.	✓	✓	✓	✓	-----	-----
2iii. (for Polish)	✓	✓	✓	✓	-----	-----
2iv. (for Polish)	✓		✓	✓	-----	-----
3i.	✓	✓	-----	✓	-----	-----
3ii.	✓	✓	✓	✓	-----	-----
3iii. (for Polish)	✓	-----	-----	✓	-----	-----

⁵⁵ Table 7 comprises only numerals in Polish and English. Fulfillment of a condition is marked with a tick. A dashed line means failure in meeting a given criterion. The same notation is used in Table 8.

⁵⁶ Distributive numerals are not included here as in Polish they are formed by means of cardinal numerals and in English they are a non-existent category.

Table 8. Diagnostics for selected quantifiers in Polish.

CONDITION	QUANTIFIER						
	CARDINAL				INDEFINITE		NOUN AND ADJECTIVE
	1	2-4	5-9	1000	kilka, wiele	dużo, mało, trochę	
1	✓	✓	✓	✓	✓	✓	-----
2i.	✓	✓	✓	✓	-----	-----	-----
2ii.	-----	only for masculine	✓	✓	✓	✓	-----
2iii.	-----	✓	✓	✓	✓	-----	-----
3i.	-----	✓	✓	✓	✓	✓	-----
3ii.	only for neuter	✓	✓	✓	✓	✓	Possible
3iii.	-----	only for <i>dwu</i>	✓	-----	✓	-----	-----

As it has been shown in above tables, the only lexemes that do to comply with criteria presented in (91), (92) and (93) are ordinal and multiplicative/frequentative (Table 7). The fact that they do not satisfy the major requirement immediately excludes them from the class of numerals. The diagnostics is additionally supported when other prerequisites are taken into account as in those cases they fail to meet necessary conditions as well. Very appealing results, on the other hand, are presented in table 8, where Polish cardinal and indefinite numerals have been analyzed. Due to the properties granting them adjectival or nominal status for lower and higher numerals respectively, together with a split within indefinite numerals owing to their inflecting possibilities⁵⁷, they have been give a special attention. Consequently, in the view of presented criteria, not only lower and higher numerals are undoubtedly one grammatical category but also lexemes *jeden* and *tysiąc* are unambiguously numerals. Similar results have been obtained for indefinite numerals. Although they differ in two aspects, i.e. their occurrence in *po*-phrases, and the availability of Genitive *-u* ending, they do abide by the major requirement, i.e. *semantic condition on sets*, following at the same time other guidelines for a numeral membership.

1.3. Conclusion

The aim of this chapter was to introduce and discuss various issues related to quantifying expressions. In the first part, i.e. section 1.1. and following subsections the category of a numeral has been presented together with its types which, have become a

⁵⁷ *Dużo, mało, trochę* do not inflect and do not appear in oblique case position.

commonly accepted, yet not without reservations, classification of numeral lexemes. On the basis of examples and references to different languages, with a special emphasis on Polish, the attempt has been made to establish properties of numeral lexemes considering syntactic contexts and their morphological specifications. Subsequently, numerous troublesome aspects have been raised, with attention drawn to these problems which have been a source of long debates. In consequence, the prevailing subject matter that developed in the latter part was a vague status of lexemes which traditionally and intuitively have been recognized as numerals but due to their complex properties wrongly ascribed to other parts of speech. Ultimately, features of numeral lexemes have been brought together, juxtaposed with properties of other parts of speech and analyzed in a novel way providing a new diagnostics for determining elements being members of the same grammatical category, i.e. quantifiers.

Chapter 2: Old English and Old Polish – characteristics of numerals in a diachronic perspective

2.1. Introduction

The aim of this chapter is on the one hand to present the numeral system of Old English which at that stage was an inflectional language, and, on the other, to discuss historical changes that influenced numerals in Present-Day Polish. The major goal is to demonstrate the inflectional paradigms of numerals, their syntactic environment as well as their relations with nominal and verbal elements in particular periods in the history. Subsequently, the attempt will be made to verify if these two languages, i.e. English in its earliest stage of the development and Polish, share any common features in reference to their numeral systems which could become a basis for promoting a working analysis of numerals.

Examination of numerals in the history of Polish and English, a brief survey of their inflectional paradigms, formation of compound and complex numerals as well as constructions in which numerals are found serve a purpose of establishing if there are any common grounds, despite differences between these languages, that would imply that lexemes denoting quantity, i.e. number of elements in a given set, can comprise one grammatical category. In this respect, chapter 2 can be treated not only as a guide through historical changes numerals have undergone but as an additional support for claims presented in chapter 1, and as a background for a proposal introduced in chapter 3.

2.2. Old English as an inflectional language

Grammar of Old English in comparison to contemporary English presented a more varied system of inflection, both in reference to nouns together with their modifiers and verbs. Gender, person, number and case were standard grammatical categories that could be recognized in inflectional paradigms of different parts of speech. Yet, despite the fact that Old English was more synthetic than English today, the degree of morphological variation did not place it on a par with other inflectional languages and rather granted Old English status of a bridge between the inflecting Indo-European proto-language and the isolating character of Present-Day English (Mengden 2010: 4). Accordingly, nouns declined for case and number, nominal modifiers, i.e. adjectives and numerals (to some degree) inflected for case and gender, additionally adjectives distinguished between singular and plural, but they both agreed in respected categories with the modifying noun. Moreover, four cases were commonly identified, i.e. Nominative, Accusative, Genitive and Dative and sometimes mentioned, but on the decline Instrumental (Mitchell 1985: 3; Fischer et al. 2004; Lass 2006). Case inflection, although exhibited syncretism in different declensional classes and in spite of being in a stage of a gradual loss since Late Old English, was found on nouns and its modifiers as well as on pronouns.⁵⁸ All in all, the general picture of Old English grammar that emerges introduces typical inflectional categories that can be juxtaposed and compared with other synthetic languages.

2.3. Old English numerals: Introduction of the system

The numeral system of Old English comprised numerals from 1-9, the so-called atomic numerals as well as bases 10, 100, and 1000 which served as a foundation in arithmetic operations to form complex numerals. To a large degree it resembled other European numeral systems, but it also displayed some idiosyncratic features unfound in other languages. Among different properties observed within Old English numerals there are certain aspects that deserve further attention, i.e. inflectional paradigms of numerals, formation of compound and complex numerals as well as quantification of nouns.

⁵⁸ For various OE declensional patterns cf. Robertson and Cassidy (1954), Burrow and Turville-Petre (1992), Bloomfield and Newmark (1963) among others.

Although numerals were nominal modifiers that inflected for gender and case agreeing with modifying nouns, not every numeral was marked for these categories. The most varied morphological distinction was found among the lowest ones, i.e. 1, 2 and 3 (cf. Tables 9-12 below). Moreover, 1, OE *an* (PDE one) was used as a numeral, category specifying cardinality or as an indefinite determiner whose present form is *a* or *an*. Even though, at first sight, it is difficult to draw a clear line between the use of 1 as a numeral or a determiner, there was a strong tendency for 1 to inflect as a strong adjective when it determined cardinality, and as a weak adjective when it was used as a determiner (Mengden 2010: 75). The interesting aspect of the inflection of 1 was that as a numeral it distinguished between genders and cases whereas as a determiner gender was differentiated only in Nominative between masculine on the one hand and feminine along with neuter on the other, e.g.:

Table 9. Strong forms of *AN* (adapted from Mengden 2010: 76).

	<i>GENDER</i>		
<i>CASE</i>	MASC	FEM	NEUT
NOM	Ān		
ACC	āne, æne, enne	āne	ān
GEN	ānes	ānre	ānes
DAT	ānum	ānre	ānum
INST	ǣne, āne		

Table 10. Weak forms of *AN* (adapted from Mengden 2010: 76).

	<i>GENDER</i>		
<i>CASE</i>	MASC	FEM	NEUT
NOM	Āna	āne	āne
ACC	Ānan		
GEN	ānan		
DAT	ānan		
INST	ānan		

Table 11. Numeral 2 in Old English (adapted from Mengden 2010: 76).

	<i>GENDER</i>		
<i>CASE</i>	MASC	FEM	NEUT
NOM	twegen	twa	twa, tu
ACC	twegen	twa	twa, tu
GEN	twegra, twega		
DAT	twam, twæm		

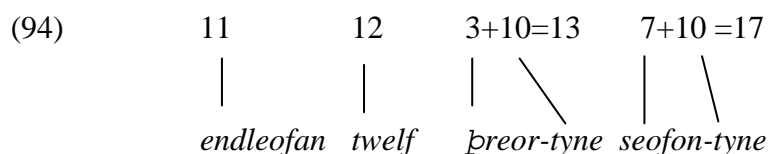
In the inflectional paradigm of 2, as it is shown in Table 11, gender distinction was captured only in Nominative and Accusative. Although, initially, there was a clear-cut difference between masculine and feminine together with neuter, masculine *twegen* was a marked form, as it never occurred in complex numerals. Moreover, when gender of a

referent was ambiguous, forms *twa* or *tu* were chosen and never *twegen* (Mengden 2010: 79). Finally, the form *twa* became the major form representing 2 (Mengden 2010: 80). A similar situation was observed with 3. Despite having masculine Nominative and Accusative form, feminine and neuter forms *þreo* were used in place of masculine. Furthermore, it was *þreo* that formed teens and not a masculine form.

Table 12. Numeral 3 in Old English (adapted from Mengden 2010: 80).

	<i>GENDER</i>		
<i>CASE</i>	<i>MASC</i>	<i>FEM</i>	<i>NEUT</i>
NOM	þry, þrī(e)	þreo	þreo
ACC	þry, þrī(e)	þreo	þreo
GEN	þreora		
DAT	þrim, þrym		

Numeral 4 and higher inflected in accordance with the declensional paradigms of the nominal *i*-stems, yet, after the Norman Conquest numerals started to follow a consonantal paradigm (Mengden 2010: 81). The inflectional endings of numerals, however, could occur when the numeral immediately preceded a noun (Mengden 2010: 81). A different characteristic of Old English numerals was that apart from 1-9 which were simple forms added to 10 *tyne* (teen), a grammaticalized form of base 10 *ty*n (ten), to form compound numerals, 11 (OE *endleofan*) and 12 (OE *twelf*), contrary to other European numerals, were also simple, idiosyncratic forms (Mengden 2010: 82-84), e.g. (Mengden 2010: 84).



Complex numerals were formed by means of a multiplication of 10 by atomic numerals, i.e. 2-9). Yet, there was an allomorphic variation of 10 depending on the value of the atomic numeral, i.e. in expressions from 20-60 the multiplicand 10 was a suffix *tig*, e.g. *twentig* (PDE twenty), *fiftig* (PDE fifty), *sixtig* (PDE sixty), whereas in expressions from 70-90 a circumfix *hund_tig*, e.g. *hund-seofon-tig* (PDE seventy), *hund-nigon-tig* (ninety) (Mengden 2010: 84-90). When it comes to numerals containing 100, two strategies were applied. On the one hand, up to 120, multiplication was used, i.e. formed by means of multiplying 12 by 10 which was represented by a circumfix *hund-twelf-tig*, on the other, in numerals 130 onwards, 100 *hund* or *hundred* were used as a bases

- (97) a. *Ðæt forme þusend stod of þusend wintrum & syx hund*
of thousand winter-DAT.PL and six hundred
*wintrum & syx & fiftigum wintrum*⁶⁰
winter-DAT.PL and six and fifty-DAT.PL winter-DAT.PL
‘The first thousand consisted of 1,656 years’
(Baker and Lapidge 1995: 233)
- b. *Þa wæs fram frymðe ealles a urnen oppæs temples geweorc. Þæt sindon*
feower þusenda wintra & an hund wintra &
four thousand winter-GEN.PL and one hundred winter-GEN.PL and
seofan & syxtig wintra
seven and sixty winter-GEN.PL
‘Then from the beginning of everything to the construction of the temple
passed by: that are four thousand one hundred and seven and sixty years.’
(Napier 1889: 9)

Another aspect of Old English worth attention is the fact that in expressions with 1000 multiplied by a numeral containing the second base, the multiplier was split and the appearance of 1000 was repeated (Mengden 2010: 137), e.g. expression 234,000 appeared as:

- (98) *twa hund þusend and feower and þritig þusend*
two hundred thousand and four and thirty thousand
‘two hundred thirty four thousand’ (Mengden 2010: 137)

2.4. Constructions with numerals: Numeral-noun order

In Present-Day English the quantified noun follows the numeral, in Old English, however, the position of the noun was not so rigid and the noun could be found in different places within the numeral complex. Although, at first glance, it points to the free word order, the position of the noun was, in fact, rather constrained, i.e. usually

⁶⁰ In longer examples word for word translation and glosses will be provided only to the relevant parts of the sentences or phrases which are given in boldface.

after the part of the complex numeral containing the base, for instance 100 or 10 (Mengden 2010: 140f.), e.g.

- (99) *Us secgað eac bec swa hit full soð is, þæt ða seofan slæperas þe slepon on ðam timan fram decies dagum ðæs deofollican caseres. oð theodosies timan ðe on crist gelyfdeq þreo hund geara fæc & three hundred year-GEN.PL period of time and twa & hundseofantig geara [...]*
 two and seventy year-GEN.PL
 ‘The books tell us, as it is absolutely true, that the Seven Sleepers who slept in the time from the evil emperor Dacius to the time of Theodosius, who believed in Christ, for 372 years [...] (Clemons 1997: 534)

When the noun did not reoccur after each constituent with a base, then the odds were that it would follow the highest base (Mengden 2010: 141), e.g.:

- (100) a. *Sege me broþor for þære soðan lufan hu fela is eower on þam mynstre? Þa cwæð he þreo hund munecan and twa and fiftig.*
 three hund monk-GEN.PL and two and fifty
 ‘Tell me, brother, for the true love, how many of you are there in the monastery? – Then he said: 352 monks. (Skeat 1881-1900: 338)
- b. *feower þusand wintra & feower hund & twa & hundeahtatig*
 four thousand winter-GEN.PL and four hundred and two and eighty
 ‘four thousand four hundred eighty two years’ (Bately 1980: 35)

Such ordering of a noun and its repetitive appearance suggested that a complex numeral consisted of independent constituents (Mengden 2010: 144). This assumption was supported by the fact that a noun followed by numerals within these expressions was marked for different case, e.g.:

- (101) a. *Þreo hund bisceopa & XVIII bisceopas*⁶¹
 three hundred bishop-GEN.PL and eighteen bishop-NOM.PL
 ‘three hundred and eighteen bishops’ (Fehr 1966: 92)
- b. *III hund daga and sextig daga and fif dagas [...]*
 three hundred day-GEN.PL and sixty day-GEN.PL and five day-NOM.PL
 ‘three hundred sixty five days’ (Napier 1967: 284)

In (101a) *bishop*, although quantified by the whole complex numeral, reappears after parts containing bases 100 and 10. In each case it is assigned a different case, i.e. Genitive after *hundred* and Nominative after *eighteen* which is justified by the fact that in Old English nouns quantified by numerals 20 and onwards were assigned Genitive (Mengden 2010: 147). Yet, another indicator of the syntactic break within complex numerals comes from examples in which one of the constituents of the expressions, usually the lowest in value, is followed by ‘also’ or a synonymous word (Mengden 2010: 148), e.g.:

- (102) *nigen hund wintra and XXX eac*
 nine hundred winter-GEN.PL and thirty too
 ‘nine hundred thirty years’ (Krapp 1931: 36)

2.4.1. Attributive constructions

The presence of a numeral quantifying the noun in Old English could signal varied constructions depending on the case pattern within the phrase and the function of the numeral. One of the most common configurations in which a numeral quantified the noun were the so-called attributive constructions in which the numeral always appeared next to the noun, either preceding, e.g. (103a), or following it, e.g. (103b).

- (103) a. *Hyrde ic þæt þam frætwum **feower mearas** lungre, gelice, last weardode,*
 four horses-NOM.PL
æppelfealuwe.

⁶¹ It was a common practice that numerals in texts were presented by means of Roman numerals.

‘I heard that four steed, bay horses, all swiftly followed the treasure.’

(Mitchell and Robinson 1998: 122)

b. *Hwæpere me gesælde þæt ic mid sweorde ofsloh*

kill-1SG.PAST

niceras nigene.

sea.monster-ACC.PL nine-ACC.PL

‘Nevertheless, it happened to me that I killed nine sea-monsters with my sword.’

(Mitchell and Robinson 1998: 67)

In these constructions both the numeral and the noun had the same case value assigned by the external case assigner, i.e. depending on its position in the sentence it could be Nominative when the phrase was in the subject position, e.g. (103a), Accusative, when the phrase functioned as the object of the verb as in example (103b), or Dative when the preposition was a source of case (Mengden 2010: 191), e.g.:

(104) *mid twam stafum*

PREP two-DAT letter-DAT.PL

‘by/with two letters’

(Clemoes 1997: 67)

Attributive quantification also allowed for elliptic structures in which the noun was not overtly expressed when it was previously mentioned or could be inferred from the context. In such cases, the numeral was more likely to show inflection than when it occurred together with a noun (Mengden 2010: 203).

2.4.2. Predicative constructions

One of the structures containing numerals, although rarely found in Old English, were predicative constructions in which the quantified noun was a subject and a numeral determining the cardinality set of the nominal referent was the predicate. In such constructions, the numeral and the noun did not form a constituent (Mengden 2010: 207). Additionally, the subject noun was frequently accompanied by the Genitive plural determiner (Mengden 2010: 207 after Visser 1963-1973 I: 226-227), e.g.:

- (105) *Þissa gewrita syndan þreo an is on ealdan mynstre*
 DEM-GEN.PL document-GEN.PL COP-3PL.PRES three
and oþer is on Wiltune and þridde æfed Wlfric.
 ‘There are three of these documents: one is at the Old Minster, the
 second is at Wilton and Wulfric holds the third.’
 (Robertson 1956: 202)

Furthermore, in some cases, the order of the predicative numeral and an NP subject was reversed which was motivated by the information structure, i.e. when the emphasis was put on the numeral (Mengden 2010: 209), e.g.

- (106) *Hit is gecweden and on halgum gewritum geræd, þæt*
ehta synd heafodgyltas.
 eight be-3PL.PRES capital sin-NOM.PL
 ‘It is said and explained in the Holy Scriptures that there are eight capital
 sins.’
 (Napier 1967: 245)

The interesting feature of these structures is the fact that the nominal subject could appear in Nominative or Genitive. Although Nominative was expected for subjects, it is much harder to explain Genitive as the assignment of this case did not fall under any instance of Genitive case assignment within the numerically quantified noun phrases in Old English (Mengden 2010: 210).⁶²

2.4.3. Partitives

Partitive constructions⁶³ along with attributive and contrary to predicative structures represented examples of formations in which the numeral was adjacent to the quantified noun. The noun always occurred in plural, even when accompanied by numeral 1, e.g. (107a), and in Genitive, e.g. (107b).⁶⁴

⁶² Genitive was assigned in partitive structures and by higher numerals, i.e. from 20 onwards. A more detailed description of this phenomena is given in subsequent sections.

⁶³ Partitives are defined as constructions in which a part is identified as distinct from a whole, e.g. *some of the tea, three of the boys*. For a discussion of partitive and pseudo-partitive constructions see, e.g. Selkirk (1977) or Vos (1999).

⁶⁴ *Of*-phrase begin to express a subset-of-a-whole relation instead of Genitive in the 12th century (Mengden 2010: 214).

- (107) a. *Ac an ðæra fugela eft fleogende com ymbe ðry dagas [...]*
 one DET-GEN.PL bird-GEN.PL
 ‘But one of the birds came flying back after three days.’
 (Godden 1979: 86)
- b. *Se apostol paulus cwæð þæt we sceolon arisan of deaðe: on þære ylde þe
 ða he þrowade: þæt is ymbe þreo & þrittig geara.*
 PREP three and thirty year-GEN.PL
 ‘The apostle Paul says that we will rise from death at the [same] age at
 which Christ was when he was suffering: that is at [the age of] thirty-
 three years.’
 (Clemoes 1997:311)

The specificity of such constructions lies in the fact that irrespective of the position in the sentence it is only the numeral that bears given case, e.g. Nominative or Accusative, while the noun’s case marking depends on the numeral, e.g.

- (108) *þara consula twegen ofslog*
 DET-GEN.PL consul-GEN.PL twegen-ACC. MASC
 ‘and [he] killed two of the consuls’
 (Bately 1980: 101)

Relying, however, only on case morphology to distinguish between attributive and partitive constructions might be problematic at times because of the poor variety of inflectional affixes in different noun classes and between different cases. As there was one shared Genitive plural marker *-a* observed in all declensions which was also found as a Nominative or Accusative plural marker for feminine nouns and masculine *u*-stems, and subsequently in inflectional paradigms of other noun classes, the distinction between attributive and partitive constructions was merely possible (Mengden 2010: 215). Therefore, the remaining criterion deciding about the type of a structure was context. In Old English, thus, Genitive partitive was assigned when a referent of a noun constituted a subset, i.e. it stood as a part for the whole, which was either mentioned previously in the sentence or in the discourse, e.g.

- (109) *Hwæt ða færllice common fif englas of heofonum, and*
 five angel-MASC. NOM.PL
twægen þæra engla on twa healfe iudan

two-MASC.NOM DET-GEN.PL angel- MASC.GEN.PL

feohtende wæron, and hine eac bewerodon.

‘Then five angels came suddenly from heaven and two of these angles fought on both sides of Judas and [they] also protected him.’

(Skeat 1881-1900 I: 168)

The other situation in which partitive construction was used was when the noun was quantified by numeral 20 and higher, e.g.

- (110) a. *þa wearð se cyning Astriges gehathyrt, and sende ðusend*
thousand

gewæpnodra cempena [...]

fighter-GEN.PL CIRC-arm-GEN.PL

‘Then, King Astryges was enraged and sent a thousand armed warriors [...].’ (Clemons 1997: 446)

- b. *tellað þreo and twentig daga fram æfterweardum Martinum upward* [...]
three and twenty day-GEN.PL

‘Count twenty three days from the end of March [...].’

(Baker and Lapidge 1995: 158)

Although, a noun quantified by numerals of higher values was in Genitive, there were some examples which did not conform to this pattern, i.e. when the phrase co-occurred with the preposition assigning Dative (Mengden 2010: 220), e.g.:

- (111) *mid þrim ðusend cempum*

PREP three-DAT thousand fighter-DAT.PL

‘with three thousand warriors’

(Skeat 1881-1900 II: 108)

Partitive constructions, despite specific properties related to the case of a quantified noun, displayed yet another distinct property, namely, the verb did not agree in number with the quantified noun (Mengden 2010: 223ff.), e.g.:

- (112) *þa he com on India eastgemæra, þa com him þær ongeon*

come-3SG.PAST

twa hund þusenda monna gehorsades folces.

two hundred thousand-GEN.PL man-GEN.PL

‘When he came to the eastern confines of India, two hundred thousand men of a riding tribe were coming towards him.’ (Bately 1980: 72)

Such an agreement pattern found in partitive constructions and with numerals 20 onwards when the quantified noun was in Genitive plural suggested that subject-verb agreement could have been instantiated only with Nominative nouns. Such a conclusion is supported by the fact that in Old English Dative or Accusative Experiencer subjects occurred only with singular verbs (Allen 1995: 70), e.g.:

- (113) *and us nu wlatað wið þysne leohtan mete*
and us-ACC/DAT now nauseate-3SG.PRES with his light food
‘And we are now nauseated with this light food.’

(adapted from Allen 1995: 70)

2.5. Development of cardinal numerals in Polish

In the history of Polish numerals many changes have occurred which ultimately have led to the emergence of numerals as a grammatical category. This process lasted approximately four centuries, stretching from the 16th to 19th c. when numerals established their inflectional paradigms to eventually, at the beginning of the 20th c., form a separate group next to other parts of speech (Siuciak 2008: 11f.).

The complex nature of Polish, and Slavic in general, numerals can be traced back to Proto-Indoeuropean when lexemes from 1-4 behaved as inflected adjectives and those from 5 and above as uninflected adjectives. Subsequently, in Proto-Slavic higher numerals, due to their morphological and syntactic properties, were put together with nouns (Siuciak 2008: 16). Interestingly, the crucial role in the development of numerals is attributed to lexeme *desęť* (ModPol *dziesięć*, ten) which on the one hand was a numeral grouped with inflecting adjectives and on the other hand it was also a noun. Eventually, in Polish, *dziesięć* (ten) prevailed as a noun becoming a point of reference in the inflectional paradigm for other numerals, i.e. it declined according to *i*-stem just like other lexemes from *five* onwards (Siuciak 2008: 17 after Basaj 1971: 156).

- b. *przez lat trzy sta <trzysta*
 for years three hundreds-PL
 ‘for three hundred years’
- c. *dwanaście set lat miał stać Rzym w pokoju*
 twelve hundreds-GEN.PL years had stayRome in peace
 ‘for twelve hundred years Rome was supposed to stay in peace’

(Bielski 1564)

Forms of *sto* are presented in the table below:

Table 13. *Sto* (hundred) (adapted from Siuciak 2008: 35 after Jakubowicz 1823: 141).

	<i>NUMBER</i>	
<i>CASE</i>	<i>SINGULAR</i>	<i>PLURAL</i>
NOM	sto	Sta
ACC	sto	Sta
GEN	sta/stu	Set
DAT	stu	Stom
INST	stem	Stami
LOC	w stu	w stach

2.5.1. An overview of changes in the inflectional paradigm of numerals

Changes that affected numerals in Polish took place over the span of four centuries. During this time among various transformations that shaped present-day numerals the most important one was establishing the inflectional paradigm of numerals which formed a separate grammatical category. That also led to the unification of relations between elements with the nominal phrase as well as between the numerically quantified subject and a verb (Siuciak 2008: 24).

2.5.2. Numerals 2-4

The characteristic feature of lower numerals in Old Polish and at the beginning of Middle Polish, i.e. in the 16th c., was that lower numerals inflected for gender, contrary to higher numerals which behaved as nouns. The distinction in gender was observed in masculine forms on the one hand and feminine and neuter on the other hand (Siuciak 2008: 57), e.g. (from Siuciak 2008: 59f.)

- (118) a. *dwa mężowie*
 two husbands-MASC.NOM.DU
 ‘two husbands’
- b. *dwa woły*
 two oxen- MASC.NOM
 ‘two oxen’
- c. *dwie są tego przyczynie*
 two are that reasons-FEM.NOM.DU
 ‘there are two reasons for that’
- d. *dwie ziarnie siemienne*
 two linseeds-NEUT.NOM

A parallel situation was originally observed among numerals *trzy* (three) and *cztery* (four) which had masculine forms such as *trze*, *cztyrze* as opposed to feminine and neuter *trzy*, *cztery*. Yet, in the Old Polish period, when *trzej* and *czterej* appeared to mark masculine animate and later personal, masculine inanimate was expressed by forms found with feminine and neuter, i.e. *trzy* (three) and *cztery* (four) (Siuciak 2008: 57).

Initially, forms *dwa*-MASC⁶⁸ and *dwie*-FEM,NEUT⁶⁹ were accompanied by nouns in dual in the 16th and to some extent in the 17th century, but were gradually replaced by plural forms, e.g. in masculine nouns dual ending *-a* as in *dwa miecza* (two swords) changed into *-e dwa miecze* (Siuciak 2008: 60).^{70,71} Additionally, under the influence of Nominative masculine animate forms *trzej* (three) and *czterzej* (ModPol *czterej*, four)⁷²

⁶⁸ Form *dwa* was commonly used in Nominative with masculine nonvirile and virile nouns up to the 16th c. and to some extent in the 17th and 18th c. (Klemensiewicz 1930: 9). Then, a new form *dwaj* and Genitive *dwu/doch/dwóch* became used with virile nouns.

⁶⁹ A neuter form *dwie* was replaced by a form *dwa* at the turn of the 17th and 18th century (Stapor 2008: 47). The feminine form *dwie* has remained unchanged in Nominative and Accusative (Klemensiewicz 1930: 9, 11).

⁷⁰ I am not giving the inflectional paradigm of dual number as it is not relevant for the present discussion. The relevant aspect is only that nouns modified by numeral *two* used to take dual inflectional endings and with the decline of dual in the 16th century, plural.

⁷¹ Dual, although lost in Middle Ages in Slavic languages can still be found Slovene and Sorbian (Gvozdanović 1999: 188).

⁷² In Old Polish common forms were *trzy* and *cztery* for all genders. Nominative masculine forms *trzej* (three) and *czterej* (four) occurred in Old Polish as well, but it was in the 15th c. for *trzej* and the 16th c. for *czterej* that they became dominant forms (Siuciak 2008: 57; Stapor 2008: 67, 71).

masculine form *dwaj* developed around the 16th c., which unified the inflectional paradigm of lower numerals in masculine animate, i.e. *two* with *three* and *four*⁷³, e.g.:

- (119) a. *dwaj*⁷⁴ *synowie* *przyszli* (Kronika Eutropiusza)
 two sons-MASC.NOM.PL came-3PL.PAST
 ‘Two sons came.’
- b. *trzey* *Arcybiskupowie* (Bielski 1564)
 three-MASC.NOM archbishop-MASC.NOM.PL
 ‘three archbishop
- c. *czterzey mężowie* *trędowaci* (Biblia Leopolda 1561)
 four men-MASC.NOM.PL leproous-MASC.NOM.PL
 ‘four leproous men.’

However, numeral *two* was influenced by forms of *three* and *four* in yet another aspect, i.e. next to Genitive and Locative form *dwu* forms *dwuch* and *dwoch* appeared in the 16th c. parallel to *trzech* (three-GEN) and *czterech* (four-GEN) (Siuciak 2008: 65).^{75,76} These, in turn, were extended in the 17th c. to Nominative virile (Klemensiewicz 1930: 8; Stapor 2008: 49). Apart from the influence from *three* and *four*, numeral *two* changed its form in masculine personal Accusative⁷⁷ which used to be syncretic with Nominative, i.e. first it has form *dwa*, then under the influence of Genitive *dwu*, and subsequently *dwuch/dwoch* (ModPol *dwóch*, two) (Stapor 2008: 53-61).⁷⁸ Accusative

⁷³ The process of inflectional unification of numerals *two* together with *three* and *four* has not been completed due to the remaining unequal gender opposition, i.e. a distinction between masculine personal, feminine and neuter in the paradigm of *two*, e.g. *dwaj/dwóch*-MASC.PER, *dwie*-FEM, *dwa*-MASC.IMPER/NEUT, and between masculine personal on the hand and feminine and neuter on the other hand in the case of *three* and *four*, e.g. *trzech/trzej*-MASC.PER, *czterej/czterech*-MASC.PER, *trzy*-MASC.IMPER/FEM/NEUT, *cztery*-MASC.IMPER/FEM/NEUT (Siuciak 2008: 64f.).

⁷⁴ Forms with final *-y* in *dwaj* and *trzey* and *czterzey* together with *-rz* in *czterzey* are alternations of *dwaj*, *trzej*, *czterej*. For the reasons of space I do not discuss alternations of numerals, but I focus only on the predominant forms.

⁷⁵ Appearance of a newer version of numeral *two*, e.g. *dwuch/dwoch* (ModPol *dwóch*) did not mean that this form became immediately a dominant one (cf. Stapor 2008: 54-55). Generally, after the emergence of a variant form of a given numeral either both forms were in use or they alternatively appeared as dominant up to the 20th c. when the paradigm was finally established.

⁷⁶ According to Klemensiewicz (1930: 12f.) form *dwoch* was found in the 16th c. *Dwuch* appeared in the 17th c. and in the 18th c. *dwóch*.

⁷⁷ Accusative-Genitive syncretism spread in the 16th and the 17th c. to masculine animate nouns, but in the 18th c. it was restricted again to masculine personal (Siuciak 2008: 89).

⁷⁸ Genitive masculine form *dwu/dwuch/dwoch* (ModPol *dwóch*, two) spread to Nominative, but prior to that it was an Accusative form as Accusative-Genitive syncretism already observed in Old Polish was established in the 16th c., so at least a whole century before Nominative-Genitive syncretism (Stapor

neuter up to the 18th c. had a form from Proto-Slavic *dwie* which subsequently changed into a present-day form *dwa*. Feminine Accusative, *dwie*, on the other hand, has not been subject to any changes (Klemensiewicz 1930: 11). Moreover, Old Polish Dative dual form, the same for masculine, feminine and neuter, *dwiema* changed into *dwum* and *dwom/dwoma* in the 17th c. (Stapor 2008: 56), but then *dwom* became dominant which finally turned into *dwóm* (Stapor 2008: 56f.; Siuciak 2008: 70-73)^{79,80}. Interestingly, in Instrumental form *dwiema* influenced the paradigm of numeral *three* and *four* which then appeared as *trzemi* (OPol/MPol three-INST), *czterzmi/cztermi* (OPol/MPol four-INST), but changed into *trzema* and *czterema*. In the 17th c. form *dwoma* was found which with varied frequency co-occurred along with *dwiema*. The usage of two forms finally normalized in the 19th c. when *dwoma* became restricted to masculine and neuter and *dwiema* to feminine (Klemensiewicz 1930: 17; Siuciak 2008: 73-77).

Lower numerals have undergone various changes in their inflectional paradigms. Although presented development is only a very brief and sketchy presentation of the most significant modifications, it is important to notice that the formation of the inflectional paradigm was a bidirectional process in a sense that both numeral *two* influenced numerals *three* and *four* as well numerals *three* and *four* affected forms of *two*. Yet, a disappearance of dual number was a crucial stage in the formation of present-day numerals, as not only dual number on modified nouns was abandoned, but also originally dual Genitive *-u* ending spread to other numerals.

The process of establishing forms of lower numerals was a complex phenomenon especially that it is difficult precisely to determine the forms occurring in a given period of time as before they were eventually replaced by new variants they had still coexisted for some time with their alternates. Secondly, indication of the source of influence has been problematic as well because not only numerals *two*, *three* and *four* affected each other, but also different case forms within one paradigm of a given numeral interacted with one another. Yet, undoubtedly, the important factor

2008: 59f.). In the same time, i.e. in the 17th c. Nominative-Genitive syncretism for masculine *three* and *four* was also found (Stapor 2008: 68, 71).

⁷⁹ Form *dwom* might have been a result of the influence of modified nouns which acquired *-om* ending in Dative (Siuciak 2008: 71). Whereas Siuciak (2008:72) presents different views on the origin of *dwum* in Dative, Stapor (2008: 56) claims that this form arose under the influence of Genitive *dwum*.

⁸⁰ Form *dwiema* between 16th and 18th c. determine the form of 3 *trzema* and to a smaller degree form of 4 *czterema* which ultimately retained their protoSlavic forms *trzem* and *czterem* (Stapor 2008: 74ff.; Siuciak 2008: 70f.).

contributing to the emergence of the present contemporary forms of lower numerals was a disappearance of dual number which not only eliminated a three-part opposition in number, i.e. singular, dual and plural, leading to the unification of nominal forms modified by numerals appearing since then in plural instead of dual, but it was also a step in establishing the inflectional paradigm of numeral *two*. As a consequence, a neuter dual form of a numeral changed (from *dwie* to *dwa*)⁸¹ as well as a distinct form for masculine personal nouns in Nominative, Accusative and Genitive affected by forms of *three* and *four* appeared. The summary of major changes is presented in tables below

Table 14. Development of the inflectional paradigm of 2.

GENDER	FEM			NEUT			MASC		
PERIOD	P-Sl	OPol/MPol	ModPol	P-Sl	OPol/MPol	ModPol	P-Sl	OPol/MPol	ModPol
CASE									
NOM	dwie			dwie	dwa ^{17th}	dwa	dwa	dwa dwaj ^{16th} / dwuch<dwoch< dwóch ^{17th}	dwaj/ dwóch
ACC	dwie	dwie	dwie			dwa	dwa	dwa/dwu ^{16th} dwuch<dwoch< dwóch ^{17th}	dwu dwóch
GEN	dwu	dwu dwuch ^{16th-19th} dwoch ^{16th} < dwóch	dwu dwóch	dwu	dwu dwuch ^{16th-19th} dwoch ^{16th} < dwóch	dwu dwóch	dwu	dwu dwuch ^{16th-19th} dwoch ^{16th} < dwóch	dwu dwóch
DAT	dwie ma	dwie ma ^{11th-19th} dwum ^{17th} dwom ^{17th} dwóm ^{18th}	dwu dwom dwóm	dwie ma	dwie ma ^{11th-19th} dwum ^{17th} dwom ^{17th} dwóm ^{18th}	dwu dwom dwóm	dwie ma	dwie ma ^{11th-19th} dwum ^{17th} dwom ^{17th} dwóm ^{18th}	dwu dwom dwóm
INST	dwie ma	dwie ma ^{18th}	dwie ma	dwie ma	Dwie ma ^{18th}	dwoma	dwie ma	dwie ma/ dwoma ^{18th}	dwoma
LOC	dwu	dwu ^{16th} dwóch ^{17th}	dwu/ dwóch	dwu	dwu ^{16th} dwóch ^{17th}	dwu/ dwóch	dwu	dwu ^{16th} / dwóch ^{17th}	dwu dwóch

⁸¹ The fact that a neuter and masculine inanimate form of 2 *dwa* is the same as the Old Polish masculine form is not the result of the influence of the latter on the former, but probably a consequence of a decline of dual number marked on neuter nouns as *-e* and its replacement with a plural marker *-a*, which must have been extended to the form of a numeral (Siuciak 2008: 64).

Table 15. Development of the inflectional paradigm of 3 and 4.

<i>GENDER</i>	FEM			NEUT			MASC		
<i>PERIOD</i>	P-Sl	OPol/ MPol	ModPol	P-Sl	OPol/ MPol	ModPol	P-Sl	OPol/MPol	ModPol
<i>CASE</i>									
NOM		trzy cztery			trzy cztery		trze/ trzy/ trzej ^{15th} cztery/ czterej ^{16th}	trzej/ trzech ^{17/18th} czterej/ czterech ^{17/18th}	
ACC		trzy	trzy		trzy	trzy		trzy/ trzech czterzech< czterech	trzech czterech
GEN	trzy cztery	trzech ^{16th} czterech ^{16th}	trzech czterech	trzy cztery	trojga czworga trzech ^{17th} czterech ^{17th}	trzech czterech	trzy cztery	trzech ^{16th} czterech ^{16th}	trzech czterech
DAT	trzem czte- rzem	trzem trzema ^{16th- 17th/18th} czterzem<c zterem czterzy ^{16th} czterma/ czterema ^{16th- 17th}	trzem czterem	trzem czterze m	trzem trzema ^{16th- 17th/18th} czterzem <czterem czterzy ^{16th} czterma/ czterema ^{16th- 17th}	trzem czterem	trzem czterzem	trzem trzema ^{16th- 17th/18th} czterzem<c zterem czterzy ^{16th} czterma/ czterema ^{16th- 17th}	trzem czterem
INST	trzemi	trzemi trzema ^{16th- 18th} cztyrmi czterem czterema ^{16th}	trzema czterema	trzemi	trzemi trzema ^{16th- 18th} cztyrmi czterem czterema ^{16th- 17th}	trzema	trzemi	trzemi trzema ^{16th- 18th} cztyrmi czterem czterema ^{16th/ 17th}	trzema czterema
LOC		trzech czterech	trzech czterech		trzech czterech	trzech czterech		trzech czterech	trzech czterech

The crucial remark regarding the development of inflectional paradigms of numerals is that after the Proto-Slavic period a separate form for masculine personal has been

established. Furthermore, equally for numerals 2-4 new syncretisms have emerged, i.e. first around the 16th c. Genitive-Accusative syncretism and later, around 17th c. Genitive-Accusative-Nominative syncretism. New syncretisms affected masculine personal. In the remaining genders, i.e. feminine, neuter and masculine impersonal, numerals had already had the same forms in direct case positions. Such a direction of changes may suggest that although new forms for masculine personal were set apart, a tendency to unification has remained which is reflected in other syncretisms, i.e. Nominative-Accusative and Genitive-Locative, in feminine and neuter.

2.5.2. Numeral 5 and onwards

In the paradigm of higher numerals the important transformations were triggered by the development of masculine personal as a grammatical category which, first of all, was signaled by the Accusative-Genitive syncretism and subsequently by the *-u* ending. Establishing new paradigms, on the one hand, was a part of a general process of unification and syncretisation observed in Slavic languages, and on the other hand emphasizing gender opposition in plural.

Contrary to lower numerals, numerals from *five* onwards used to be feminine nouns declined according to the pattern of *i*-stem declination. In many cases these numerals had forms inherited from Proto-Slavic which started to change around the 16th century. In Nominative such a form was *pięć* (five), but when the Accusative-Genitive syncretism began to spread at the turn of the 16th and 17th century masculine personal form *pięci* was becoming common (Stapor 2008: 86f.). Subsequently, when syncretic Genitive and Accusative was *pięciu* as the result of dissemination of dual Genitive *-u* ending for all genders, the form extended to masculine personal Nominative around the 17th and 18th c. (Stapor 2008: 91; Siuciak 2008: 104f.). It is worth mentioning that Accusative-Genitive syncretism for masculine nouns had already emerged among lower numerals in the 16th c. Then, the spread of the *u*-ending in Nominative masculine personal forms can be attributed to Genitive dual adopted by numeral quantifying expressions such as *kilka* and *wiele* with Accusative and Genitive masculine personal forms such as *kilku/wielu* which subsequently was taken over by higher numerals. Finally, the transfer of *u*-ending to Nominative masculine personal

forms can be traced back to Nominative-Accusative syncretism firstly found among non-masculine nouns which later affected other numerals (Siuciak 2008: 101f.), e.g.:

- (120) a. *Pięć domów było*
 five-NOM houses-GEN.PL was-3SG.PAST
 ‘There were five houses.’
- b. *Pięć domów miałem*
 five-ACC houses-GEN.PL had-1SG.PAST
 ‘I had five houses.’ (Siuciak 2008: 101)

The same process was observed with *six, seven, eight, nine* and *ten* which from Genitive *sześci, siedmi, ośmi, dziewięć/dziewięci, dziesięci/dziesięci* turned into *sześciu, siedmiu, ośmiu, dziewięciu, dziesięciu* (Stieber 1979: 181f.; Stapor 2008: 90; Siuciak 2008: 113).⁸² Nominative-Accusative-Genitive syncretism and *u*-ending as the exponent of masculine personal were introduced later among higher numerals 20-900, namely in the 19th c. (Siuciak 2008: 109). In Dative and Locative a characteristic ending was *-i* which was also replaced by *-u*. This change started approximately in the 17th c., but as a norm it was established in the 19th c. (Stapor 2008: 93-94, 101; Siuciak 2008: 124-127). In the meantime, Dative underwent an intermediate stage at which it adopted *-om* ending also typical of Dative *dwom* (two), i.e. *pięciom, sześciom, siedmiom* etc. (Stapor 2008: 93), but it was superseded in the 17th c, by *u*-ending (Siuciak 2008: 126). In Instrumental throughout the Old Polish period Proto-Slavic forms ended with *-q* continued, i.e. *pięciq, siedmiq, ośmiq* etc. In the 18th c., however, forms with *-u* and *-oma* endings following the paradigm of numeral *two*, i.e. *dwu-dwoma* became popular and have survived till now (Stapor 2008: 99; Siuciak 2008: 129-131).

⁸² Alternations among these numerals are discussed in Stapor (2008).

Table 16. Development of the inflectional paradigm of 5.

GENDER	FEM	FEM/NEUT		MASC	
PERIOD	ProtoSl	OPol/MPol	ModPol	OPol/MPol	ModPol
CASE					
NOM	pieć	pieć	pieć	pieć piąci/pieci pięciu	pięciu
ACC	pieć	pieć	pieć		pięciu
GEN	piąci/pięci	piąci/pięci pięciu ^{17th/18th}	pięciu	piąc pięciu pięciu ^{17th/18th}	pięciu
DAT	piąci/pięci	pięci pięciom ^{16th} pięciu ^{17th/18th}	pięciu	pięci pięciom ^{16th} pięciu ^{17th/18th}	pięciu
INST	piącia/pięcia	pięciu ^{18th} pięcioma ^{18th}	pięciu pięcioma	pięciu ^{18th} pięcioma ^{18th}	pięcioma
LOC	piąci/pięci	pięciu ^{17th/18th}	pięciu		pięciu

As it is shown in Table 16, the major change that affected higher numerals was *-u* ending which appears both in feminine and neuter as well as masculine gender. Syncretism of cases does not cover Instrumental in all genders and excludes Nominative and Accusative in feminine/neuter. Such a distinction however is not accidental. Nominative-Accusative syncretism to the exclusion of Genitive in non-virile gender at some point was a result of a process leading to setting apart masculine personal gender. Yet, in masculine personal, the tendency was to identify Genitive and Accusative to the exclusion of Nominative which in the time of developing masculine plural became syncretic with Genitive and Accusative. Spreading *-u* ending within numerals was initiated by the form of numeral *two*, i.e. *dwu*, popularization of masculine personal forms in Accusative and Genitive of lower numerals followed by the adoption of *-u* ending by quantifying expressions such as *kilka* (several), *wiele* (many) in the 17th c. (Siuciak 2008: 85-90). Only then higher numerals started to acquire *-u* ending in their paradigm. The interesting part is that establishing Nominative form for masculine personal was the latest step in the numeral formation as it was related to the Slavic across-the-board phenomenon of marking gender opposition for Nominative (Siuciak 2008: 110). Thus, the emergence of *-u* ending for masculine personal nouns is attributed to Nominative as late as in the 17th/18th c. (Stapor 2008: 86-87).

In the overview of changes that affected numerals, apart from the tendencies to unify their inflectional paradigm, the most significant one was establishing gender distinction which was first manifested by Accusative-Genitive syncretism and now by Nominative and Accusative forms. In this process, the vital role was played by lower

numerals, especially numeral *two*, which affected other numeral expressions, yet the changes were not adopted unanimously by all numerals, but gradually in different periods of time, i.e. starting from the animate/inanimate distinction among numerals *trzy* (three) and *cztery* (four), followed by the masculine personal forms of *dwa* (two), expressions such as *kilka/wiele* (several, many) and then 5-10. In the final stage of numeral formations 500-900 acquired a gender exponent at the turn of the 19th and 20th century (Siuciak 2008: 110).

2.5. Patterns of agreement within a nominal phrase

Numerically quantified phrases have been also analyzed regarding the agreement patterns within the phrases, i.e. between the numeral expression and a modified noun, as well as with reference to the form of the verb in the relation with the subject containing a numeral. In this respect numerals exhibited characteristics inherited from Proto-Slavic, i.e. lower numerals inflected like adjectives assumed congruent forms with the modified noun and numerals 5 and onwards with noun-like properties assigned Genitive plural to the noun. These properties, to a large extent, have been carried over to Modern Polish. Yet, before patterns of internal and external agreement were finally established, other combinations were possible.

In Proto-Slavic and Old Polish the form of a noun in expressions 11-19 depended on the first numeral, i.e. whether it was 2-4 or 5-9, in which case there was either agreement in externally assigned case between a numeral and a noun or the noun was in Genitive plural (Siuciak 2008: 144). Yet, at some point syntax of these expressions was inconsistent as one time the numeral 2-9 governed the choice of the case, e.g. (45) and (46), and in other situations case of the quantified noun was determined by the compound numeral, e.g. (47), (48), (Klemensiewicz 2009: 310).

- (121) a. *dwianaście grzywnie*
 twelve fines-NOM.DU
 ‘twelve fines’
- b. *czternaście grzywny*
 fourteen fines-NOM.PL
 ‘fourteen fines’

- c. *dwanaście grzywien*
 twelve fines-GEN.PL
 ‘twelve fines’
- d. *czternaście grzywien*
 fourteen fines-GEN.PL
 ‘fourteen fines’ (Siuciak 2008: 144)

This distribution had been found in Polish until the 16th c. when the Genitive plural noun became a standardized option with numerals 11-19 (Siuciak 2008: 143f.). Such a unification of the internal agreement following numerals 5-10 was actually observed only when the phrase occurred in positions where Nominative or Accusative case were assigned, so in the structural case positions. In oblique case positions, there was a strong tendency to agreement with the modified noun, perhaps influenced by lower numerals (Siuciak 2008: 145). In a similar fashion relations between a modified noun and numerals 20 onwards were determined. However, before that happened, nouns in formations containing 20-90 and numerals 2-4 could appear either in Genitive plural or in a form congruent with the lower numeral. The ambiguity of such expressions was related to the undetermined at that time word order which placed the noun either in front of the numeral expression in which case the first numeral governed the form of the noun (122a), or the noun followed the expression and then depended on the second numeral (122b) (Siuciak 2008: 147), e.g.:

- (122) a. *przez lat dwadzieścia i dwie* (Kronika Eutropiusza)
 for years-GEN.PL twenty and two
 ‘for twenty two years’
- b. *Ten umiał dwadzieścia y dwa języki* (Bielski 1564)
 this-3SG could_{3SG.PAST} twenty and two languages-ACC.PL
 ‘This man could speak twenty two languages.’

In example (122a) noun *lat* (years) in the frontal position assumes the form conditioned by the higher numeral. In (122b), on the other hand, noun *języki* (ModPol *języki*, languages) agrees with a lower numeral in case assigned by the verb. Such an optionality of forms was present in Polish till the 18th c. Then in the 19th c. when the word order was established the noun followed the numeral expression and the last

element in the numeral formation was responsible for the form of the modified noun (Siuciak 2008: 147f.). Yet, apart from a different position of a noun and resulting form it its form, there were also instances in which the noun should have a form determined by the lower numeral, but instead it occurred in Genitive plural⁸³, e.g.:

- (123) a. *Bormistrz sto y czterzy okrętów potopił*
 mayor hundred and four ships-GEN.PL sank
 ‘The mayor sank hundred and four ships.’ (*Kronika Eutropiusza*)
- b. *Ogień pięćdziesiąt y trzy Kamienic w popioł obrocil*
 fire fifty and three tenement houses-GEN.PL in ashes turned
 ‘The fire turned fifty three tenement houses to ashes.’
 (*Kuryer Polski 1756*)

Such examples, according to Klemensiewicz (1930: 95) might have been reproduced patterns found in expressions containing numerals 5-9, e.g.:

- (124) *padło ich tam trzydzieści i sześć mężów* (*Biblia Leopolda*)
 fell-3SG.PAST them there thirty and six men-GEN.PL
 ‘thirty six men fell dead there’

From the analyses of Old and Middle Polish examples it follows that relations between numerals and modified nouns were still developing. Lower numerals, although were congruent with a noun happened to present patterns typical of numerals 5-10, i.e. the modified noun was in Genitive plural. However, changes within phrases occurred also with higher numerals, i.e. 5 onwards. Throughout the period of Old Polish they unanimously assigned Genitive plural irrespective of the external case assigned to the whole phrase. Such a pattern, however, started to change towards the end of Old Polish, i.e. around 15th and 16th c., when the dominant relation was of congruity in oblique contexts (Siuciak 2008: 148ff.). The earliest transition from the syntax of government to the syntax of agreement was found with Locative, where the noun instead of Genitive

⁸³ Genitive plural nouns accompanied by numerals 2-4 were not exceptional cases and as late as in the 17th and 18th c. such a form of a noun was especially frequent in temporal expressions, e.g. *za lat trzy* (in three years-GEN.PL (Chmielowski 1754), *przez godzin dwie* (for two hours-GEN.PL) (Ruszel 1656) (Siuciak 2008: 163). However, this syntactic relation did not spread to all cases, but was restricted to Nominative, Accusative and Locative (Siuciak 2008: 165).

plural, e.g. (125a), (125b), began to appear in Locative plural, e.g. (125c), (125d) (Siuciak 2008: 153).

- (125) a. *w piąci lat* (Opec 1522)
 in five-_{LOC} years-_{GEN.PL}
 ‘within five years’
- b. *po siedmi lat żyznych*
 after seven-_{LOC} years-_{GEN.PL} fertile
 ‘After seven fertile years’ (Historia o świętym Iozefie [1530] 1909)
- c. *w tych dziesięci dnoich* (Klemensiewicz 1930: 101)
 in these ten-_{LOC} days-_{LOC.PL}
 ‘within these ten days’
- d. *w siedmi leciech* (Klemensiewicz 1930: 101)
 within seven-_{LOC} years-_{LOC.PL}
 ‘within seven years’

The same changes affected nouns occurring in phrases assigned Dative (126a) and Instrumental (126b), e.g.:

- (126) a. *piąci mężow* (Klemensiewicz 2009: 311)
 five-_{DAT} husbands-_{GEN.PL}
 ‘to five husbands’
- b. *między siedmią pagorkow* (Starowolski 1647)
 between seven-_{INST} hills-_{GEN.PL}
 ‘surrounded by seven hills’

The process of changing relations between the numeral and a noun in oblique cases was not uniform as congruent with the numeral forms had been replacing Genitive on a noun for approximately four centuries.

2.7. Composite numerals with *one*

In a discussion of internal relations between elements in a numerically quantified phrases a word of attention should be paid to expressions containing *jeden* (one).

Although the status of *jeden* (one) has been widely debated, similarly to other numerals, and its characteristic distinguishes it even more from other numerals, e.g. it selects for nouns in singular instead of plural, it occurs in complex numeral formations bringing out interesting properties.

Jeden (one) coming from Proto-Slavic *edinъ* developed two forms *jeden* (one, some) and *jedzin(y)/jedyny* (only). In Present-Day Polish it also seems to have two distinct forms, i.e. one juxtaposed with determiners of *some*-type and the other occurring only in composite numerals (Stapor 2008: 38) when it always occurs as an uninflected element.⁸⁴ Despite the fact that *jeden* assumes different inflectional endings agreeing in gender, number and case with a modifying noun, e.g. *jeden pan* (one/some-MASC man-MASC.PL) *jedna kobieta* (one/some-FEM woman-FEM.SG), *jedni studenci* (some-MASC students-MASC.PL), in complex numerals its form always remains the same, i.e. *jeden*. Such forms, although already established for a long time, were not the only options available. Szober (1922: 131) mentions expressions in which the modified noun agreed in number and gender with *jeden* instead of the penultimate element, e.g. (Szober 1922: 131).

- (127) a. *dwadzieścia jeden dom*
twenty one-MASC house-MASC.SG
'twenty one houses'
- b. *pięćdziesiąt jedna chata*
fifty one-FEM hut-FEM.SG
'fifty one huts'
- c. *dwieście jedno drzewo*
two hundred one-NEUT tree-NEUT.SG
'two hundred one trees'

⁸⁴ Examples with *jeden* (one) meaning *some* and its properties are discussed in chapter 1.

Moreover, *jeden* in such expressions could also decline by case analogically to soft-stemmed complex numerals such as *pięćdziesięciu* (fifty), *sześćdziesięciu* (sixty) (Klemensiewicz 1932: 38; Szober 1922: 134), e.g. (Szober 1922: 134).

- (128) a. *dwudziestu jedniu chat*
 twenty-GEN one-GEN huts-GEN.PL
 ‘twenty one huts’
- b. *w dwudziestu jedniu chatach*
 in twenty-INST one-INST huts-INST.PL
 ‘in twenty one huts’

Also, inflected forms of *jeden* in plural on the model of plural indefinite pronoun *jedni* (some-MASC.PL) *jedne* (some-FEM/NEUT.PL) (Klemensiewicz 1932: 37) were observed in such formations, e.g. (Klemensiewicz 1932: 37).

- (129) a. *dwudziestu jednych panów*
 twenty-GEN. one-GEN.PL men-GEN.PL
 ‘twenty one men’
- b. *dwudziestu jednym panom*
 twenty-DAT one-DAT.PL men-DAT.PL
 ‘twenty one men’

Jeden, just as it is postulated in present accounts, out of Proto-Slavic forms developed two lexemes, i.e. an indefinite pronoun and a numeral. Although nowadays the status of *jeden* as a numeral is frequently questioned due to its fossilized behavior in complex numerals, presented examples demonstrate that *jeden* used to be viewed as a numeral which is shown in the attempts to apply inflectional paradigms of other numerals to this one. The fact that *jeden* occurs in an unchanged form in certain contexts may be the result of conflicting features of *tens* and *one* forming a numeral composite. As *jeden* imposes singular on a modified noun, when it is part of a complex formation which as a whole is interpreted as plural it must be in an unvaried form. Such an inactivation of one

of the elements in a complex formation might be a strategy to avoid the problem of contradictory requirements regarding number and, what follows, gender.^{85,86}

2.8. Verbal predicates and numerically quantified subjects

In the history of Polish language relations between nominal phrases containing numerals or other numeral modifiers such as *dużo* (a lot of), *wiele* (many), *kilka* (several) in subject positions and verbal predicates gave rise to various agreement patterns. On the one hand, the verb appeared in singular neuter form or, on the other, in plural with gender marking dependent on the gender of a noun. These patterns have survived till today, yet before they were established, different variants competed for several centuries depending on the value of the numeral and gender of the noun.

Phrases with lower numerals (2-4) agreed in number and gender with verbal predicates. Despite the fact that this was a prevailing pattern, occurrences with a singular verb were also found starting from the 16th c. (Siuciak 2008: 189), e.g.:

- (130) *było w tej świątyni trzy kaplic* (Borkowski 1820)
 was-3SG.PAST in this chapel three chapel-GEN.PL
 ‘there were three chapels in this temple’

Other constructions with lower numerals in which a modified noun was in Genitive plural and the verb in singular neuter were those with masculine personal nouns and masculine forms of *two*, *three* and *four*, e.g.:

- (131) *Do Rzymu wybrało się z Polski czterech*
 to Rome went-3SG.NEUT.PAST REF from Poland four-MASC
Pielgrzymow

⁸⁵ Although a constant form of numeral 1 may suggest the avoidance strategy to eliminate the problem of number of a quantifying noun, it does not work when case is assigned by complex numerals. In these circumstances we might be talking about two different phenomena, i.e. the assignment of number as the intrinsic property of numerals specifying the cardinality set of a referent represented by a quantified noun and the assignment of case as a morphosyntactic requirement dependent not on the complete value of the numeral expression, but (at least in Polish) on the numeral adjacent to the modified noun.

⁸⁶ Gender distinction on numeral 1 is recognized when it also quantifies the modified numeral, i.e. it governs its number. When, however, its property to assign (singular) number is frozen, no gender marking appears as well.

pilgrims-MASC.GEN.PL

‘Four pilgrims went to Rome from Poland’

(Haur 1693)

Such fluctuations with the usage of plural and singular forms lasted until the 19th c. when singular forms were rarely found and were considered ungrammatical (Bajerowa 2000: 48).

Subjects with higher numerals, especially with 5-10, in Proto-Slavic and in Old Polish occurred with feminine singular verbs following the properties of 5-10 as feminine singular nouns (Siuciak 2008: 175f), e.g.:

(132) a. *pięć lat minęła*
five years-GEN.PL passed-3SG.FEM.PAST
‘five years passed’

b. *jako minęła dziesięć lat*
as passed-3SG.FEM.PAST ten years-GEN.PL
‘as ten years passed’

(Siuciak 2008: 176)

A feminine singular form, however, was superseded by singular neuter forms at the end of Old Polish and at the beginning of Middle Polish.⁸⁷ Yet, the decline of feminine singular did not unify the subject-verb relation as in the 16th c. plural forms with gender depending on the noun became a competitor for singular.⁸⁸ This way, until the 19th c. when singular form of a verb in past and present tense was being standardized, both patterns were in use, i.e. singular (133a) and plural (133b) (Siuciak 2008: 175f.), e.g.:

(133) a. *nad rzeką, z ktorey wychodziło siedm*
above river, from which get.out-3SG.PAST.PROG seven
krow cudnych
COWS-GEN.PL gorgeous- GEN.PL
‘on a river, from which seven gorgeous cows were getting out’

(*Historya o świętym Iozefie* 1909)

⁸⁷ In the literature different attempts have been made to explain singular neuter form of the verb (cf. Szober 1928; Klemensiewicz 1930; Bajerowa 2000 among others).

⁸⁸ Pisarkowa (1984: 22ff.) claims that neuter singular verbs with numerals 5 onwards were already found in the 15th c. yet the competition between singular and plural lasted a couple of centuries before the norm was established.

- b. *pięć Litwinow wpadli do ich obozu w nocy*
 five Lithuanians-GEN.PL arrived-3PL.PAST to their camp in night
 ‘five Lithuanians arrived at the camp at night’ (Strykowski 1582)

Interestingly, establishing the form of a verb with a numerically quantified subject took the longest with numerals 5-10 and teens. The earliest singular forms were normalized with lexemes *mało* (little), *dużo* (a lot of), *wiele* (many), *kilka* (several), e.g (134a), (134b), *sto* (134c) and *tysiąc* (134d) (Siuciak 2008: 188),⁸⁹ e.g.:

- (134) a. *wiele pszczół cudzych przylatuje*
 a.lot.of bees-GEN.PL somebody else's flies.in-3SG.PRES
 ‘a lot of somebody else’s bees fly in’ (Miechowita and Glager 1535)
- b. *potonęło koni niemało*
 drowned-3SG.PAST.PERF horses-GEN.PL quite a lot
 ‘quite a lot of horses drowned’ (Gwagnin 1611)
- c. *było sto koni*
 was-3SG.PAST hundred horses-GEN.PL
 ‘there were hundred horses’ (Paprocki 1584)
- d. *tysiąc wszystkich ludzi poszło*
 thousand all-GEN.PL people GEN.PL went-3SG.PAST
 ‘all thousand people went’ (Potocki [1670] 1924)

Higher numerals, multiples of 10, also quite early (in the 16th c.) started to appear with singular neuter verbs (Siuciak 2008: 185), e.g.:

- (135) *miedzy innymi było siedemdziesiąt mężow*
 among others was-3SG.PAST seventy men-GEN.PL
 ‘there were seventy men among others’ (Paprocki 1584)

Although the usage of singular neuter was earlier adapted in phrases with expressions 50-90 in comparison to 20-40 which were still found with plural verbs in the 16th c.,

⁸⁹ The origin of a singular neuter form of a verb can be traced back to the earliest form of *sto* as a neuter noun. In the case of lexemes *mało/dużo* singular neuter is also explained by the fact they used to be neuter nouns (Szober 1928: 99).

plural forms were observed on regular basis up to the 19th c. first with animate masculine nouns and then with masculine personal (Siuciak 2008: 186), e.g.:

- (136) a. *osiemdziesiąt Hiszpanów zrobili ucieczkę w nocy*
 eighty Spaniards-GEN.PL made-3PL.PAST escape in night
 ‘eighty Spaniards escaped at night’ (Mroziński [1819]1858)
- b. *czterdzieści Biskupow iemu poddanych do Papieża się*
 forty bishops-GEN.PL him subject to Pope REF
obrocili
 turned-3PL.PAST
 ‘forty bishops subject to him turned to the Pope’ (Cichowski 1692)

The final establishing of singular neuter form of verbs accompanied by phrases quantified by higher numerals took place in the 19th c. when according to some linguists (cf. Bajerowa 2000), formal agreement replaced semantic (Siuciak 2008: 187).

2.9. Conclusion

In the discussion of numeral systems, both in Old English and in the history of Polish, numerous interesting properties have arisen which are characteristic of cardinal numerals. Although, the direction of development in these languages seems to be different, features that appeared may point to some properties shared by numerals as a category in general, irrespective of a language. Both Old English and Polish numerals are subject to the same arithmetic operations, i.e. addition and multiplication, their inflectional paradigms differ depending on their value, and they present similar behavior depending on the syntactic context they are found in, i.e. they either assume congruent forms with the modified nouns, or act as elements governing the assignment of case to the noun. Despite the fact that the last two attributes are met in different contexts, e.g. in Old English a numeral agrees with a noun in case and gender when its value does not exceed 19 and Genitive case is assigned to the noun in partitive constructions and by numerals 20 and higher, while in Polish congruency is achieved when the non-virile noun is quantified by numerals from 2 to 4 and Genitive of quantification is found in phrases with numerals 5 onwards or with lower ones modifying virile nouns, the general pattern that emerges in these languages implies that

numerals, beyond features specific to given languages, have qualities that distinguish them from other categories. Additionally, a dual status of numeral 1 in both languages and evidence for complex numerals as if consisting of separate syntactic units capable of assigning different case to the modified noun demonstrate another common platform of comparison between these two numeral systems. Yet, apart from the similarities, there were also some other important aspects that contributed to the shape of contemporary cardinal numerals which did not run parallel in discussed languages, i.e. the presence and loss of a dual number in Polish, establishing masculine personal in plural as a distinct gender and emerging new case syncretisms that have modeled a present-day declension of numerals.

Chapter 3: Structure of the numerically quantified phrases and intraphrasal relations between their elements.

3.1. Introduction

The structure of nominal phrases has been a topic of numerous debates, especially since the introduction of the proposal that the head of the nominal phrase is a determiner, i.e. D occupied by the definite article taking NP as its complement (Szabolcsi's 1983, 1994; Abney's 1987; Fukui and Speas 1986; Horrocks and Stavrou 1987⁹⁰; Loebel 1989, 1993; Stowell 1991; Longobardi 1994 and Lyons 1999 among others). The hypothesis that a functional element, the D head, projects the nominal phrase was put forward to highlight the parallelism between clauses (IPs or CPs) and nominal phrases (DPs) as well as for the need of a richer structure for nominals providing explanation for various word orders within nominal phrases. First of all, DP was juxtaposed with CP as its head, i.e. D, just like C, turned its complement into an argument. For proponents of the DP structure, the category D realized by the definite article was necessary to change the NP into an argument. Such a view was presented, e.g. by Longobardi (1994) analyzing Italian nominal phrases and claiming that the article functions as a subordinator saturating the predicate, that is a bare noun. Similarly, Higginbotham (1985) emphasized that the relation between the article and the noun can be compared to the one between the verb and its object.⁹¹ Along with the presence of the definite article in the position of D used for the interpretative reasons Giusti (1997, 2002) argued that the

⁹⁰ Horrocks and Stavrou (1987) have actually postulated the Article Phrase.

⁹¹ According to Higginbotham (1985) the role of the article in saturating the role of a noun is performed in languages without definite articles by the case morphology.

definite article as a functional head is only one way of providing referential interpretation to the nominal phrase. Due to *the principle of economy of lexical insertion* stating that:

- (137) A functional projection must be licensed at all levels of representation by
- i. making the specifier visible
 - ii. making the head visible,

(Dimitrova-Vulchanowa and Giusti 1998: 346, Giusti 2002: 70)

Demonstratives as referential expressions can be inserted in the specifier position of DP ensuring the same interpretation as definite articles.⁹² The problem of complementary distribution of articles and demonstratives suggesting that they occupy the same position was also solved by this principle assuming that conditions (i.), i.e. making the specifier visible, and (ii.), i.e. making the head visible, are disjunctive (Giusti 2002: 73).⁹³

In Lyons (1999), on the other hand, the D head was associated with the notion of *definiteness* viewed as a universal semantic or pragmatic property grammatically realized on D in a form of interpretable or uninterpretable feature [DEF].⁹⁴ Moreover, he claimed that definiteness can be realized in languages differently and it is their idiosyncratic property. What follows, the occurrence of a DP was tantamount to the presence of the definite article (Lyons 1999: 323).

The introduction of a DP in the context of similarities between clauses and nominal phrases was also advocated by Grimshaw (1991) and Riemsdijk (1998) who proposed the notion of *the extended projection* of the noun. Nominal phrases, NPs, similarly to VPs are dominated by the functional projections, DP and IP/CP respectively. Consequently, the DP and IP/CP are the extended projections of lexical heads.

The other argument for a DP structure was drawn from different positions of a noun with respect to various elements of the nominal phrase which led to the

⁹³ Complementary distribution of articles and demonstratives can be accounted for by the version of a *doubly-filled complementizer filter* (Chomsky and Lasnik 1997) according to which the specifier of CP and the head C cannot be simultaneously filled.

⁹⁴ In fact, for Lyons (1999) the DP was actually the *Definiteness Phrase*.

postulation of an additional projection above NP providing place for a moved nominal head. The N-D movement was proposed for languages in which the noun was found to precede the article or other determiners, e.g. in Norwegian (Taraldsen 1991), or in Italian (Longobardi 1994). Apart from the head movement, the analysis of phrasal movement in the nominal domain, i.e. movement of focused or interrogative elements analyzed in Greek (Horrocks and Stavrou 1987) as comparable to the movement to the specifier of CP was put forward as yet another argument for the presence of a functional projection DP.

After the introduction of various proposals regarding the structure of the nominal phrase being the projection of a functional head, D, the discussion has centered on the issue of the universality of the DP hypothesis. The subject of disputes has been the question of whether in languages lacking a definite article, thus when the functional head D has no morphological realization, it is legitimate to postulate DP. Over the years this question has given rise to two camps, i.e. advocates of the so-called *universal DP hypothesis* according to which the nominal phrase without exception is a projection of a functional head D or a *parameterized DP hypothesis* in which depending on the presence or absence of articles in a given language a nominal phrase can be DP or NP. Despite the abundance of analyses opting for one stance or another, so far no conclusive position has been presented that could end the discussion. Apart from the unresolved issue regarding the DP or NP status of nominal phrases, another problem that seems to provide material for further discussions is the structure of nominal phrases quantified by numerals and numerical expressions. In this case, the problematic aspect is the choice of the head between the noun or the quantifier, which in different cases seem to be the locus of morphosyntactic features. In Old English and in Slavic languages such as Polish, there is a noticeable tendency for lower numerals to agree in gender and case with the modified nouns whereas the higher numerals assign Genitive to the noun. This discrepancy has led to analyses which not only admit the possibility of instating different heads depending on the type of a numeral quantifying the noun, i.e. the noun when it is modified by lower numerals and the quantifier when it assigns Genitive, but also to establishing different case assigning properties to numerals. The final point of contention is the adjectival modification in numerically quantified nominal phrases which may refer to the modification of a noun or of a numeral depending on its position in the phrase. In the following sections of this chapter I focus on addressing issues regarding the DP hypothesis for articleless languages arguing for

the universality of DP (section 3.2.). Moreover, the structure of numerically quantified phrases is analyzed, i.e. attention is given to the headness dilemma and case assignment by numerals (section 3.3.). In section (3.4.) I present the new idea of case which does no longer belong to the feature matrix of lexical and functional categories but it is represented in the syntactic structure and defined under structural terms. Particular cases found in a given language are heads of their own projections topped with the so-called *Kase Phrase* (KP). The split KP and case as a terminal node was proposed by Caha (2009, 2010) and used to account for case syncretisms in various languages. His analysis being a part of a novel approach to grammar, nanosyntax, has become a starting point for my proposal in which cases are projections within the extended projection of a noun. What follows, I assume that case assignment is a specifier-head relation between the noun and a case feature, here taken to be a head. Consequently, acquiring case by a nominal element or/and its modifiers proceeds through a movement to the relevant position within KP. Applying this mechanism to numerically quantified phrases in which the numeral and a modified noun bear cases of different values allows treating both lower and higher numerals as a uniform category occupying the same position in the syntactic tree. Moreover, the movement theory of case seems to provide justification for case patterns within phrases with higher numerals in structural and oblique case positions as well as accounts for word order and case variation among adjectives and demonstratives co-occurring with phrases containing numerals. Finally, the approach presented facilitates the explanation of agreement patterns between the numerically quantified subjects and the predicate.

3.2. DP hypothesis and articleless languages

Abney's proposal (1987) regarding the structure of nominal phrases has initiated a discussion about the type of a head that projects the nominal phrase. The analysis of properties of possessive-gerund constructions in English and symmetries between the clauses headed by the functional head INFL have resulted in the introduction of a D-element that projects the nominal phrase. Szabolcsi (1983) presented the idea that a Hungarian NP is headed by INFL element, similarly to sentences. Abney (1987) developed this thought postulating Determiner as the head of a nominal phrase, which was later adopted by Szabolcsi (1994) in the analysis of Hungarian DPs. Although for

both English (Abney 1987) and Hungarian (Szabolcsi 1994) the same functional element was introduced to head nominal phrases there were some differences in their approaches, e.g. Szabolcsi (1994) assumed that DP was parallel to CP and not IP as Abney (1987) proposed, and only articles and not all determiners could become instantiations of D according to Szabolcsi (1994) and contra Abney (1987). Szabolcsi (1994) analyzed a Hungarian phrase postulating that it is, in fact, a Determiner Phrase.⁹⁵ Another significant contribution to the structure of nominals was made by Longobardi (1994), who on the basis of Italian, showed that even in the absence of the definite article, the noun has to be introduced by the functional element. His assumptions have been based on the observations that Romance bare singular nouns do not appear in argument positions, e.g. (138a), as well on the fact that mass and plural nouns, despite being ungrammatical in subject positions, are legitimate in intermediate argument positions, e.g. (138b) (Longobardi 1994: 616).

- (138) a. **Acqua viene giù dale colline.*
 water comes down from the hills
 ‘Water comes down from the hills.’
- b. *Viene giù acqua dale colline.*
 comes down water from the hills
 ‘There comes down water from the hills.’

The presence of a definite (or indefinite) article in the case of singular countable nouns was necessary to turn them into arguments according to (139) (Longobardi (1994: 615).

- (139) A “nominal expression” is an argument only if it is introduced by a category D.

⁹⁵ Apart from different functional projections present in nominals literature abounds in analyses of particular languages in which attempts have been made to either prove the presence of a DP projection, e.g. Bašić (2004, 2007) for Serbo-Croatian, Leko (1999) for Bosnian, Rappaport (2002), Pereltsvaig (2006, 2007) for Russian, Migdalski (2001, 2003), Rutkowski (2002a, 2007), Linde-Usiekniewicz and Rutkowski (2006) for Polish. On a more extensive discussion of DP see, e.g. Bernstein (2001) and references cited therein.

A phonetically empty D-head, on the other hand, postulated for mass and plural nouns, has been a reason for the unavailability of such expressions in the subject positions because the D-head has been left ungoverned. The government issues, however, has not arisen in the intermediate argument positions, therefore mass and plural nouns could appear there. A third reason for a DP projection as discussed by Longobardi (1994: 621ff.) was a word order of a proper noun and modifiers when the article was present. In examples in which the definite article accompanies a proper name, the possessive adjective either occurs between the determiner and the noun, e.g. (140a) or follows the noun, e.g. (140b). Yet, in the other phrase, i.e. when the definite article is absent e.g. (140c), the same modifier follows the noun (Longobardi 1994: 623).

- (140) a. *Il mio Gianni*
 the my Gianni
 b. *Il Gianni mio*
 the Gianni my
 c. *Gianni mio/*mio Gianni*
 Gianni my / my Gianni

The variation in a word order in Italian was explained via N-D movement of a proper name. The N-D movement was also proposed for other languages, e.g. for Semitic by Ritter (1989), Ouhalla (1988) or Siloni (1990), for Scandinavian (Taraldsen 1990) or Romanian (Grosu 1988).⁹⁶ The views on the structure of nominals promoting the DP as introduced in the 80s and 90s have been gradually complemented with other developments in the architecture of nominal phrases. What follows, the nominal projections have been enriched with a Number Phrase, e.g. Ritter (1993) and Carstens (2000), a Gender Phrase, e.g. Picallo (2008), or a Possessive Phrase, e.g. Longobardi (2001). Yet, despite empirical evidence and theoretical support for the extended projection of a noun, a nominal structure as a projection of a functional element has been immediately confronted with the opponents of the DP hypothesis. In the course of numerous analyses some arguments have arisen according to which DP cannot be claimed to be a universal projection of nominal phrases as D does not occur in languages without articles. The absence of the definite article and resulting

⁹⁶ References cited from Longobardi (1994: 611).

consequences have become the major argument against the universality of the DP hypothesis which has been discussed in Corver (1990, 1992), Zlatić (1998), Willim (2000) and numerous works by Bošković (2005, 2008, 2009, 2011, 2012, in press a, in press b). In the following parts of this section, I briefly discuss stance presented by adversaries of the *universal DP hypothesis*, then I move to analyses supporting the universality of a DP projection. As debates on the presence or absence of a DP projection involve discussions of Slavic languages Polish including, in the final part I focus on Old English which also belongs to articleless languages. Just like in the case of Slavic languages, contrary to popular opinion, it is shown that an Old English nominals cannot be bare NPs.

3.2.1. *Universal DP hypothesis and its descriptive adequacy*

In different approaches to the structure of a nominal phrase the most significant ones are those arguing for either one universal nominal projection with a D-head and those postulating that lack of a phonological exponent in the position of a functional head becomes a source of differences between languages representing each type. A wide range of analyses is built around Serbo-Croatian, a South-Slavic language, in which attempts have been made to prove that there are much more differences between languages with and without articles which cannot be attributed only to the presence or absence of elements in a position of a functional head projecting a nominal phrase, therefore for these languages, i.e. without articles, NP instead of DP should be established.

Some of the frequently quoted arguments against the *universal DP hypothesis* include the so-called Zwicky's test (1985), the unavailability of left-branch extraction (hence LBE) in languages with articles and phasal status of DP phrases as opposed to NPs. Apart from these Bošković (2005, 2008, 2009, 2011, 2012, in press a, in press b) in his numerous works demonstrates various evidence from different Slavic languages that is supposed to show that nominal projections are not uniform across languages. Starting from Zwicky's test (1985) as discussed by Zlatić (1998) and Petrović (2011), Slavic nominal phrases cannot be DPs as their heads, i.e. Ds, taking NPs as complements do not pass the 'headness' test as proposed by Zwicky (1985). Criteria taken into account while determining the head include:

- i. the morphosyntactic locus
- ii. the determinant of concord and a governor
- iii. the obligatory constituent
- iv. the distributional equivalent⁹⁷
- v. the semantic argument
- vi. the subcategorizand⁹⁸

The element being the morphosyntactic locus bears inflectional features, for instance, phi-features such as number and gender found on a noun. In consequence, such an element determines the concord, i.e. it ensures that appropriate features are realized on other constituents, e.g. number and gender of a noun appearing on its modifiers such as adjectives. Moreover, being the distributional equivalent means that a given element can stand for the whole constituent. Finally, the semantic argument is defined as the element that provides the interpretation of the noun phrase, in which case it is the noun. The last point, however, according to which the head is a subcategorisand, i.e. a lexically subcategorized constituent, indicates that the head is a determiner (Zwicky 1985: 4ff.). These tests, applied to the string *determiner + noun* points to the noun as the head of a noun phrase. They have also been used by Zlatić (1998) to show that in Serbo-Croatian it is the noun that can be attributed with these properties and not a determiner, e.g. features such as gender, number or animacy are located on a noun and not on a determiner and, in consequence, it is the noun that triggers concord between the determiner and the noun and not the determiner. Moreover, as determiners are optional the whole phrase has a distribution as a noun. As a result the test points to the noun as the head. Similarly, Petrović (2011) uses criteria enumerated by Zwicky (1985), to prove the NP status of Serbo-Croatian nominal phrases. Although it is difficult to deny the validity of proposed tests, it seems that in a juxtaposition of a lexical and a functional element, i.e. the noun and the determiner, especially in a situation in which the head is defined through the prism of morphosyntactic features, i.e. through the criterion (i), i.e. the morphosyntactic locus, and the resulting from it criteria (ii), i.e. the

⁹⁷ For a further discussion of Zwicky's test see Corbett and Fraser (1993).

⁹⁸ *Subcategorizand* is a term used by Zwicky to define a lexical category subcategorized with respect to its sister constituents.

determinant of concord and a governor and (iii), i.e. the obligatory constituent, it is always the lexical element that ranks as a head.⁹⁹

Even though the argument over NP versus DP status of nominal phrases in the light of Zwicky's tests scales in favor of adversaries of the DP hypothesis, it does not entirely exclude the possibility of a presence of a DP projection in the architecture of nominals. As proposed by Grimshaw (1991) and further discussed by Riemsdijk (1998), the lexical head is associated with a functional head which has the same categorial status. This functional head, then, constitutes the extended projection of the lexical head (Grimshaw 1991). Riemsdijk (1998), in his discussion of the notion of endocentricity, points to the fact that with the introduction of functional heads, when there are two projections, i.e. NP and DP, the (nominal) phrase is no longer endocentric as each projection with its maximal node has its own head which cannot be determined for the whole phrase (Riemsdijk 1998: 3). Thus, the dispute over the D or N as the nominal head seems to be spurious. Yet, the question over the presence or absence of a DP in the structure of nominals, especially in articleless languages was still a subject of interest. This time, the aspect taken into consideration while establishing the structure of nominals was left-branch extraction, i.e. movement of the leftmost constituent of the NP outside this NP. One of the early analysis of left-branch extraction was presented by Corver (1990, 1992) in view of *Empty Category Principle* (hence ECP) and the *Subjacency Condition*. His analysis was based on Chomsky's (1986) system utilizing the idea of a barrier and a proper government of empty non-pronominal categories, i.e. NP traces and variables. According to Chomsky (1986), movement is constrained in such a way that a moving constituent cannot cross more than one barrier, where a barrier is defined in (141):

- (141) A is a **barrier** for B iff (i.) or (ii.):
- i. A immediately dominates C, C is a *Blocking Category* for C
 - ii. A is a *Blocking Category* for B, A ≠ IP

⁹⁹ It seems that Zwicky's test could work only when heads of the same type are analyzed, i.e. lexical. It definitely gives expected results when the adjective and the noun are compared. Interestingly, when Slavic numerals and nouns are examined, again, it does not provide any conclusive answer to the problem of determining the head, as depending on the criterion it can be either the numeral or the noun.

Blocking Category (BC)

D is a Blocking Category for E iff D dominates E and it is not L-marked, i.e. it is not theta-marked by a lexical head.

Moreover, traces left by a moved element must be properly governed, which is regulated by the ECP. A definition of a proper government based on Chomsky (1986) is given below.

- (142) A trace of movement is properly governed iff
- i. it is **antecedent-governed**, where A antecedent-governs B iff A binds B and no barrier intervenes on the path between A and B, or
 - ii. it is **lexically governed**, where A is a lexical head governing its complement.

Considering the essentials of Chomsky's analysis, Corver (1990, 1992) proposed that the ungrammaticality of the extraction of adjectives in languages such as English could be attributed to the presence of a DP projection which becomes a barrier for government. Specifically, the adjective, being an NP adjunct moves out of NP which is not L-marked by a D-head, hence a blocking category and a barrier. Then, depending on whether the moved adjectival constituent passed through the specifier of DP or not the weak or strong violation of subjacency would result as DP constitutes a barrier through the inheritance from NP. Moreover, the DP layer, the immediate projection of D precisely, yields the *Minimality Barrier* which is defined as the immediate projection of a head that can serve as a closer, potential governor and thus a barrier for the antecedent government. The non-extractability of adjectives from nominals containing DPs, is compared by Corver to the configuration with *that*-trace effect in which the lexically filled C becomes a barrier for antecedent government of a trace left by the extracted subject, e.g. (143a) with the extracted subject, and (143b) with the extracted adjective:

- (143) a. *Who_i do you think [_{CP} t_i' [_C that [_{IP} t_i will win the Football Championship]]]
- b. *Big_i he finally understood [_{DP} [_{D'} the [_{NP} t_i [_{NP} [_{N'} plan]]]]]]

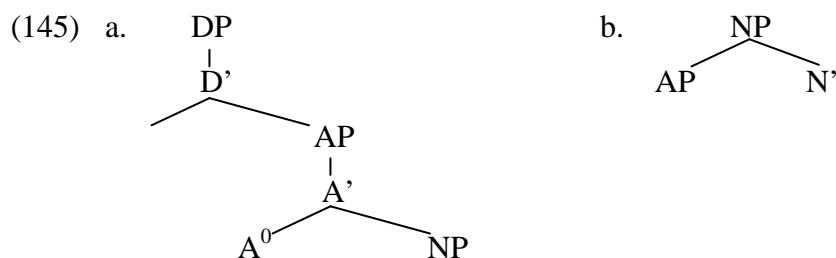
Yet, there appears a problem with the parallelism between these two constructions as the empty C head ceases to be a barrier as example (144a) shows, whereas null D does not improve the ungrammatical structure, e.g. (144b).

- (144) a. Who_i do you think [_{CP} t_i [_C e [_{IP} t_i will win the Football Championship]]]
 b. *Smart_i she met [_{DP} [_{D'} D [_{NP} t_i [_{NP} [_{N'} students]]]]]

Therefore, Corver (1990, 1992) had to assume that D, regardless of being phonologically null or morphologically realized invariably constitutes a minimality barrier contrary to structures with the empty C head. In what follows, languages that allow the adjectival Left Branch Extraction and obey the ECP cannot feature a DP layer. Although the analysis presented by Corver (1990, 1992) attempted to explain the LBE on the basis of the same mechanism as it was employed in the case of a different functional head, i.e. C, in the final account of these phenomena, i.e. *Minimality Barriers* constituted by D or C, an additional assumption, not supported by any principle of grammar, had to be added. In consequence, postulation of a DP layer only for languages with overt definite articles on the basis of *The Empty Category Principle* did not seem to be the best justified account.

Another analysis of a structure of a nominal phrase considering the availability of left-branch extraction is advocated by Bošković (2005, 2008, 2009, 2011, 2012, in press a, in press b) who strongly opposes the *universal DP hypothesis* on the grounds of a position of adjectives and a phase-based locality (2005, 2008). In both approaches the major claim is that articleless languages do not feature a DP projection.

Following Abney's (1987) proposal, Bošković (2005) proposes that nominal phrases in different languages can have either the structure (145a) or (145b), e.g.:



In the case of DPs the adjective cannot be extracted as it is not a constituent. In example (b), on the other hand, the adjectival phrase sits in the specifier of a noun phrase and thus can freely move. The difference between languages with and without articles boils down to the position of adjectives in the nominal structure, which might be different depending on the assumed approach. If, for example, adjectives are situated in specifier positions of functional heads just like in the cartographic approach presented in Cinque (1999) and Scott (2002), the problem of movement of a non-constituent disappears. Scott (2002), on the basis of Cinque's (1999) proposal regarding the distribution of adverbs, argues for the structure of nominal phrases in which adjectives are no longer adjuncts of the NP but specifiers of distinct functional projections. Following Cinque (1999) who introduced the so-called *Universal Hierarchy of Clausal Functional Projections* according to which adverbs are located in the specifiers of clausal-functional projections (FPs) arranged in a fixed order, Scott (2002) applies the idea of a universal hierarchy of empty functional heads whose specifier positions are semantically related to these heads to adjectival modification, e.g. the adjective *Polish* occupies the specifier position of a *Nationality/Origin Phrase*, the adjective *long* sits in the specifier of a *Size Phrase*, and *yellow* in the specifier of *Color Phrase*.¹⁰⁰ The reason behind extending Cinque's analysis to adjectives, is that it does not only explain the ordering restrictions on stacked adjectives, but it also maps the hierarchical structure to the linear order of adjectives. Moreover, the semantic interpretation of adjectives can be attributed to their position in the structure and this way can be dissociated from the pragmatic component of grammar, e.g. the adjective *green* meaning color is base-generated in the specifier position of *Color Phrase*, yet, when it means *inexperienced* it is placed in the specifier of a *Subjective Comment Phrase*. The difference in position and meaning is reflected in examples below (Scott 2002: 107).

- (146) a. *A young green [=color] Martian*
 b. *A green [=inexperienced] young writer*

¹⁰⁰ The order of functional projections hosting adjectives in Scott (2002) is based on the list of the Adjectival Ordering Restrictions as proposed by Kingsbury and Wellman (1986), i.e. SUBJECTIVE COMMENT > SIZE > AGE > SHAPE > COLOR > NATIONALITY > MATERIAL > COMPOUND ELEMENT > NOUN. These categories can be further decomposed. Moreover, the order of adjectives may slightly vary depending on a language, or a particular adjective may belong to a different semantic class in different languages (Scott 2002: 110).

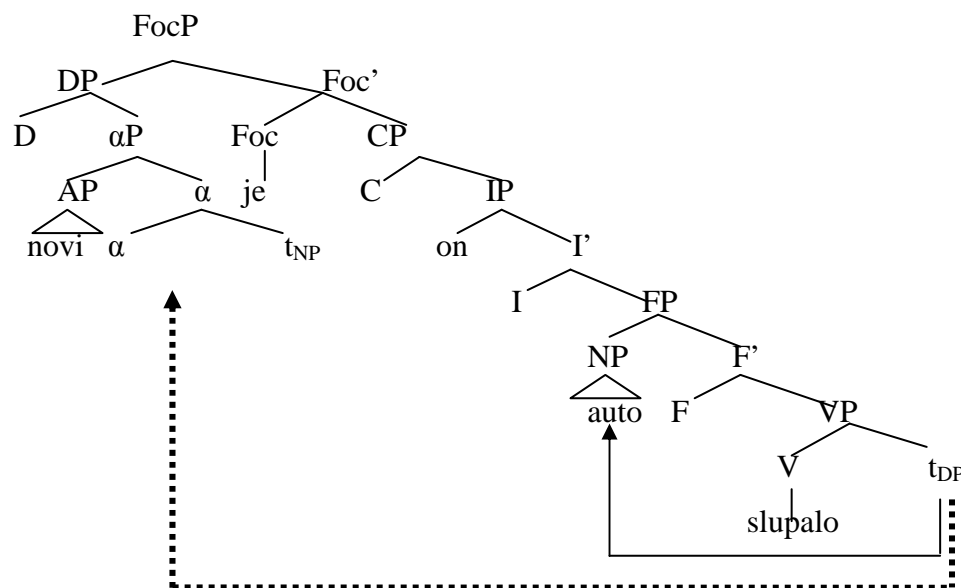
The adjective *green* can be interpreted as a color or be a subjective comment. Depending on its meaning it is placed in the distinct position in a nominal phrase which is reflected in its position in reference to the other adjective, i.e. *young*. Such an order can be explained via the sequence of functional heads which provides places for adjectives belonging to particular semantic classes (Scott 2002: 96-108). Additionally, rejection of the adjunction hypothesis allows one to account for the agreement in phi-features between adjectives and nouns in languages in which case, number and gender are marked on these categories as placing adjectives in the specifier position creates the configuration in which checking of features of the element in the specifier, i.e. the adjective, and the head, i.e. the noun, can be accomplished (Scott 2002: 97). The approach to the architecture of a nominal phrase in which adjectives are no longer adjuncts but specifiers of dedicated functional projections does no longer provide an argument for differences in extractability of adjectives in languages. Although Bošković (2009: ft.15) rejects such an analysis of adjectives claiming that orders of adjectives can be filtered out by semantics without involving the phrase structure, the mere possibility that the placement of adjectives can be a subject to variation, i.e. they can be treated as adjuncts or hosted in specifier positions of functional heads, weakens his proposal of LBE based on exactly this premise as the major obstacle to adjectival extraction, i.e. movement of a non-constituent, disappears.

The other proposal regarding LBE, by Bošković (2005, 2012 and in press a), refers to the phase theory and the notion of anti-locality as discussed by Abels (2003) and Grohmann (2003) among others. The analyses by Bošković are built upon Chomsky's phase-based system (2001) and some aspects of locality of movement. The starting point for the analysis is a distinction among nominal phrases in languages having definite articles such as English and those lacking them, i.e. Serbo-Croatian. Initially, i.e. in Bošković (2005), the nominal phrase in a former case is a DP whereas in a latter it is an NP. Moreover, only DPs are considered to be phases and not NPs, which together with *PIC Phase Impenetrability Condition*, a requirement in a phase-based system (Chomsky 2001) according to which the element moving outside the phase must pass its head or specifier as only these positions are available for movement to the outside of the phase, explains the extractability of adjectives in languages without articles, hence missing a DP layer. Assuming that adjectives are NP-adjoined, they can freely move when there is no DP and because the NP does not constitute a phase. Such a state of affairs is indeed found in Serbo-Croatian, or other Slavic languages such as

Polish. In English, on the other hand, the DP is present as the language features a definite article and the extraction of the adjective, here also adjoined to the NP, is not possible. The immobility of the adjective is a result of a previously mentioned *PIC* that forces movement of an element through the edge of a phase defined as a head or a specifier of a phrase with a phasal status, and a version of anti-locality which prohibits movement that is too local. The anti-locality hypothesis excludes movement that creates a dependency with two positions being too close to each other. In Abels (2003), this constraint bans movement from the complement to the specifier position. This prohibition is a part of a *Last Resort* condition stating that movement happens for a reason and that reason be a new feature checking relation. Now considering that the head-complement relation is a prototypical syntactic relation in which features can be checked, there is no rationale behind complement-to-specifier movement. In consequence, the *Anti-Locality Constraint* together with *PIC* becomes a reason for immobility of phasal complements, i.e. the complement of a phasal head cannot evacuate the domain a phase head as this movement would have to proceed through the specifier position, which is ruled out. In Grohmann's (2003) terms, the anti-locality means that movement cannot take place in the same domain, where domain is understood as one of three layers, i.e. thematic, agreement and discourse layer, that are distinguished within the clausal or nominal structure. Finally, Bošković (2005) utilizes the idea of anti-locality arguing that a licit step of movement must cross a maximal projection and not just a segment. Taking these into account, i.e. *PIC* and the anti-locality hypothesis as defined by Abels (2003), together with a requirement on movement crossing at least one phasal boundry (Bošković 2005), results in that that adjectives in languages such as English, i.e. having DP, cannot move. The phasal status of a DP ensures that movement proceeds through specDP, yet, moving from the NP-adjoined position through the edge of DP violates the anti-locality as no phasal boundry has been crossed. Therefore, such a movement is illicit. In articleless languages, so those lacking DPs, this issue does not arise as NP is not a phase. The analysis by Bošković (2005) elaborating on the LBE framed in the theory of phases provides quite strong grounds for a parameterized DP hypothesis. Yet, if we make some amendments not only to the structure of a nominal phrase, precisely to the position of adjectives, but also if we find a way to circumvent locality issues imposed by *PIC*, it may be possible to postulate DP for both types of languages, and, simultaneously, account for the extraction facts without resorting to two different structures, i.e. DP and NP. One such

option is explored by Rappaport (2001) who places the source of variation between article and articleless languages in the presence or absence of the EPP feature on the D head. Taking that in both cases the nominal phrase is a DP and a phase, movement out of DP must proceed through specDP. As adjectives can be extracted only in Polish and not in English, the major obstacle for their dislocation in English is the unavailability of specDP as an escape hatch for subsequent movement which is caused by the lack of the EPP feature on D. Another approach to the LBE is pursued by Bašić (2004) and further developed in Bašić (2007). In her account the LBE is viewed as a remnant movement, which allows her to account for a crosslinguistic variation without resorting to structural differences of a nominal phrase. Bašić (2004, 2007) proposes that the movement of prenominal elements out of a nominal phrase which, irrespective of the presence or absence of determiners in a given language, is a DP, takes place in two steps, i.e. movement of an NP out of DP followed by the remnant movement of a DP to the initial position.¹⁰¹ The exemplary derivation is shown on the basis of a Serbian example in (147) from Bašić (2007: 3).

- (147) *Novi je on auto slupalo.*
 new aux he car crashed
 'He crashed the new car.'



¹⁰¹ Advantages of a remnant movement over direct extraction approaches are discussed by Bašić (2007: 4-6).

Here, the NP moves to the position preceding VP and then the remnant moves to the position above CP. The crosslinguistic differences in the availability of movement of prenominal elements out of a nominal phrase, however, amount to what phrase constitutes a phase in a given language and to the ban on the intermediate traces (Bašić 2007: 8). Although both in English and in Slavic languages the nominal phrase is a DP, it is claimed to be a phase only in English, perhaps due to the phonologically realized determiner in a position of a D head. In other languages, e.g. Slavic ones, which do not feature articles, the DP is not viewed as a phase. The consequence of a different status of nominal phrases is that in a case of a phase the additional condition on movement applies, i.e. *PIC*, when the extracted element must move through the specifier position of a phasal projection, DP. In this case that would be the first step of a derivation proposed by Bašić (2004, 2007) when the NP evacuates DP. Subsequently, the remnant DP containing a trace in its specifier position moves up. Unfortunately, this derivation is illicit as the trace left by the NP becomes unbound which excludes the left-branch extraction in languages with DP being phases.¹⁰² Such a scenario does not apply in Slavic languages where the DP is not a phase and therefore movement through the specifier position does not occur and, what follows, no intermediate traces are left unbound. This derivation not only accounts for the difference between languages having overt articles and without them but at the same time allows to preserve a uniform approach to the structure of nominal phrases. Importantly, it directly addresses two major issues raised by Bošković (2005), namely, left-branch extraction and the phasal status of nominal phrases in languages with phonologically present articles. The proposal in Bašić (2004, 2007) in an elegant way reconciles two major arguments of Bošković against the *universal DP hypothesis* with the presence of a D head across languages showing that the source of variation is not necessarily linked exclusively with the DP/NP status of nominal phrases and that features typical of each group of languages (with and without articles), e.g. the availability of left-branch extraction or the phasal status of nominal phrases in languages possessing articles, are still observed and explained without introduction of distinct projections, i.e. DPs and NPs.

The crosslinguistic analyses of a nominal projection in terms of its phasal status and the extractability of attributive adjectives is further developed in other works by Bošković (2012, in press a, in press b) in which DP in article languages is considered to

¹⁰² Intermediate traces in a successive cyclic movement cause no violation contrary to those in a remnant movement (Bašić 2007: 8 built on Müller 1998, 1999).

be a phase and in articleless languages NP (Bošković 2012). These differences in the phasal status of nominal projections are to account for the adjectival left branch extraction and other phenomena discussed in his work.¹⁰³ In English, a language with a definite article, the nominal phrase is a DP and a phase. This fact together with *PIC* and the antilocality hypothesis prohibits movement of the adjective out of DP. The adjective evacuating DP must move through its specifier position due to *PIC*, yet being the NP adjunct it fails to cross one phrasal boundary which goes against the anti-locality hypothesis. Consequently, extraction of adjectives is incorrect in languages such as English. In articleless languages, on the other hand, the DP is missing and the status of a phase is granted to the NP. Then, the adjective can freely move from its position as no restrictions introduced by *PIC* or antilocality are imposed. The phasal status of NP phrases is shown on examples from Serbo-Croatian disallowing deep LBE, i.e. the extraction of the adjective from the genitive complement of a noun, e.g. (148a) and the extraction of the genitive complement of a noun, e.g. (148b) Bošković (2012: 19).

- (148) a. **Pametnih_i on cijeni [NP [N' prijatelje [NP t_i [NP studenata]]]]*
 Smart he appreciates friends students
- b. **Ovog studenta sam pronašla [NP knjigu t_i]*
 this student_{GEN} am found book

¹⁰³ Bošković (2008, 2012) copiously discusses generalizations regarding languages with and without definite articles. Among numerous correlations between the presence/absence of a definite article in a language and a syntactic phenomena there are the following statements.

1. Only languages without articles may allow LBE.
2. Only languages without articles may allow adjunct extraction out of T(raditional)NP.
3. Only languages without articles may allow scrambling.
4. Multiple wh-fronting languages without articles do not display superiority effects.
5. Only languages with articles may allow clitic doubling.
6. Only languages with articles may allow the majority superlative reading.

Some other observations refer to the focus morphology, negative concord with complex negative constituents, quantifier scope, pro-drop, number morphology, focus adjacency, interpretation of possessors, classifiers and second position clitics (for a discussion of each generalization see Bošković (2012). Undoubtedly, work by Bošković is of a paramount importance not only for contrastive studies but also in finding correlations between various syntactic phenomena which could facilitate analyses of some debatable topics such as the DP/NP status of nominal phrases. Yet, lack of a detailed analysis showing a clear-cut connection between the presence/absence of a definite article and, in turn a DP in a given language, with each of these observations, seems to leave a room for analyses advocating the Universal DP Hypothesis. As still work has to be done to prove that these phenomena are exclusively related to the occurrence of a definite article tantamount to the presence of DP and that absolutely no other factor comes into play here, it does not seem to be completely erroneous to posit a DP for languages in which the D head is not occupied by a definite article. These observations indisputably link the presence of a definite article with some syntactic phenomena, but at the same time they do not rule out the possibility that there may be some other sources of language variation nor do they exclude analyses accounting for these differences but based on different premises, i.e. other than the appearance of a definite article.

‘Of this student I found the/a book.’

Although predictions concerning the NP as a phase are borne out on the basis of (148a) and (148b), they do not seem to provide exactly the same results in Polish. As long as the deep LBE is also illicit in Polish, e.g. (149a) and (149b), extraction of a genitive complement does not produce ill-formed structures, e.g. (149c) and (149d).

- (149) a. **Miłych nauczyciele lubią t rodziców uczniów.*
 nice teachers like t parents students_{GEN}
 *‘Nice teachers like parents of their students.’
- b. **Jakich nauczyciele lubią t rodziców uczniów?*
 what.kind teachers like t parents students_{GEN}
 *‘What kind do teachers like parents of their students?’
- c. *Tego studenta_i znalazłem [książkę t_i].*
 this student found.I book
 ‘I found a book of this student.’
- d. *Czego_i by [projektowanie t_i] przyniosło jej sławę i*
 what would designing brought her fame and
 pieniądze?
 money
 ‘Designing of what would bring her fame and money?’

Sentences (149c) and (149d) show that extraction considered ungrammatical in NP languages due to the antilocality hypothesis, i.e. the ban on movement of complements of phasal heads (Abels 2003), is, in fact, possible in Polish. These, in turn, suggests that either NP in Polish is not a phase or that there must be more structure between two nominals facilitating movement of the genitive complement. Yet, before rejecting the-NP-as-a-phase hypothesis for Polish, it is worth checking if there are some other reasons which could explain the extraction facts in Polish and at the same time preserve Bošković proposal. In sentence (149c), the extracted element instead of being analyzed as a genitive complement can be viewed as a possessive, in which case its movement out of NP stays in lines with Bošković (2012). In example (149d), on the other hand, the extracted genitive could be treated as a constituent bearing inherent case which again could serve as an explanation for the extraction facts. According to Bošković (2012:

ft.26, in press a, in press b), complements bearing an inherent case are equipped with more structure, i.e. the additional projection FP, which not only enables extraction out of NP, e.g. (150a), but also allows a deep LBE, e.g. (150b) from Serbo-Croatian (Bošković 2012: ft. 26, in press a).

- (150) a. *Čime_i ga je [(Jovanova) pretnja t_i] uplašila*
 what_{INST} him is Jovan's threat scared
 'The threat of what (by Jovan) scared him?'
 b. *Kakvom_i ga je uplašila pretnja [t_i smrću]?*
 what-kind-of him is scared threat death_{INST}
 'Of what kind of death did a threat scare him?'

The account with the inherent case, however, does not seem to be the right one for Polish, as the genitive complement is structural and not inherent. This conclusion is drawn from the fact that the noun *projektowanie* 'designing' is a deverbal noun from the verb *projektować* 'to design' assigning structural Accusative to its object which turns into Genitive under negation, e.g.:

- (151) a. *projektować ubrania*
 design clothes_{ACC}
 'to design clothes'
 b. *nie projektować ubrań*
 not design clothes_{GEN}
 'not to design clothes'

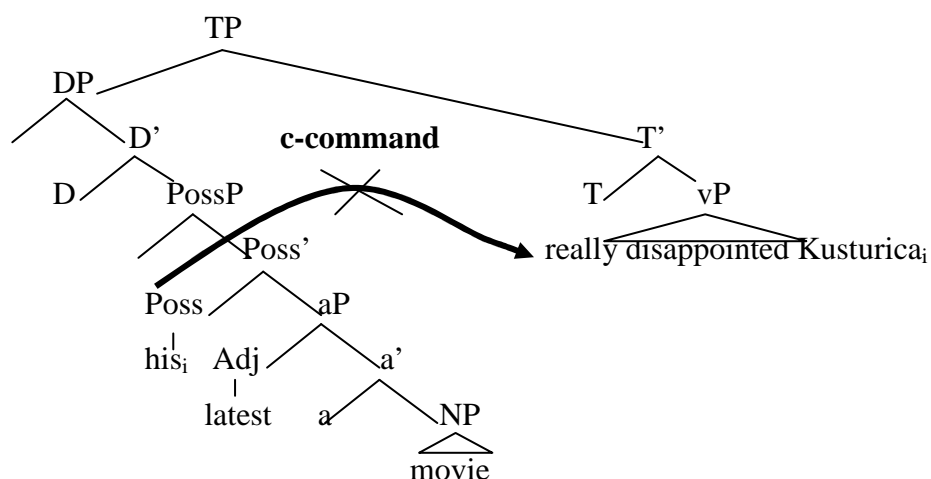
Moreover, nominal complements with inherent case allow deep LBE in Serbo-Croatian, as it was shown in (150b), which is disallowed in Polish, e.g. (152a), and (152b):

- (152) a. **Jakich [projektowanie [t sukien]] zajęło mu sporo*
 what designing dresses took him a.lot.of
czasu?
 time
 'Designing of what dresses took him a lot of time?'
 b. **Którego czytanie t listu zasmuciło Marię?*

which reading letter sadden Mary
 ‘Reading of which letter sadden Mary?’

Finally, the idea that a Polish nominal phrase, despite lacking articles, should not be viewed as a bare NP is additionally supported with c-command facts provided by Despić (2009, 2011a, 2011b) who contrasts nominal phrases in Serbo-Croatian and English. Considering that in English a nominal phrase is a DP and possessives are located in the specifier of PossP immediately dominated by DP, i.e. [DP [D [PossP [POSS [áP [ADJ [NP [N]]]]]]], they fail to c-command constituents outside the subject which allows for coindexation of the pronoun and the noun in (153a) and (153b), e.g.:

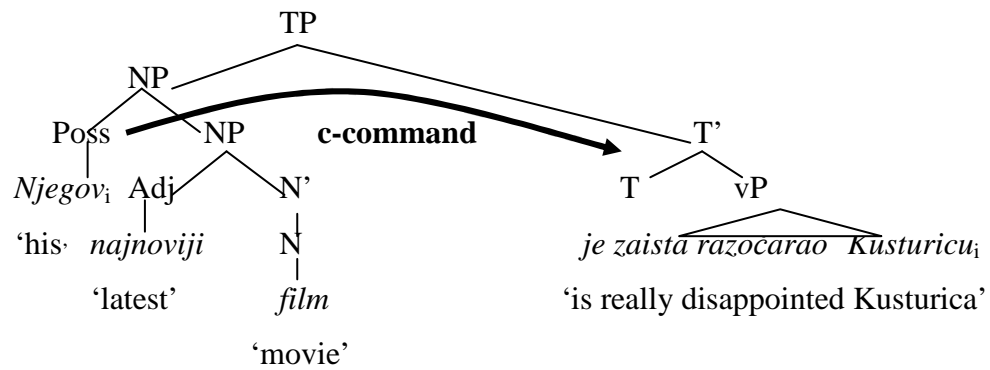
(153) a. *His_i latest movie really disappointed Kusturica_i.*



b. *Kusturica's_i latest movie really disappointed him_i*

Yet, the same examples in Serbo-Croatian are found ungrammatical, which is used by Bošković (2012) to argue for the NP status of nominal phrases in SC, e.g. (154a) and (154b)

(154) a. **Njegov_i najnoviji film je zaista razočarao Kusturicu_i.*
 his latest movie is really disappointed Kusturica
 ‘His_i latest movie really disappointed Kusturica_i.’



- b. **Kusturicini najnoviji film gai je zaista razočarao.*
 Kusturica's latest movie him is really disappointed
 'Kusturica's latest movie really disappointed him.'

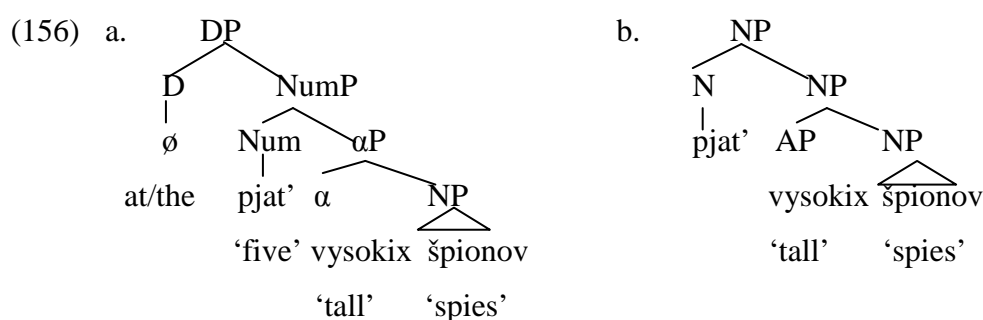
The same patterns should be also observed in Polish which similarly to Serbo-Croatian does not feature definite articles and consequently, as it is claimed by Bošković, a DP. Interestingly, parallel examples with possessives comply with the English rather than those in Serbo-Croatian implying that Polish nominal phrases must have a more elaborate structure that just NP with modifiers and possessives located in the NP adjunct positions, e.g.:

- (155) a. *Najnowszy film Kusturicy rozczarował go.*
 latest movie Kusturica's_i disappointed him_i
 'Kusturica's_i latest movie disappointed him_i.'
- b. *%Jego najnowszy film rozczarował Kusturicę.*
 his latest movie disappointed Kusturica
 'His latest movie disappointed Kusturica.'

Taking into account the following aspects, i.e. the nature of case of Polish genitive complements and ungrammatical examples with deep LBE, it is hard to maintain the stance arguing for the inherent nature of nominal complements. As there is no other substantial grounds for explanation of extraction facts in Polish what is left are two options, i.e. the one in which NP is simply not a phase, but in this case what else can be

granted this status, or a claim that there is indeed more structure within Polish nominal phrases. As pursuing the first option would lead us nothing closer to the solution of finding a more unified account of nominal phrases with and without articles, I would rather lean towards the option utilizing the idea of a richer architecture of nominal phrases in Polish, which has already been supported with the c-command facts discussed above. The topic of a more elaborate structure will be pursued in the subsequent sections in which I present the proposal regarding Polish nominals.

A different aspect taken into consideration while postulating the projection of nominal phrases refers to prenominal modifiers, e.g. demonstratives, possessors, adjectives and numerals and their position within the nominal projection. As Pereltsvaig (2007) shows on the basis of Russian, premodifiers should be placed within their own projections following the line of Cinque (1994; 1999) and Scott (2002) and not as adjuncts as it is proposed in the *parametrized DP hypothesis*. The adjunct status of all premodifiers neglects their properties and does not predict differences between them and their ordering (Pereltsveig 2007: 61). As adjunction is a free operation, the order of elements being merged in the process is not restricted contrary to what we expect from the premodifiers being merged within separate functional projections as it is proposed in the *universal DP hypothesis*. In such a structure of nominal phrases, i.e. the one in which different premodifiers are placed in their own functional projections, adjectives can be ordered as well as the distinction between light, i.e. those being the heads, and heavy modifiers, i.e. those being phrases, can be observed. Moreover, other premodifiers such as demonstratives, possessives and cardinality expressions are no longer put together with adjectives or nouns but they have their own projection (Pereltsveig 2007: 61), e.g.:



As it is presented in example (156a) (taken from Pereltsveig 2007: 60, ex. 1a and 1b), the application of a DP hypothesis, although with an empty D-head, allows to have a

more articulate structure of a nominal phrase containing different modifiers. In example (156b) however, both the numeral and the adjective are adjuncts of an NP. In Russian, despite lack of an overt article and what follows the proposed NP structure by the advocates of the *parametrized DP hypothesis*, it is, in fact, the structure in (a) that addresses properties of adjectives in Russian. Pereltsveig (2007) conducted a survey which revealed that Russian adjectives are ordered according to the Scott's (2002) hierarchy just like adjectives are ordered in English, language with overt articles.¹⁰⁴ Furthermore, a distinction between light, i.e. of X type, and heavy adjectives, i.e. of XP type, which are found in Russian is not captured by the bare NP structure and adjunction of modifiers as proposed by Bošković (2005). First of all, there is no strict correlation between the presence of articles in a language and the presence of light or heavy adjectives in a prenominal position, as heavy adjectives preceding nouns are found both in Bulgarian which has articles and Russian, an articleless language (Pereltsveig 2007: 67). Secondly, contrary to a bare NP structure proposed for Russian and a phrasal status of adjectives, evidence from approximate inversion which is a head movement being blocked by some adjectives, i.e. those which are heads, proves that adjectives in Russian cannot be analyzed only as NP adjuncts. This, in turn, supports the *universal DP hypothesis* which provides the adequate structure to host both light (heads) and heavy (phrasal) adjectives (Pereltsveig 2007: 69). When it comes to other premodifiers, Pereltsveig (2007) also examines cardinality expressions concluding that their properties do not allow to treat them as nouns. Firstly, different patterns of agreement in gender, number and case between the cardinal expression or a cardinal noun and modifying them adjectives show that these two, i.e. cardinal expressions and cardinal nouns, must belong to different categories, e.g.:

- (157) a. *celyx* *desjat'* *koktejlej*
 whole-GEN.PL ten-NUMERAL cocktails-GEN.PL
 'whole ten cocktails
- b. *celyj* *desjatok* *koktejlej*
 whole-ACC.SG.MASC ten-NOUN.MASC.ACC cocktails- GEN.PL
 'whole ten cocktails'

¹⁰⁴ Scott's hierarchy (2002) has been introduced in footnote 101.

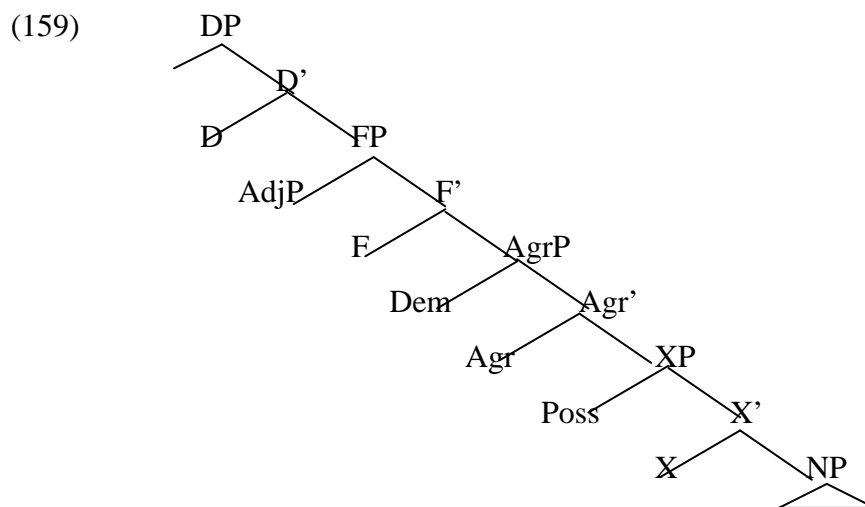
In Russian, the agreement occurs between the adjective and the main noun which is easily noticed in above examples. In (157a), the adjective agrees with the noun *cocktails* and in (157b) with the noun *ten*, which serves as an argument for not placing the numeral and the cardinal noun under one category (Pereltsveig 2007: 72). Moreover, the possibility of an approximate inversion with numerals and not cardinal nouns strongly suggests that these two cannot be both labeled as nouns, e.g.:

- (158) *James Bond vypil rjumok [desjat' /*desjatok]*
 James Bond drank-up glasses-GEN ten-NUMERAL /ten-NOUN
vodki vodka-GEN
 'James Bond drank up ten glasses of vodka.'

Finally, demonstratives and possessives are argued to be elements occupying the position of a head (D) and its specifier (specDP) instead of being adjectives adjoined to the NP (Pereltsveig 2007: 73-85). As a major argument Pereltsveig (2007) mentions the lack of morphological similarity between demonstratives or possessives and adjectives, challenges the argument that the occurrence of possessives in predicate positions in copular constructions, so in positions where adjectives are found, make possessives the adjectival category, and finally she analyzes modifiers of prenominal modifiers refuting the claim that the lack of adjectival modification makes them similar to adjectives.¹⁰⁵ Although the status of demonstratives and possessive pronouns is still a controversial issue in Slavic languages as they are often claimed to be adjectival (e.g. Bašić 2004 for Serbian, Progovac 1998: 167; Bošković 2005, 2008, 2009, 2011, 2012, in press a, in press b for Serbo-Croatian, Julien 2002 for Scandinavian, Zlatić 1998: 5), the common ground for these accounts is that they still assume the presence of DP for nominal phrases. A similar stance is also taken for Polish by Migdalski (2001) arguing for the adjectival nature of Polish demonstratives and possessive pronouns which as referential elements occupy the specifier position of a DP. Following Cambell (1996) and Giusti (1995, 2002) who attributes referential properties not to a definite article but to a specifier position of DP, Migdalski (2001) analyzes examples with demonstratives,

¹⁰⁵ One of the arguments of the proponents of the adjectival status of possessors and demonstratives in Russian is that these are not modified by adjectives just like other adjectives cannot be modified by adjectives. Although it is true, possessors and demonstratives cannot be modified by adverbs either and they do not allow complements which all in all do not make them the adjectival category (Pereltsveig 2007: 78).

possessives pronouns as well as genitival adjectives claiming that these elements are occupants of specDP which ensures their semantic referential interpretation. Although these elements are viewed as adjectival because they agree in phi-features, i.e. in number and gender, with the noun the modify, they are all base-generated in different positions. Adjectives are located in the specifier positions of functional heads as introduced by Cinque (1994) in order proposed by Scott (2002), demonstratives are placed in an AgrP which is lower than other projections containing adjectives and pronominal possessives occupies the position below demonstratives.¹⁰⁶



The additional evidence for the phasal status of demonstratives comes from ellipsis, e.g. (160), Migdalski 2001: 6).

- (160) *Chcę tego/tamtych.*
 want this/those
 ‘I want this/those.’

In example (300), the fact that demonstratives are not ellided suggests that they are not heads. Moreover, Migdalski (2001) provides examples from scrambling of adjectives in which demonstratives, being adjectival, block movement of the modifier, e.g. (161a) with a scrambled adjective and an example (161b) with a demonstrative impeding scrambling:

¹⁰⁶ Migdalski (2001) only briefly mentions the exact positions of modifiers in the nominal phrase. No explicit phrase marker is provided.

- (161) a. *Ładne kupiła kwiaty.*
 nice bought flowers
- b. *?*Ładne kupiła tamte kwiaty.*¹⁰⁷
 nice bought those flowers

Other candidates for the specifier of DP where they check their referential features are pronominal possessives and genitival adjectives. In the case of former, both the possessive and the demonstrative can co-occur which at first sight may pose a problem as they are both referential and they both must move to the specifier of DP which provides only one spot in a phrase, e.g. (Migdalski 2001: 7).

- (162) *ta moja nowa torebka*
 this_{FEM.NOM.SING} my_{FEM.NOM.SING} new_{FEM.NOM.SING} bag_{FEM.NOM.SING}
 ‘This new bag of mine.’

The potential complication, however, is overcome. First of all, demonstratives are described as elements with two sets of feature, i.e. [+/-referential] and [+deictic] whereas possessives encode [+referential] and [+deictic] features. Both the referential and deictic features are checked in specDP, yet when a demonstrative is [-referential] and [+deictic] it has an indefinite specific reading indicating more than one referent in the universe of discourse while with [+referential] and [+deictic] features it has deictic interpretation which pinpoints the uniqueness of the object denoted by the noun. According to Migdalski (2001), differences in reading are reflected in a position of the demonstrative and the possessive. When they both appear in the phrase, only a demonstrative moves to specDP as it is closer than a possessive. Then, however, the possessive cannot check its referential feature which as a result does not percolate to the whole phrase. Hence, the interpretation of a phrase is indefinite specific, i.e. it does not trigger inclusive reading exactly as in example (162) *ta moje nowa torebka* (this my new purse) which, on the other hand, can be contrasted with structure in (163) in which

¹⁰⁷ Scrambling of adjectives as evidence for the adjectival status of demonstratives has been used by Wit and Schoorlemmer for Russian (1996). Similarly, Migdalski (2001) analyzes examples from Polish.

the noun *mama* (mother) is definitely unique and definite and thus does not seem to be felicitous in a string with both a demonstrative and a possessive pronoun, e.g.

- (163) **Ta moja mama upiekła pyszne ciasto*
 this my mum baked delicious cake
 *‘This my mum baked a delicious cake.’

The presence of a possessive in a nominal phrase is not the only example of a genitive construction in Polish that announces movement to the specifier of DP. As discussed by Migdalski (2003), referential possessors, i.e. proper names and arguments, also move to specDP. Moreover, this dislocation may be accompanied by the movement of a nominal head, i.e. N to D, which is reflected in the word order, e.g.:

- (164) *torebka Marii / Marii torebka*
 purse Mary_{GEN}/ Mary_{GEN} purse

Another set of elements competing for a position in specDP to obtain a referential reading contains the so-called genitival adjectives¹⁰⁸ (Migdalski 2001: 11, 2003), e.g.:

- (165) *mamina spódnica/ ojцова ziemia*
 mother skirt / father land

These elements, although of a very limited productivity in Polish, are adjectival and referential, thus must move to specDP.

Examples from Polish discussed by Migdalski (2001, 2003) along with the adopted stance that referential elements of the nominal phrase must move to the specifier of DP demonstrate that the idea of a DP in Polish, not having definite articles, is not so ridiculous. The referential interpretation of nominal phrases and related to it word order seem to be justified premises for postulation of DP.

Scrutinizing data and arguments provided by Pereltsveig (2007), i.e. a preference for a more restrictive order of adjectives in Russian rather than a free one, distinction between light and heavy adjectives checked upon the approximate inversion as well as

¹⁰⁸ Genitival adjectives are defined as a formation consisting of a nominal base, a possessive suffix and a Case-number suffix agreeing with the modified noun. This definition in Migdalski (2001) is adapted from Dimitrova-Vulchanova and Giusti (1998).

the status of cardinal expressions different from cardinal nouns, together with the analysis of Polish nominal phrases introduced by Migdalski (2001, 2003) in which he discusses elements providing referential reading of a nominal phrase as well as order of a demonstrative and a noun being the result of an N-D movement *the parametrized DP hypothesis* seems to be too much of a simplification. The mere adjunction hypothesis according to which the nominal phrase consists of a head noun and modifiers being adjuncts irrespective of their type, i.e. demonstratives, adjectives, possessive pronouns, genitival adjectives and cardinality expressions, does not seem to be the adequate approach to host and differentiate between all modifiers in the nominal phrase. Additionally, elements with referential and deictic features, i.e. demonstratives and possessive pronouns, contributing to the interpretation of the whole phrase, appear to be left unaccounted as there is no place for them to move and this way ensure a proper reading of a phrase. Finally, an adjunction analysis does not account for a demonstrative-noun and noun-demonstrative order as found in Polish as there is no potential landing site for a displaced head.¹⁰⁹ Additionally, placement of particular modifiers, i.e. demonstratives, possessive pronouns, adjectives, quantifiers, is not completely free as some orders are marked or unacceptable, e.g. (166a) and example (166b) as an instance of a more neutral order.

- (166) a. ?/**dwie ładne te panie*
 two nice these women
 b. *te dwie ładne panie*
 these two nice women

Moreover, depending on the order of modifiers, the phrase have different readings. Apart from examples mentioned by Migdalski (2001) with deictic and indefinite specific interpretations, phrases with numerals may have partitive, e.g. (167a), or non-partitive reading, e.g. (167b).

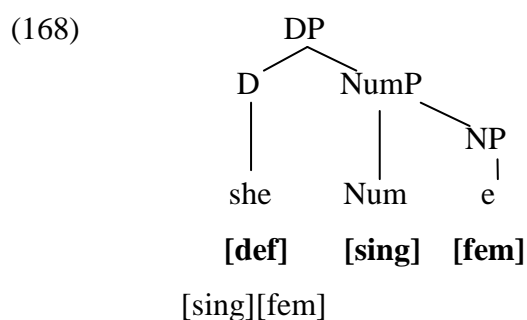
- (167) a. *pięć moich książek*
 five my books
 ‘five of my books’

¹⁰⁹ The alternate order of a noun and a demonstrative is probably not the strongest argument for a DP structure as the base-generation approach may be used to account for this variation.

- b. *moje pięć książek*
 my five books
 ‘my five books’

Considering all these aspects, grouping all modifiers into one position, i.e. as an adjunct, does not address their properties and prevents from their adequate distinction. Therefore, the nominal phrase with a noun as a core category and premodifiers as adjuncts does not provide enough structure to mark a differentiation between all the elements building the phrase.

In the exploration of the architecture of a nominal phrase and NP versus DP hypothesis it is crucial to mention approaches elaborating on the structure of pronouns which are analyzed along the lines of the DP hypothesis. One of the early views was that a pronoun is an instantiation of an intransitive D head (Abney 1987). This determiner status of pronouns has been widely discussed, in consequence, leading to the postulation of their more elaborate structure. Panagiotidis (2002), for example, proposes that the distribution of features within DP is relocated on different heads, i.e. person feature on D, number on Number Projection and Gender on N.¹¹⁰ As a result, the structure of a third person singular feminine personal pronoun *she* is presented in the example below (from Panagiotidis 2002: 36).



Here, the pronoun has the feature [def] (definiteness), as person entails definiteness, a feature found on determiners, the feature number agrees with the corresponding feature located on the Num, i.e. sing, and gender is checked with the appropriate feature found on the empty noun. Bearing in mind that in Polish all those features are present on personal pronouns, e.g. *ona* (*she*_{3SG.FEM}) it is hard to defend a bare NP hypothesis.

¹¹⁰ That person and number are found on different functional heads is nothing new. Abney (1987), Ritter (1993) among others have linked these features with D and Num respectively.

Pronouns are also used as an argument for a *universal DP hypothesis* by Progovac (1998) who shows that in Serbo-Croatian, a language without articles, the position of nouns and pronouns with respect to some adjectives, i.e. intensifying adjectives, suggests that they must occupy a different position in a structure, e.g. (Progovac 1998: 167).

- (169) a. *I samu Mariju* /?**Mariju samu to nervira.*
 and alone Mary / Mary alone that irritates
 ‘That irritates even Mary.’
- b. ?**I samu nju/mene to nervira.*
 and alone her/me that irritates
 ‘That irritates even her/me.’
- c. *I nju/mene samu to nervira.*
 and her/me alone that irritates
 ‘That irritates even her/me.’

As examples (169a), (169b) and (169c) demonstrate the intensifying adjective precedes the noun *Mariju* (Mary) but it follows pronouns *nju* and *mene* (her, me). A different ordering of pronouns, i.e. when they precede the adjective, causes ungrammaticality. The noun-pronoun asymmetry is also discussed in the context of Polish in which examples with the adjective *sam* (alone), quantifier *wszyscy* (all), numerals and pronoun *coś* (something), indicate that the position of a noun and pronoun is different and therefore a bare NP structure is not enough to capture their positions (Rutkowski 2002a, 2007). First of all, in sentences below, i.e. (170a) and (170b), whenever there is a noun it follows the intensifier but when there is a pronoun it precedes it.

- (170) a. *Sam dyrektor przyszedł na spotkanie.*
 alone manager came on meeting
 ‘Even the manager came to the meeting.’
- b. *On sam przyszedł na spotkanie.*
 he alone came on meeting
 ‘Even he came to the meeting.’

Secondly, in sentences with a quantifier *wszyscy* (all) and numerals the ordering of a noun and pronoun is the same as in previous examples, i.e. modifiers precede the noun and follow the pronoun (Rutkowski 2002a: 163f.; Rutkowski 2007: 87ff.).

- (171) a. *Wszyscy goście/ oni wszyscy wyszli na taras.*
 all guests/ they all went on balcony
 ‘All the guests, the all went to the balcony.’
- b. *Tylko dwóch uczniów/tylko ich dwóch nie przyszło do szkoły.*
 only two students/only they two not came to school
 ‘Only two student/ only two of them did not came to school.’

Finally, in constructions with the indefinite pronoun *coś* (something), the adjective follows the pronoun supporting the claim in Polish NP is dominated by more projections, i.e. projections hosting pronouns and modifiers (Rutkowski 2002a: 165f.), e.g.:

- (172) *Obejrzałabym coś ciekawego/ ciekawy film.*
 I.would.watch something interesting/ interesting film.
 ‘I would watch something interesting/an interesting film.’

Thus, the evidence from noun-pronoun asymmetries found in Serbo-Croatian and Polish becomes another argument for the universality of a DP projection, i.e. its presence in languages which do not have articles.

Analyzing nominal phrases in selected Slavic languages without articles it has been emphasized that the co-occurrence of various modifiers such as demonstratives, possessives, adjectives and numerals as well as the syntax of pronominal elements require postulation of a structure comprising more projections than just NP with adjuncts. Moreover, examples of extraction from the noun phrase in Polish and Serbo-Croatian together with c-command facts have demonstrated that the lack of a demonstrative cannot be a common denominator for languages and, at the same time, argument for a particular structure shared cross-linguistically. Therefore, the rejection of a proposal promoting the NP status of nominal phrases for articleless languages

advocated by Bošković (2005, 2008, 2009, 2011, 2012) seem to be a well-founded claim.

Last but not least it is worth mentioning that even though the *universal DP hypothesis* is not widely accepted for languages without articles it is not automatically assumed that the only option left for the architecture of a nominal phrase is an NP. Willim (2000), for example, despite refuting the DP analysis of Polish nominals on the grounds that there is neither morphological nor syntactic evidence for a DP, postulates two functional heads in the extended projection of a noun, Num(ber) and K(ase). In her account of nominal phrases in Polish, the absence of a definite article amounts to the fact that DP is not projected. Moreover, in Polish there does not seem to be any syntactic evidence supporting the presence of either the head or the specifier of DP as pronouns, the only candidates for a D position are claimed to occupy Num head. Moreover, lack of the variation in the order of adjectives, i.e. in a prenominal and a postnominal position, found in Semitic and Romanian languages signaling N-D movement, instantiates another argument in favor of the *parameterized DP hypothesis*. Instead, some projections are proposed which not only serve the purpose of checking features of a noun but they also provide sites to which modifiers are attached. Specifically, NP is dominated by a NumP which is subsequently dominated by KP. The head position of NumP is a place where number and gender of a noun are checked. The head of KP, on the other hand, is a position required for case checking. Modifiers occupy specifier positions of NumP and KP, which due to specifier-head configuration ensures feature agreement between the modifier and the noun. The structure of a nominal phrase is presented in (173):

(173) [KP [K t_N [NumP [Num t_N [NP [t_N]]]]]]

The noun, having features to check, raises first to NumP where gender and number features are checked and then moves to KP where case is checked.

After a general survey on the syntax of a nominal phrase being a DP and the introduction of various issues addressing the DP hypothesis developed by both its opponents and advocates, I briefly examine the nominal phrase in Old English which despite belonging to articleless languages usually is not analyzed in the context of an overall discussion on the DP/NP status of nominals.

3.2.2. A nominal phrase in Old English

Old English represents an interesting example of a language which in the course of history has changed from an inflectional, i.e. the stage at which it had morphological case, to an analytic language conveying grammatical information through syntactic relations and positions rather than inflection. This development has become a source of various analyses of syntactic phenomena, the functional architecture of the nominal phrase including. The transition from the period in which English had morphological case to the phase when it lost it is frequently mentioned in the context of the emergence of a definite article which, in turn, led to alternations in the structure of a nominal phrase. Although analyses of Old English nominals are not as frequent as of other articleless languages being a part of a Slavic family in reference to the NP/DP status of noun phrases, there are some competing studies on the role of nominal morphology, determiners and the shape of nominals in Old English. In one of them it is argued, e.g. in Osawa (2000), pursuing the line of Longobardi (1994) and Higginbotham (1985), that NPs are identified as referential either by being DPs or through case morphology. Because OE did not have a definite article and other determiners, e.g. quantifiers and demonstratives, are not regarded as candidates to be placed within a DP projection due to the fact that they are of N category¹¹¹ the conclusion is that OE featured only NP. Following Higginbotham (1985), Osawa (2000) proposes that in Old English the referentiality of a noun, so the requirement on NPs being arguments (Longobardi 1994), is determined by means of case morphology binding the so-called R(eferential) role in an NP. This binding holds under particular structural conditions, which is tantamount to the head-complement relation. Case morphology by binding the noun determines the theta-role of the noun which becomes an argument (Osawa 2000: 62). The crucial assumption in this analysis is that only inflection on nouns and not, e.g. on modifiers as it is in the case of German, can license an argument. When case morphology is absent, on the other hand, its role in marking a noun as referential is taken over by definite articles which is called by Osawa (2000: 70) “a reallocation of the duty of identifying

¹¹¹ This is claim made by Osawa (2000: 56) on the grounds that they inflected and agreed in case, number and gender with the modified noun. Yet, concord with the noun is not a sufficient requirement to propose that they are of an N type ruling out at the same time their D status. Although Osawa (2000: 58f.) refers to arguments by Abney (1987) in determining candidates for a D position which is a functional head and thus should be occupied by a functional rather than lexical element and cannot appear without a complement (see Panagiotidis 2002 for a transitive and intransitive Ds) they should not be precluded from a specifier position of DP which is where they are frequently positioned in analyses of Slavic languages.

referentiality from morphology to syntax”. As a consequence, due to the lack of candidates that could confirm the existence of a D head¹¹², the nominal phrase in OE is considered an NP which subsequently, i.e. with the demise of case morphology and the emergence of a definite article turned into DP. Such an approach, however is challenged by, for example, Bartnik (2011) who notices that arguments raised by Osawa (2000) against a DP status of a nominal phrase are not entirely justified. One of the dubious aspects is the issue of definiteness and indefiniteness which in Osawa’s account is dealt with by means of case morphology. Data from OE however, seem to show that demonstratives, in fact, did contribute to the identification of a phrase being definite or indefinite, which all in all could provide grounds for introduction of a DP in OE. In constructions with weak adjectives a demonstrative occurred rendering the phrase definite. With strong adjectives, there were no demonstratives and the phrase was interpreted as indefinite (Bartnik 2011: 24). Another problem is the position of nominal modifiers in the structure, which is not accounted for in the analysis promoting the NP over DP. The obscure explanation and suggestion that demonstratives might be NP adjuncts not only does not introduce any conclusive solution nor is it in accordance with the fact that OE demonstratives agreed in number, gender and case with nouns (Bartnik 2011: 24).

The DP status of OE nominals is also argued by Wood (2003) who shows that despite the absence of a definite article filling the position of D in DP, word order, morphological facts and movement phenomena in Old English indicate that the presence of DP. First of all, the ordering of particular premodifiers in the nominal domain demonstrates that despite morphological distinction in OE, i.e. of case, number and gender, word order of nominal modifiers is not free. On the basis of survey conducted by Carlton (1963) and Pillsbury (1967) (as cited in Wood 2003: 75ff.) it has been shown that demonstratives and possessives can co-occur in the following orders but they always precede adjectives, e.g. [dem+poss+ (adj)], e.g. (174a) (from Wood 2003:117), or [poss+dem+adj], e.g.(174b) (from Wood 2003: 113).

(174) a. þa somninga se **min latteow**

¹¹² According to Osawa (2000), numerals and personal pronouns occupy the position of N. Interestingly the statement about numerals is made only on the basis of lexeme *one* (OE *an*) in constructions *one of them* or *when one began* which in these contexts are not numerals but adjectival forms meaning *a certain person*. A discussion of these two different lexemes one being a numeral and the other being an adjective is in previous chapters.

then immediately that-NOM.MASC my leader-NOM-MASC

gestod

stood

(BEDE, 13.430.24)

- b. *ða cwæð Apollonius: Min se leofesta freond* Stranguilio þanca
then said Apollonius my that dearest friend Stranguilio, thank
Gode. . . .

God

(APOLLO, 14.9.14)

When it comes to numerals they follow demonstratives and possessives and precede attributive adjectives. Secondly, a closer look at the morphology of demonstratives, possessives and adjectives also indicates that these three cannot be labeled as one part of speech, i.e. adjectives, and placed in the same position within the nominal phrase as their declensional patterns differ considerably. OE adjectives featured both a weak and strong declension but demonstratives, possessives, numerals and quantifiers had only the strong one (Wood 2003: 83). Moreover, adjectives preceded by demonstratives or possessives appeared in a weak declension whereas those preceded by numerals and quantifiers had a strong inflection (Wood 2003: 104).¹¹³ Finally, OE examples containing proper names are used by Wood (2003) as evidence of overt N-D movement and, what follows, the existence of a DP projection. Wood's analysis of samples with proper names based on the Brooklyn corpus has revealed that they either appeared with a demonstrative, e.g. (175a) and (175b) (examples from Wood 2003: 136), or they preceded a common noun, e.g. (175c), (175d) and (175e) (from Wood 2003: 135):

- (175) a. *þa wæron ða Perse mid þæm swiþe*
then were those Persians with that very-much
geegsade

frightened

(OROSIU, 78.13)

- b. *Seo Siluie wæs Romuses modor Romules*
that-NOM.FEM Sylvia was Remus mother and Romulus,
þe Rome burgetimbredon
that Rome constructed

¹¹³ Although all determiners were considered to have a strong declension, only the presence of a demonstrative rendered the nominal phrase definite. Other elements such as possessives, numerals and quantifiers, in spite of having a strong inflection as well, cause either definite or indefinite interpretation of nominals (Wood 2003: 104).

‘Sylvia was the mother of Romulus and Remus who built Rome.’

(OROSIU, 60.20)

- c. *Ond Willferð biscop eac swylce of Breotone*
and W. bishop also in-like-manner of Britain
in Gallia rice to hadienne sendeð wæs
in Gauls rule to ordain sent was
‘and bishop W was also sent from Briton to minister in the kingdom of
the Gauls.’ (BEDE, 2.260.12)
- d. *þa Eadmund cynincg mid þam þe Hingwar com*
then Edmund king with that that Hingwar came
‘then King Edmund, when Hingwar came . . . ‘
(AELIVE, IV, 320.101)
- e. *Her Gregorius papa sende Brytene Augustinum*
here Gregory pope sent to Britain Augustine
(CHROA2, 20.595.1)

Such an arrangement, i.e. a proper name accompanied by a demonstrative or preceding other nominals is supposed to prove that its referentiality was obtained either with the support of a demonstrative being placed in SpecDP or by its movement to D, which in both cases may imply the existence of a DP. Last but not least, it is worth mentioning the so-called possessive-demonstrative and demonstrative-possessive constructions which constitute one more evidence for a DP structure in Old English. Their different structures and distribution are to show that they cannot be treated as variants of the same construction and what follows determiners and possessives cannot be regarded as adjectives. The immediate consequence of this is that a more elaborate structure than a bare NP is necessary in order to host these elements. One of the differences between mentioned constructions is that in the case of possessive + demonstrative the adjective is commonly found after a demonstrative, e.g. (from Allen 2006: 155):

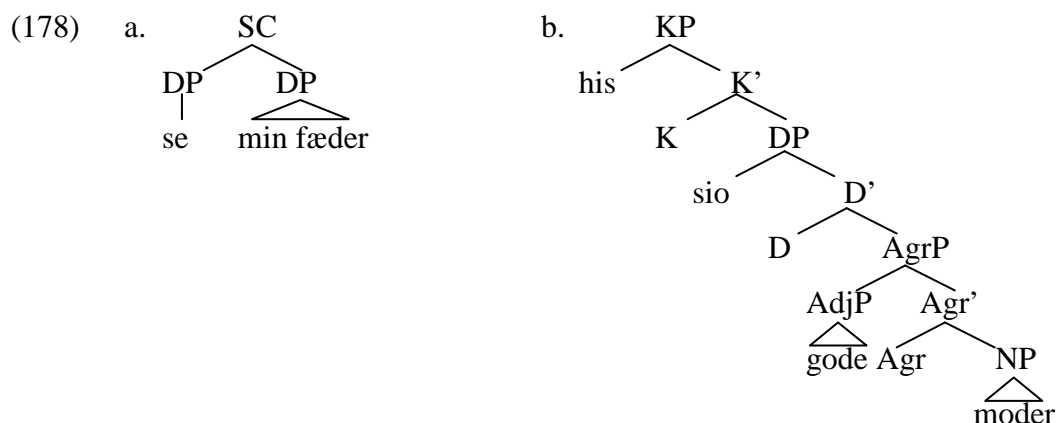
(176) *min se swetesta sunnan scima*
my the sweetest sun’s radiance
‘my sweetest sunbeam.’

(Juliana 166)

In structures with demonstrative + possessive, on the other hand, the noun follows the possessive, e.g. (from Allen 2006: 153):

- (177) *Dreogeð se min wine micle modceare*
 suffers that my friend much sorrow
 ‘that friend of mine will suffer great sorrow at heart’ (Wife 50)

According to Wood (2003: 111), the presence of a demonstrative is required by the need to make an expression definite as the possessive in Old English, contrary to PDE, does not mark definiteness yet. In the structure with a demonstrative as the initial element, the possessive intervenes between a demonstrative and a noun which, at first sight, may suggest it belongs to the adjectival class, however its strong instead of a weak declension, as it would be expected with adjectives preceded by a demonstrative, eliminates such an option. When it comes to the structural representation of both constructions, Wood (2003: 120) proposes that the latter is a small clause, e.g. (178a), whereas the former might be with a possessive in a projection above DP, e.g. (178b) (Wood 2003: 122).¹¹⁴



Although at this point the exact structure for poss+dem and dem+poss is not of primary interest here, it is crucial to notice that these two are not equivalents of the same structure with a different order but actually two distinct constructions. Consequently,

¹¹⁴ It is not entirely clear, what the structure for *poss+dem* is, as it may be the case that possessive sits in specDP pushing a demonstrative to D, or there might be an additional projection above DP, as suggested by Wood (2003).

demonstratives and possessives must be analyzed as two different elements which have to be distinguished from the adjectival modifiers of a noun.

In this succinct discussion of nominal phrases in Old English, it has been presented that several issues examined in the literature on OE may serve as solid grounds for postulating a DP instead of NP for the period in which the morphological exponent of a D head has not developed yet. A differentiation in attributive modifiers of a noun whose ordering did not only follow a set pattern but was also a subject to some morphological requirements, i.e. the choice of a weak or strong declension of adjectives depending on the type of determiner, interpretation of proper names involving either movement to D or a company of an element occupying DP as well as the properties of two different constructions containing both a demonstrative and a possessive indicate that DP was already present in OE.

3.3. Headness dilemma and the structure of numerically quantified phrases.

The architecture of nominal phrases has been extensively investigated especially since the introduction of a Determiner Phrases and analyses seeking parallels between nominals and clauses. No smaller attention has been given to the position of modifiers within the structure of NPs, i.e. adjectives, attributive possessors, numerals and other quantifying expressions with the last two generating the most heated debate. In what follows, the most challenging aspect of nominal phrases containing quantifying expressions is reconciling the unique properties of numerals, i.e. their case assigning properties, with the structure of the phrase they appear not only within one language but also cross-linguistically. Despite the fact that there have been dozens of proposals trying to account for idiosyncrasies of numerals and constructions they form, still there is no explicit and clear-cut stance or agreement not only on how to define numerals but also where they belong to within the nominal phrase, what constitutes the head of the phrase when numerals are introduced as modifying elements and what mechanisms govern case distribution in such constructions. After a brief discussion of selected analyses dealing with each of these issues, I would like to introduce a proposal which, in my view, presents a more adequate and more economical solution in terms of a structure when it comes to properties of numerals and linguistic data which could be universally applied not only within one language but also cross-linguistically. In order to pursue this goal, in the upcoming sections, i.e. (3.3.1., 3.3.2. and 3.3.3.), I review some

accounts arguing for a particular structure of numerically quantified phrases on the basis of syntactic criteria postulating either the noun or the numeral as the head of a nominal phrase and, in consequence, case assigning procedures. Then, I focus on Old English and Polish (section 3.3.4). The next step would be an introduction of a framework in which I would like to place my account followed by a proposal regarding the structure of numerically quantified phrases including a discussion of adjectival modification and determiners which occur in phrases with numerals but present different case patterns. (section 3.4.) The closing part, in the same section, deals with subject-verb agreement with nominal phrases with numerals in the subject position

3.3.1. The noun as the head in numerically quantified phrases

The unique properties of numerals, i.e. different patterns of case distribution in phrases in which numerals modify nouns, have led to numerous accounts in which attempts have been made to explain puzzling issues regarding the case patterns and position of particular elements in the nominal phrase. Among these analyses, we can distinguish those in which it is postulated that the head of a phrase is a noun, e.g. Babby (1987), Rappaport (2002, 2003), Pesetsky (2012), and the others in which the numeral or a functional head (F) are designated heads. Although this claim does not seem to be so controversial at first sight, after a closer look at sentences in some Slavic languages it can be noticed that the element that governs case assignment in the phrase is not the supposed head, i.e. a noun, but a numeral, e.g.:

- (179) a. *pjat' butylok* (Russian, Babby 1987: 92)
 five-NOM bottles-GEN.PL
 'five bottles'
- b. *kupili smo pet knjiga* (Serbo-Croatian Franks 1995:97)
 bought AUX five books-GEN.PL
 'They bought five books.'

In examples (179a) and (179b) the noun occurs in Genitive although the expected case in structural case positions, i.e. where subject and object occur, are Nominative and Accusative. These well-known patterns where the numeral and not some other external

governors, functional heads such as the inflectional (Infl) or a tense (T) heads assign Nominative or little *v* Accusative, become problematic when establishing the head of the numerically quantified phrase. An additional hindrance in pointing to a head of a phrase is a case pattern when a numerically quantified phrase appears in oblique case positions, i.e. in positions where the value of case depends on lexical properties of the verb or a preposition, e.g.:

- (180) a. *s pjat'ju bol'simi butylkami vina* (Russian, Babby 1987: 100)
 with five-INST big-INST bottles- INST wine- GEN
 'with five big bottles of wine'
- b. **s pjat'ju bol'six butylok vina* (Russian, Babby 1987: 100)
 with five-INST big-GEN bottles-GEN wine-GEN
 'with five big bottles of wine'

Apart from discrepancies in case distribution depending on whether it is a structural or an oblique case position, syntax of numerically quantified phrases also differs when lower and higher numerals are considered. Numeral *one* in Russian presents typically adjective-like syntax, i.e. it lacks any case assigning properties, e.g.:

- (181) *Ivan kupil odnu mašinu.*
 Ivan-NOM bought one-ACC.SG car-ACC.SG
 'Ivan bought one car.' (Franks 1994: 600)

Numerals from *two* to *four*, on the other hand, assign Genitive to nouns which then appear in singular, e.g.:

- (182) *Ivan kupil tri mašiny.*
 Ivan-NOM bought three-ACC cars-GEN.SG
 'Ivan bought three cars.' (Franks 1994: 600)

Interestingly, in Serbo-Croatian Genitive of quantification is found in the whole case paradigm, i.e. both in structural and oblique case positions, with higher numerals, e.g.:

- (183) a. *Kupili smo pet knjiga*

bought-MASC.PL AUX-1PL five books-GEN.PL
 ‘We bought five books.’ (Serbo-Croatian, Franks 1994: 605)

- b. *sa pet djevojaka*
 with five girls-GEN.PL (Serbo-Croatian, Franks 1995: 97)

Serbo-Croatian lower numeral, however, become much more troublesome when it comes to establishing their case assigning properties as the case marking of a noun assumes forms of Nominative plural or Genitive singular depending on the gender of the noun and thus are generally glossed as paucal (Franks 1994: 9ft.). In Polish, on the other hand, lower numerals resemble the syntax of other modifiers in that they agree in case and gender with the noun in structural, e.g. (184a), (184b), and oblique case positions, e.g. (184c):

- (184) a. *Dwie nauczycielki pilnowały grupy.*
 two-NOM.FEM teachers-NOM.FEM.PL watched-3PL.FEM.PAST group
 ‘Two teachers watched the group.’
- b. *Spotkałyśmy dwie koleżanki z liceum.*
 met-1PL.FEM.PAST two-ACC.FEM friends-ACC.FEM.PL from high school
 ‘We met two friends from high school.’
- c. *Dzieci pojechały na wycieczkę z trzema opiekunami.*
 children went on trip with three-DAT teachers-DAT.PL
 ‘Children went on a trip with three teachers.’

Such a paradigm, however, is found only with non-virile, i.e. feminine, neuter and masculine inanimate nouns. With masculine animate nouns, lower numerals behave just like higher ones, i.e. they require a noun in Genitive in structural case positions, e.g.:

- (185) a. *Dwóch/pięciu piłkarzy strzeliło gola.*
 two/five-NOM/ACC/GEN footballers-GEN.VIR scored-3SG.NEUT.PAST goal
 ‘Two/five footballers scored a goal.’
- b. *Na rynku widzieliśmy dwóch/pięciu [znanych aktorów].*
 at square.market saw-1PL.MASC two /five-NOM/ACC/GEN [famous actors]-DAT.MASC.PL

‘At the square market we saw two/five famous actors.’

Although initially it may seem that the numeral governing Genitive case is the head of the phrase, several accounts argue for the noun as the core of the phrase. One of such analyses is proposed by Babby (1987) who despite narrowing it down to Russian and only higher numerals designates the noun as the head but explains case patterns via the assignment by the external governor to the maximal projection and further percolation within the phrase. As a consequence, the case of particular elements depends on their structural position within the phrase and percolation paths. When the Nominative or Accusative are assigned to the numerically quantified phrase being NP, this particular case feature percolates down to other elements within the phrase unless there is some other element whose maximal projection becomes responsible for the assignment of other case. In this particular example that would be a quantifier which assigns a different case, i.e. Genitive, to all the elements in its c-command domain. Yet, in oblique case positions, for some reasons, the maximal projection of Q does not prevent spreading of oblique case. It happens because, according to Babby (1987), the lexical case overrides the structural case, i.e. whenever the lexical case is assigned to the maximal projection of a noun, even when there is some other case governor inside the phrase, Genitive from the numeral is suppressed by the lexical case which results in every constituent of the nominal phrase being marked with the same case.¹¹⁵

In the analysis by Rappaport (2002), also for Russian, it is assumed that the head of numerically quantified phrases is the noun and not the numeral, but case assignment and distribution is accounted for in the minimalist spirit. Both lexical and functional elements enter the derivation either with valued or unvalued case features. case valuation is reached by means of Agree. In what follows, the heterogeneous syntax of numerically quantified phrases is obtained when the numeral has a valued case feature and the noun an unvalued one. Then, the noun, as the result of Agree, ends up with Genitive case. Although, at first glance such an approach seems to be a clear-cut application of minimalist ideas, it is not free from stipulations. In the Agree operation between the numeral and the noun, the numeral provides value for case to the noun and the noun value for gender to numerals. Yet, the numerals do not enter the derivation with Genitive, which is subsequently copied onto the noun. Therefore, Rappaport

¹¹⁵ Babby (1987) uses terms homogenous and heterogeneous syntax which since then have been used to describe phrases in which numerals agree in case with a modified noun or select for nouns in Genitive.

(2002: 334f.) assumes that numerals have a fixed value for case called Quantitive which is syncretic with Genitive found on a noun. In homogenous syntax, when the numeral and the noun have the same case value so in oblique contexts, the noun is selected from the lexicon with a valued case feature and the numeral with unvalued which is later copied from the noun to the numeral via Agree. The account, however, becomes a little more complicated for Polish data, when forms of different numerals are taken into consideration. The first problem, indicated by Rappaport (2003), is the form of a higher numeral in direct case positions in feminine and neuter, e.g. (186a), versus masculine where, e.g. (186b), we have the following patterns:

- (186) a. *pięć* *kobiet* / *pięć* *krzesel*
 five-NOM/ACC women-FEM.GEN.PL / five-NOM/ACC chairs-NEUT.GEN.PL
- b. *pięciu* *mężczyzn*
 five-NOM/ACC/GEN men-MASC.GEN.PL

With masculine nouns which are in Genitive the numeral has a form syncretic with Nominative, Accusative and Genitive but nevertheless the syntax of such a phrase cannot be treated as homogenous as, according to Rappaport (2003), the Quantitive case of a numeral in non-virile gender having \emptyset ending in masculine is syncretic with Genitive due to some morphological rules.¹¹⁶ The same morphological rules are responsible for the form of masculine lower numerals which, de facto, present the syntax of higher numerals, i.e. they select a noun in Genitive having themselves a form syncretic with Nominative, Accusative and Genitive, e.g.:

- (187) *dwóch* *mężczyzn*
 two-NOM/ACC/GEN men-GEN.VIR

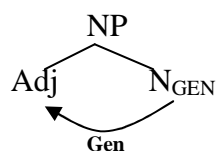
The non-virile lower numerals exhibit agreement in case with a modified noun. These case patterns for lower numerals in direct case positions are explained by postulating that lower numerals are associated with Accusative case which, again, due to some morphological rules are spelled as Accusative in non-virile and as Genitive for virile.

¹¹⁶Rappaport (2003) assumes that Polish numerals do not have Nominative form.

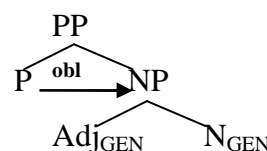
Genitive = N
Accusative = V
Oblique = P

Then, case assignment proceeds via merger with an element of a particular type, e.g. D, N, V, or P, in consequence of which, the feature is copied onto the merged item and all other elements dominated by it.¹¹⁷ Additionally, the *One-Suffix Rule* ensures that upon every next merger with a different part of speech, the case suffix is deleted leaving room for the new one, for instance, when the adjective is merged with the noun which as N category starts its syntactic life as Genitive it becomes Genitive as well, e.g. (190a). Then, after the merge of a preposition, so the element of P category, NP and everything it dominates change their cases to the one provided by P, e.g. (190b).¹¹⁸

(190) a.



b.



Now, this mechanism applied to strings containing numerals is used to account for various puzzling morphological phenomena in Russian. One of them being the fact that in the presence of paucals the noun and the adjective are marked as Genitive. What is more, the adjective occurs in plural whereas the noun is in singular. These discrepancies are explained by means of the order of merger of given elements building the phrase and the nature of a numeral which, in fact, is viewed not as a numeral but as a free standing NUMBER (NBR) introduced in the syntax and not in the lexicon.¹¹⁹ In consequence, even in the presence of the adjective, it is NBR and the noun that are first merged, after which the adjective is added, e.g. [Adj [NBR N]] (Pesetsky 2012). As the

¹¹⁷ The process of feature assignment has been subsumed under a definition of *Feature Assignment* given in e.g. (11).

(11)

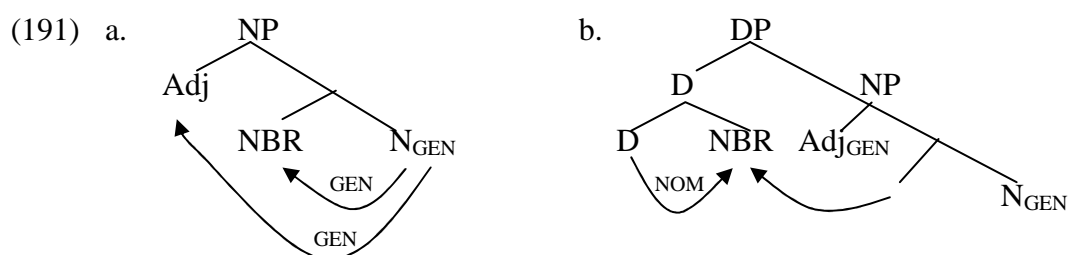
Feature Assignment (FA)

- i. **Copying:** When α merges with β , forming $[\alpha \ \alpha \ \beta]$, if α has satisfied its complementation requirements and is designated as a feature-assigner for β , its prototype α is immediately merged with β , forming $[\alpha \ \alpha \ [\beta \ \alpha^* \ \beta]]$.
- ii. **Realization as morphology:** α^* is realized as morphology on all accessible lexical items dominated by β . (Pesetsky 2012: 49)

¹¹⁸ It is possible that before P merges with NP, there is one more merger, namely with D which renders the structure, i.e. NP, Nominative.

¹¹⁹ When NUMBER is merged with the noun in the lexicon, its presence is reflected in nominal inflection.

result, the noun, as the numberless element, together with paucal, which constitutes an independent number morpheme, becomes a formation triggering plural on the adjective which complies with the linguistic data. Turning to case distribution, the Nominative form of a paucal and Genitive on the adjective and the noun arise in the process of the merger of the adjective, NBR and noun which, in the first place, gives rise to Genitive marking, e.g. (191a). Then, upon the introduction of D into the structure and a subsequent movement of a paucal to D, the paucal is marked as Nominative, which is what we expect in Russian, e.g. (191b).¹²⁰



In constructions with higher numerals, i.e. 5 onwards, and some non-numeral quantifiers such as *mnogo* (many) or *nemnogo* (a little), the derivations proceeds in a very similar manner, i.e. first we observe the merge of the adjective, numeral and the noun which is followed by the merge of D. Yet, the difference between paucals and higher numerals lies in the number marking of the noun, i.e. with paucals the noun appears in singular and with higher numerals in plural, which is related to the character of a numeral. According to Pesetsky (2012), paucals are instantiations of NBR morpheme and thus they merge with the noun before other elements, e.g. adjectives. Quantifiers, on the other hand, merge with the noun which is lexically marked for number thus they are merged relatively high within NP.¹²¹ This, in turn, leads to the fact that noun is marked as plural instead of singular as it is with paucals. After the NP is completed, and all its constituents are marked with Genitive, D merges with the structure. Then, a quantifier moves to D due to which it receives Nominative. The exemplary derivation is provided in (192).¹²² When, however, the nominal phrases

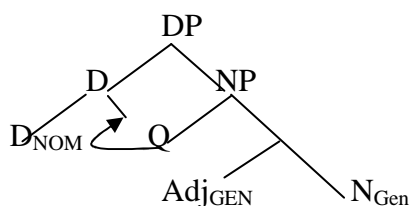
¹²⁰ The fact that only paucal is marked as Nominative is explained by Pesetsky (2012) via constraint that only element satisfying the complement requirement of a given category can end up with a feature obtained upon merger, so in this case, only NBR receive case provided by D.

¹²¹ Pesetsky (2012) is not very specific about the exact place of merger of paucals and quantifiers within NP.

¹²² Actually Pesetsky (2012: 26) assumes that in structures with paucals, Quantifier is also present. Then, movement of paucal to D is mediated with Q, i.e. paucal moves to Q and then Q with NBR moves to D.

misses quantifiers, no movement to D occurs and the whole NP receive Nominative by default.¹²³

(192)



Attractive and innovative as the proposal appears to be, the attempt to apply it to patterns found in numeral constructions in Polish seems to raise some questions. First of all, the fact that both lower and higher numerals induce plural on the quantify noun, which means that the noun is lexically marked as plural, put them together as a category of one type, i.e. quantifiers. But then, the prediction made by Pesetsky's analysis is that in the presence of D, both lower and higher numeral will be attracted to it as complements of D, which results in their Nominative marking. Although this scenario proves correct for higher numerals, it does not render grammatical results for lower numeral which occur with a noun also marked as Nominative, e.g. (193).

(193) *pięć* *szklanek* vs. *dwie* *szklanki*
 five-NOM glasses-GEN.PL two-NOM glasses-NOM.PL

These patterns indicate, that higher numerals, just like in Russian examples, being quantifiers can satisfy the requirement of D, yet lower numerals, which seem to be of the same type as their higher counterparts, receive Nominative together with NP, which illustrates the mechanism of case distribution applied when quantifier is missing. In what follows, either a distinction between higher and lower numerals for Polish cannot refer only to plural marking of a noun or rules of *feature assignment* should be reanalyzed so that they accommodate facts for Polish.

Although this step ensures that the requirement of D attracting only one category, i.e. Q, is fulfilled, it is not clear what the reason for which Q is present in structures with paucals is.

¹²³ It is not particularly transparent in the analysis why the complement requirement of D can be satisfied only in some contexts and in others it does not hold.

3.3.2. The numeral as the head in numerically quantified phrases

Peculiar properties of numerals which provoke to draw a dividing line between lower and higher numerals have also ultimately led to proposals in which not a lexical noun but a numeral is regarded as the head of the phrase. One of such analyses is introduced by Przepiórkowski (1999) and Bailyn (2004) who try to show, although in two different frameworks, that a projection of numerals plays a crucial role in the numerically quantified phrases.

In Przepiórkowski's (1999) analysis conducted within the Head-Driven Phrase Structure Grammar, the numeral is a designated head of the phrase and a noun is its subject. On the basis of examples with ellipsis of a noun from the numerically quantified phrase, it is argued that the numeral as the distributional representative is a major element in the phrase, e.g. from Przepiórkowski (1999: 178):

- (194) a. *Pięciu facetów przyszło.*
five men-GEN.MASC.PL came-3SG.NEUT.PAST
'Five men came'
- b. *Pięciu przyszło.*
five came-3SG.NEUT.PAST
'Five men came.'
- c. **Facetów przyszło.*
men-GEN.MASC.PL came-3SG.NEUT.PAST

Moreover, higher numerals are treated as nouns with an extra specification of being {+NUMERAL} which makes it easier to account for case patterns within the phrase (Przepiórkowski 1999). The noun, however, is analyzed as its argument, to be more specific a subject.¹²⁴ Considering that the HPSG framework is a constraint-based grammar, case distribution within the numerically quantified phrases is explained via lexical entries according to which when the numeral has a lexical case, so in oblique case positions, case agreement with its subject, the noun, is observed. When, however, the phrase is in a structural case position, so when the numeral is in a position where

¹²⁴ Przepiórkowski (1999: 179) makes a distinction between subjects and specifiers, designating nouns subjects. The choice is motivated by the fact that specifiers, apart from possessives, are not semantic arguments and in predicative copular constructions it is the unrealized subject of the predicative phrase and not its specifier that can be shared with the copula.

Nominative or Accusative are distributed, its subject is lexically specified as Genitive (Przepiórkowski 1999: 186). Thus syntax of phrases with numerals is encoded in the lexicon. Apart from the explanation regarding the internal syntax of numerals, Przepiórkowski (1999, 2004) also discusses the case of numerals advocating the so-called *Accusative hypothesis* according to which numerals do not have Nominative case but Accusative, which serves as the explanation for the lack of subject-verb agreement with numeral subjects and the form of demonstratives which agree with the numeral or the noun.¹²⁵ In sentences with numeral subjects, the verb invariably appears in third person singular instead of a form agreeing with the subject which suggests that the head of the phrase, the numeral, cannot be Nominative, e.g.:

- (195) a. *Siedmiu mężczyzn uciekło z miejsca zbrodni*
 seven men-GEN.MASC.PL ran.away-3SG.NEUT.PAST from place
 crime.
 ‘Seven people ran away from the scene of crime.’
- b. *Mężczyźni uciekli z miejsca zbrodni.*
 men-NOM.MASC.PL ran.away-3PL.MASC.PAST from place crime
 ‘Some men ran away from the scene of crime.’

Another argument for the *Accusative hypothesis* comes from the form of modifiers, e.g. (196a) and (196d), and predicative adjectives, e.g. (197a) and (197b), (Przepiórkowski 2004: 135).

- (196) a. *Te kobiety zrobiły pranie.*
 these-NOM/ACC women-NOM.FEM.PL did laundry
 ‘These women did the laundry.’
- b. *Te/tych pięć kobiet zrobiło*

¹²⁵ Przepiórkowski (1999) argues for the *Accusative hypothesis* rejecting other possibilities, i.e. the Nominative hypothesis, the Nominative-Genitive hypothesis and the Accusative-Impersonal hypothesis. Nominative case of numerals is refuted on the grounds of the lack of subject-verb agreement normally found with other Nominative subjects. The second proposal suffers from the same shortcoming as the Nominative hypothesis, i.e. no explanation for the absence of the subject-verb agreement with the Nominative subject. The final hypothesis is disproved as the numerically quantified nouns pass the tests for subjects and cannot be treated as measure adverbs as is it assumed in this approach (for tests for subjecthood see Przepiórkowski 1999: 168ff.).

these-NOM/ACC.PL // GEN.PL five women-GEN.FEM.PL did-3SG.NEUT.PAST
pranie.

laundry

‘These five women did the laundry.’

- c. *Ci mężczyźni zbudowali most.*
 these-NOM.PL men-MASC.NOM.PL built-3PL.NEUT.PAST bridge

‘These men built a bridge.’

- d. **Ci/tych pięciu mężczyzn zbudowało most.*
 these-NOM.PL/ACC/GEN.PL five men-MASC.GEN.PL built-3PL.NEUT.PAST bridge

‘These five men built a bridge.’

In example (197a) and (197b), demonstrative *te* which has a syncretic form in Nominative and Accusative can occur with a bare feminine noun and a feminine noun quantified by the numeral. Yet, the masculine noun in the subject position allows a Nominative form of a demonstrative only when it is not modified by the numeral, e.g. (196c). When the numeral precedes the noun, the form *tych*, which is an Accusative and Genitive form, is the only possible option, e.g. (196d). The same regularity is found with adjectival predicates, e.g. (197a) and (197b) (from Przepiórkowski 2004: 135), i.e. with non-virile (feminine, neuter or masculine nonhuman) nouns the adjective can be Nominative/Accusative or Genitive but when the quantified noun is virile (masculine human) Accusative/Genitive form is exclusively acceptable and grammatical.

- (197) a. *Sześć samolotów zostało zakupione / zakupionych*
 six planes-NON.VIR.GEN was-3SG.NEUT.PAST bought-NON.VIR.NOM/ACC / GEN
we wrześniu

in September.

‘Six planes were bought in September.’

- b. *Sześciu niewolników zostało *zakupieni / zakupionych w 1768r.*
 six slaves-VIR.GEN was bought-VIR.NOM/ ACC/GEN in 1768

‘Six slaves were bought in 1768.’

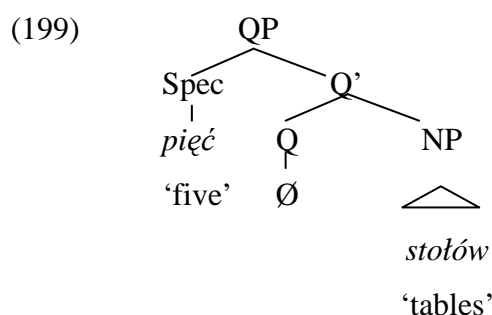
The *Accusative hypothesis*, although it deals with the problem of forms of demonstratives and predicative adjectives does not remain unchallenged. The major objection raised against it is that in Polish there are no other examples of Accusative

subjects. Moreover, ellipsis of a noun does not exclude its status as a head of a phrase as in examples where the adjective is left in the nominal phase it has not become a candidate for the core of NP, e.g.:

- (198) *Dzieci zamówiły ciastka o różnych smakach. Marysia wzięła czekoladowe a Zosia waniliowe.*
 ‘Children ordered cookies of different flavors. Mary took chocolate and Sophie vanilla.’

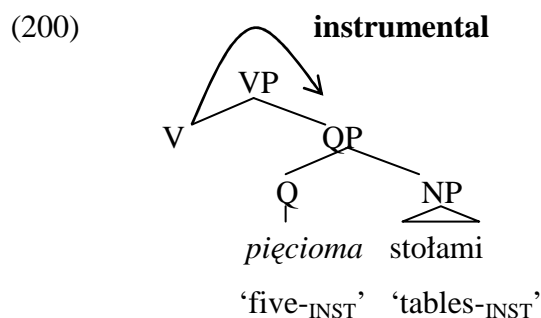
Arguments from ellipsis are discussed by Willim (2003), who shows on the numerous examples that non-ellipted element of the phrase does not gain a status of a head of a phrase in which case its ability to mark the whole phrase as Accusative in the subject position is also undermined.¹²⁶

The numeral, labeled as Q (Quantifier), is also viewed as the core of the numerically quantified phrase and the source of Genitive case. Such an account is presented by Bailyn (2004) who actually unifies the Genitive case assignment following Pesetsky and Torrego’s (2001) ideas that Nominative case is simply an uninterpretable Tense feature on nominals. In what follows, all instances of structural Genitive case (as opposed to lexical) are examples of feature valuation by the Q head. The noun is a complement to Q and the heterogeneous syntax becomes the result of placing the numeral in the specifier position of QP which at the same time licenses the whole phrase (Bailyn 2004: 18), e.g.:



¹²⁶ Willim (2003) provides many examples of different constructions, including sentences with predicative adjectives which require Nominative instead of postulated by Przepiórkowski Accusative. For a detailed discussion see Willim (2003: 246-252).

The homogenous patters, on the other hand, arise when the numeral is placed in the head position absorbing, at the same time, case assigning properties of the head. Then, the external governor becomes the source of case for both the numeral and the noun which renders the case agreement between these two elements, e.g.:



This way, i.e. by unifying the structure of the numerically quantified phrase and by placing lower and higher numerals within QP, Bailyn (2004) makes the assignment of all types of Genitive uniform, making a Q head responsible for a Genitive form of nouns.¹²⁷

3.3.3. Head properties split between the numeral and the noun

In the vast literature on numerals another group of analyses focusing on different properties of lower and higher numerals explores the possibility of different structures depending on the type of a modifier. One of the well-known approaches by Dziwirek (1990), Tajsner (1990), Franks (1994, 1995) or Bošković (2006) provide a close-up of the architecture of the nominal phrase with numerical quantifiers considering lower and higher numerals affecting the nominal projection and/or the mechanism of case assignment and distribution within the phrase.

In Dziwirek (1990) the head on the phrase is established on the basis of case assigning properties and concepts utilized in the framework of Relational Grammar.¹²⁸

¹²⁷ Some potential questions that arise with regards to the analysis are those relating to the licensing the QP phrase containing lower numerals and the conditions deciding about placing lower virile numerals in the specifier position instead of the head position which is connected with their case assigning properties.

¹²⁸ For reasons of space I will not go into details of Relational Grammar which is based on different roles and relationships between elements in the sentence which change depending on the strata. There is no reference to structural properties of a sentence but the formalism explores the grammatical relations as primitives. For a discussion of a framework see Perlmutter (1983 and subsequent works) or Blake (1990).

As a result, in a numerically quantified phrase in oblique case positions, the numeral is treated as a modifier but in Nominative and Accusative contexts the relation between the numeral and the noun is reevaluated and in the so-called final strata, the numeral becomes the head and the noun becomes demoted, i.e. is not longer the nucleus of the phrase. In a similar fashion, but employing a different framework, Tajsner (1990) accounts for disparities in discussed phrases. Analyzing various contexts, for example, agreement in case with the external case assigner in structural case positions (Tajsner 1990: 153), Genitive of negation (Tajsner 1990: 154) it seems obvious that the numeral quantifier constitutes the head of the phrase, e.g. (from Tajsner 153f. but glosses and translations are mine)

- (201) a. *Widziałem kilka dziewczynek.*
 saw-1SG.MASC.PAST several-ACC girls-FEM.GEN.PL
 ‘I have seen several girls.’
- b. *Nie widziałem kilku dziewczynek.*
 not see-1SG.MASC.PAST several-GEN girls-FEM.GEN.PL
 ‘I have not seen several girls.’

Yet, if selectional restrictions, i.e. the fact that the verb subcategorizes for the noun as in example (202a), and extraction observations showing that the head moving to the specifier position violates Structure Preservation Constraint as in sentences (202b) and (202c), are considered, the noun becomes the candidate for the head of the phrase (Tajsner 1990: 154f.), e.g.:

- (86) a. *Zjadłem kilka parasolek.*
 ate-1SG.MASC.PAST several-ACC umbrellas-MASC.GEN.PL
 ‘I ate several umbrellas.’
- b. *Ile_i widziateś [t_i dziewczynek]?*
 how.many saw-2SG.MASC.PAST girls-FEM.GEN.PL
 ‘How many girls did you see?’
- c. **Kogo_i widziateś [kilka t_i]?**
 whom saw several
 *Whom did you see several?

Such mutually exclusive facts, i.e. case assignment by the numeral on the one hand and the head status of the the noun as contrasted with the phrasal status of quantifying expressions lead to the conclusion that at different steps of a derivation different elements are heads of the phrase. This way, at D-structure the noun is the head of the phrase and at S-structure, after the restructuring operation, the numeral becomes the head. The restructuring approach allows to account for case distribution in oblique and structural contexts, i.e. at D-structure when the inherent case is distributed and the numeral agrees in case with the noun, and at S-structure when the numeral becomes the head of the phrase agreeing in case with the external case assigner and when it assigns Genitive to the noun. Although this analysis seems to address properties of constructions of numerals it is placed in the generative framework based on the existence of levels (D and S-Structure) which have been dispensed with in the Minimalist Program (Chomsky 1995 and further permutations of the theory). Therefore, a more up-to-date analysis is necessary that would be compatible with the current assumptions of the generative model.

In a more minimalist spirit Franks (1994, 1995) and Bošković (2006) address the problem of numerically quantified phrases. In Franks (1994, 1995, 2002), the architecture of phrases with numerals varies depending on a language, i.e. in Russian, Serbo-Croatian and Polish such constructions presenting slightly distinct traits are ascribed different structures. In Russian, in which in structural case positions the noun is invariably assigned Genitive, both by lower and higher numerals, the claim is made that Genitive of Quantification is structural and the N head can project either to NP/DP or to QP¹²⁹. In Serbo-Croatian, on the other hand, in which Genitive appears on a noun in the whole case paradigm, i.e. whenever the structural or oblique case is assigned, Genitive of Quantification is said to be inherent¹³⁰ and the numerically quantified noun phrase is supposedly an NP/DP¹³¹, whereas in Polish QP is projected in restricted situations as the Genitive of Quantification is assigned only in accusative contexts¹³². In Bošković

¹²⁹ The NP/DP versus QP status of numeral subjects is determined on the basis of some tests, e.g. control of gerunds and infinitives and binding. For a more detailed discussion see Franks (1995: 118ff.).

¹³⁰ Later, in Franks (2002), the inherent versus structural Genitive dichotomy is handled by means of [+ oblique] versus [-oblique].

¹³¹ In Franks (2002: 155) N in Serbo-Croatian projects to KP.

¹³² The *Accusative Hypothesis* is based, on the one hand, on the fact that Accusative forms of numerals are syncretic in Nominative and Accusative, e.g. pięć-NONVIR.NOM/ACC.PL and pięciu-VIR.NOM/ACC.PL., and on the other, on the lack of the subject-verb agreement between the numeral subject and the verb, as well as due to Accusative forms of determiners accompanying virile quantified nouns in a subject position, e.g.

(2006), however, the numerically quantified phrases have the same structure but agreeing numerals and those assigning Genitive are granted different positions in the nominal phrase. First of all, in examples with agreeing numerals the structure corresponding to the adjectival modification is employed, i.e. numerals that agree in case with the noun are compared to adjectival adjuncts, e.g. $[_{NP} AP [_{N'} N]]$, whereas phrases with Genitive nouns are presented as QPs with Q heads taking NPs as their complements, e.g. $[_{QP} [Q NP]]$. Subsequently, both patterns are expressed by means of a uniform projection FP accommodating both the numeral and the noun but with the former in a different position. In contexts with agreeing numerals the numeral as an AP is located in the specifier of NP, e.g. (89), and in Genitive contexts, the numeral is a QP placed in the specifier of FP, e.g. (90), (Bošković 2006: 102f.).

- (203) a. $[_{FP} [_{F'} F [_{NP} AP [_{N'} NP]]]]$
 b. $[_{FP} QP [_{F'} F NP]]$

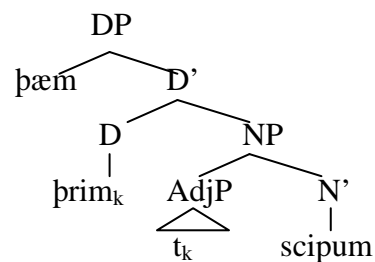
The consequence of proposed structures is that the case is assigned by F head, so the Genitive, only when the specifier is present, i.e. when the numeral occurs, which is demonstrated in example (203b). When the specifier in the FP is empty, e.g. (203a), the source of case is outside the projection. To ensure that the proper structure will be employed numerals are specified already in the numeration whether they are adjectival, thus agreeing with the noun or quantificational and assigning Genitive (Bošković 2006: 103). This analysis, despite proposing a uniform structure for the nominal phrase, makes a split within numerals. The consequence of this approach is that at the expense of the structure, numerals are classified as belonging to two grammatical categories.

-
- (12) a. *wszyscy/ci mężczyźni*
 [all /these men]_{-NOM}
 b. *wszystkich/tych pięciu mężczyzn*
 [all /these five men]_{-GEN}

Although, morphology and the lack of subject-verb agreement may indicate such a scenario, there is no explanation either in Przepiórkowski (1999) or in Franks (1995, 2002) what the source of Accusative subject is.

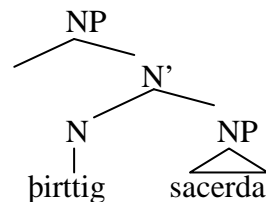
According to Wood (2003), phrases with lower and higher numerals, and, what follows, with different patterns of case distribution, have two different structures. Numerals agreeing in case with the modified noun are described as adjectival thus they occupy the head of AdjP, e.g. (from Wood 2003: 216):

- (205) *þæm þrim scipum*
 those three ships



Numerals that assign Genitive, on the other hand, are heads taking quantified nouns as their complements, e.g.:

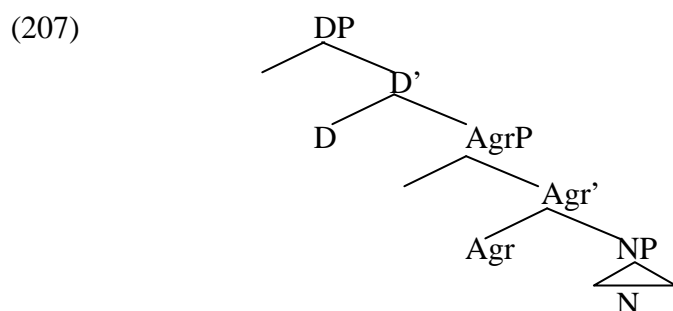
- (206) *þirttig sacerda*
 thirty priests



The NumP which is traditionally the projection hosting numerals, is argued to develop in Middle English, with the rise of the indefinite article. The arguments for lack of NumP at this period of English come from the development of compound pronouns after Old English, comparison of declensions in Old English and German and the emergence of intensifying adjectives which are said to occupy the position preceding the indefinite article, i.e. the specifier position of NumP (Wood 2003)¹³³. The Old

¹³³ Compound pronouns such as *anybody*, *anything*, *everything*, especially followed by the adjectives, are formed by the movement of the light noun from N to Num position. As these compounds appeared in the Middle English they serve as the evidence for the lack of NumP in Old English (Wood 2003: 164).

English nominal phrase, though, has the structure presented in (207), in which definiteness is checked in DP and case and gender in AgrP¹³⁴ (Wood 2003: 152f.).



The plurality of nouns, interestingly, as manifested by the morphological endings on nouns, does not have to be checked against Num head (Wood 2003: 153f.). Such an approach to numerically quantified phrases, although interesting, seems to be problematic, especially in view of lower numerals and their adjectival status. As Wood (2003) points out, pronominal elements differ considerably when it comes to their order of appearance and requirements regarding morphology, i.e. two quantifiers cannot co-occur but the quantifier and the numeral can, moreover, a numeral can be preceded by a demonstrative but not a quantifier. With respect to morphology, adjectives preceded by a demonstrative have a weak inflection whereas numerals are strongly inflected, which all in all make them a different category than adjectives and consequently that should be marked in the structure. Furthermore, the fact that numerals following demonstratives have a strong inflection rather than weak may resemble examples from German in which adjectives from particular declensional classes following the indefinite article and possessives are strongly declined in structural case positions¹³⁵ (see footnote 26), which is related to the presence of NumP between DP and KP blocking case percolation found either on D or K (Wood 2003: 166-170). Despite the fact that my intention is not to apply the analysis from German (originally proposed by Mallen 1997 and discussed by

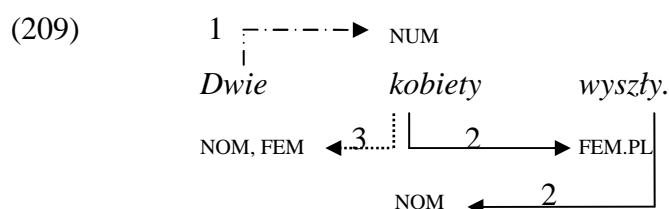
Another argument for the lack of NumP comes from German, in which three adjective declensions are found instead of two present in Old English. This state of affairs is due to the NumP placed between DP and KP in German preventing case percolation to DP which results that not a demonstrative but an adjective ends up with a strong declension. Finally, degree words such as *so*, *such*, *what* etc. preceding the indefinite article which are analyzed as occupants of specNumP did not appear in English.

¹³⁴ AgrP in Wood (2003: 153) corresponds to KP.

¹³⁵ Obviously, declensional patterns in German are a bit more complex, especially, that this strong declension is found only in singular, as in plural it is the demonstrative or a possessive that takes a strong declension and the adjective weak. There are also variations depending on the declensional class (Wood 2003: 168).

When it comes to Polish, there is disagreement on the structure of nominals either as accounts split between those arguing for the numeral or the noun as the head of the phrase.

The major argument for the numeral as the core of the phrase is put forward by Saloni and Świdziński (1998), Saloni (2004), emphasizing the case assigning properties of higher numerals thus designating them for the core of the phrase. In the opposite view, i.e. that the noun is the head of the phrase, Bobrowski (1998) presents the model in which lower and higher numerals agree in their features with nouns resulting in homogenous and heterogenous patterns. Lower numerals, but only non-virile, check number with the modified noun which previously enters into the Agree relation with the verb. Only after the agreement between the noun and the verb is obtained, gender and case features are checked between the noun and the numeral¹³⁸, e.g.:



Higher numerals, however, possess additional feature, i.e. a case feature, responsible for Genitive forms of modified nouns. In this situation, the checking relation is, first of all, reached between the numeral and the noun. When the noun is settled with Genitive, the Nominative case feature of the verb¹³⁹, is introduced in the derivation and attempt is made to check it with the noun. As the noun has already checked its feature with the numeral, the case feature is sent over to the numeral. The form of the verb, however, is the result of the lack of agreement between the noun and the verb and not between the numeral and the verb, i.e. the verb assumes third person singular in the light of the missing relation between the noun and the verb. Interestingly, this mechanism is a bit altered when it comes to lower virile numerals which just like higher ones assign Genitive to the noun. Here, Bobrowski (1998: 72) proposes that virile *dwóch* is a separate lexeme which in the numeration, contrary to lexeme *dwa*, has a gender and

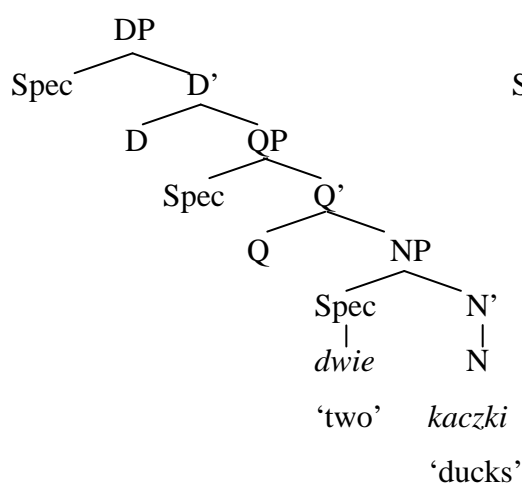
¹³⁸ It seems that the relation between the numeral and the noun occurs in two steps, first when the number is established and secondly, when gender and case of a numeral are checked. Also, at first stage, the checking relation between the noun and the verb is arranged.

¹³⁹ Although it is not stated in Bobrowski's account (1998), the Nominative feature of the verb should be understood as the feature of the INFL or T head.

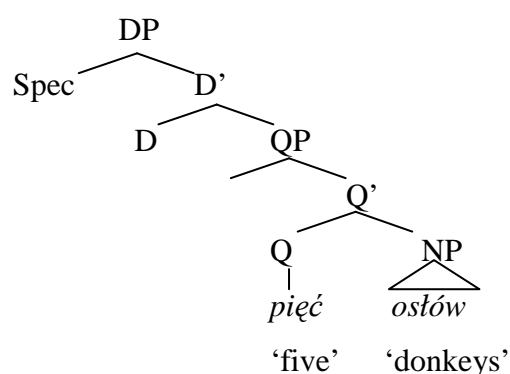
case feature due to which the agreement relation occurs first between the numeral and the noun and later with the verb. A described procedure applies in structural case positions, yet, when the phrase with the numeral is present in oblique case positions, the checking relation between the numeral and noun is superceded by the relation with the verb, i.e. case features of the verb are imposed on the numeral and the noun irrespective of the Genitive feature distributed by the numeral. Despite the fact that this proposal is based on the generative model it suffers from several shortcomings. First of all, derivations seem to be countercyclic, secondly, it is not specified what category particular elements in a clause are, e.g. whether a nominal phrase is a QP, DP or NP, or what the position of numerals within the structure is.

The analysis in which a noun is the core of the phrase is also introduced by Rutkowski (2002b). Yet, in his account, lower and higher numerals are divided into the so-called A-numerals and Q-numerals respectively. Such a distinction within numerals is tightly connected with their case-assigning properties and is reflected in their structure, e.g. (from Rutkowski 2002b: 13).

(210) a. A-numerals



b. Q-numerals



The major motivation behind a division within numerals, according to Rutkowski (2002b), lies in their syntactic behavior. Higher numerals are located in the position of a functional head Q as they are viewed as elements with limited semantic context whose meaning is reduced to express quantity (Rutkowski 2002b : 11). Moreover, they assign Genitive to the noun they modify and are intrinsically Accusative. Lower numerals, on the other hand, always agree with a modified noun and are found in the specifier

position of the NP. When it comes to case distribution within phrases it takes place twofold. Lower numerals have the same case as a modified noun due to the spec-head agreement in the spirit of the Chomsky (1995) whereas Q-numerals assign case to its complement. The only issue left is a variation of case assignment in structural and oblique case positions which is dealt with by Rutkowski (2002b) by application of two levels of representation, i.e. D-structure and S-structure. By treating Q-numerals as functional elements, Rutkowski (2002b: 22f.) proposes that they are introduced in the derivation as late as at S-structure, therefore in oblique case positions, where the inherent case is assigned, only the noun receives case due to downward percolation to the first syntactic head. After the insertion of Q-numerals, they agree in case with the noun rendering the homogenous patterns. Although this analysis seems to accommodate properties of numerals in Polish, on the one hand it refers to Chomsky's model of phi-features and specifier-head agreement but on the other it still relies on the notions of D- and S-structure that have been eliminated in the Minimalist Program and its permutations.¹⁴⁰ Moreover, criteria justifying the division into A-numerals and Q-numerals relying on their semantics and syntactic behavior do not seem to be fully justified. As both lower and higher numerals quantify a modified element and they both participate in the formation of complex numerals it is hard to disambiguate them considering their semantics. Furthermore, apart from case issue, lower and higher numerals do agree in phi-features with the noun, i.e. in gender. Finally, the apparent intrinsic feature of higher numerals making them Accusative, as concluded on the basis of examples with Nominative virile demonstrative *ci*, e.g. **ci pięciu rolników* (these-NOM.PL [five farmers-PL]-VIR.GEN), cannot be exclusively attributed to higher numerals as it seems to be operative also with lower numerals, e.g. **ci dwóch chłopców* (these-NOM.PL [two boys-PL]-VIR.GEN). Therefore, the distinction into functional and lexical elements is not very accurate.

Having discussed selected analyses and approaches to phrases with numerals first cross-linguistically, then focusing on Old English and Polish, it seems that available accounts do not bring conclusive answers to all aspects of syntax of numerically quantified phrases leaving some questions regarding not only a particular language but also their structure in general. Therefore, in the following sections I address

¹⁴⁰ Reference to D- and S-structure resembles accounts of numerals from Government and Binding theory, e.g. Babby (1987) or Tajsner (1990). However, Rutkowski (2002b) builds his analysis on the idea of late merge of functional elements as discussed by Emonds (2000) and Veselovská (2001).

some of the problematic issues such as the structure of nominals with numerals and case distribution. In my proposal I assume that a nominal phrase is not a bare NP but it is topped with a functional projection FNP, which may correspond to the universal projection DP. Lower and higher numerals, both in Old English and Polish are treated as elements of the same category thus they are located in the same position irrespective of their value, i.e. in NumP/QP.¹⁴¹ Moreover, case assignment is explained by means of movement to selected positions within the structure, as case is reanalyzed as a terminal node within KP due to which particular elements receive case. Cardinal numerals, analyzed as belonging to one part of speech, according to my analysis from chapter 1, occupy the same position within the structure of nominals irrespective of their properties related to case. This claim is additionally supported with their syntactic behavior which clearly indicates that any division within a numeral group is unfounded. Analyzing structures in which both lower and higher numerals can move to the sentence initial position marked with focus, e.g. (211a) and (211b), or that they both license ellipsis of a noun, e.g. (212), one can see that, apart from case issues, nothing else points to their bi-partite division.

- (211) a. *Cztery_t to mogę zrobić [t przysiady], ale*
 four this can-1SG.PRES do-INF knee.bends-ACC.PL but
czterdzieści to za dużo.
 forty is too many.
 ‘Four knee bends, I can do, but forty is too many.’
- b. *Dwadzieścia_t to bym upiekła [t ciastek], ale dwieście?*
 twenty this would bake cookies-GEN.PL but two.hundred
 ‘Twenty cookies, I would bake, but two hundred?’
- (212) *Każde dziecko zjadło śliwki na deser. Maria zjadła trzy, a*
 every child ate plums on dessert. Mary ate three and
Zosia pięć.
 Sophie five
 ‘Every child ate plums for dessert. Mary ate three and Sophie five.’

¹⁴¹ NumP or QP are names for the same projection hosting numerals. NumP has been used in previously discussed accounts. I use QP as numerals and other numerical expressions are labeled as quantifiers.

Apart from discussion on the structure of nominals and mechanisms of case distribution the following sections include also a commentary on the adjectival modification within numerically quantified phrases and subject-verb agreement found in phrases with numerals.

3.4. Case as a terminal node and the account of numerically quantified phrases: Preliminary assumptions

In the debate on the architecture of nominal phrases there has been no common stand not only on the head of the phrase, i.e. the noun or the numeral, but even on the attachment place of modifiers, numerals including. Some other contestable issues refer to the mechanisms of case assignment and distribution in phrases with numerals. In the current section, I focus on establishing the structure of nominals taking into account a *universal DP hypothesis* for both Old English and Polish. Then, I turn to the place of numerals and possibly other modifier arguing for the separate projection QP/NumP hosting weak quantifiers and cardinal numerals of both type. Presenting a uniform structure of numerically quantified phrases is a first step in my proposal which is developed in the subsequent sections.

Following Wood (2003) and her arguments, I assume that Old English featured a DP, yet contrary to her claims regarding a Number Phrase which developed with the emergence of the indefinite article, I postulate the existence of this projection being at the same time place for cardinal numerals in its head position and weak quantifiers in its specifier position. When it comes to Polish, although DP is also not commonly recognized due to the lack of candidates to fill a head or the specifier position within DP, e.g. see Willim (2000), on the basis of the presence of other elements in the Noun Phrase such as demonstratives, possessive pronouns or genitival adjectives as argued by Migdalski (2001, 2003), I claim that some extra projection has to be present to provide place for these elements and to enable checking of some formal features.¹⁴² Additional evidence for an extra projection in Polish, let's name it FNP, comes from different word orders. Starting from examples with strings containing a noun and a demonstrative, e.g. *ta dziewczyna* (this girl) vs *dziewczyna ta* (girl this), to

¹⁴² According to Migdalski (2001, 2003), movement to DP in Polish is motivated with the need to check referential and deictic features of demonstratives, possessives or the so-called genitival adjectives.

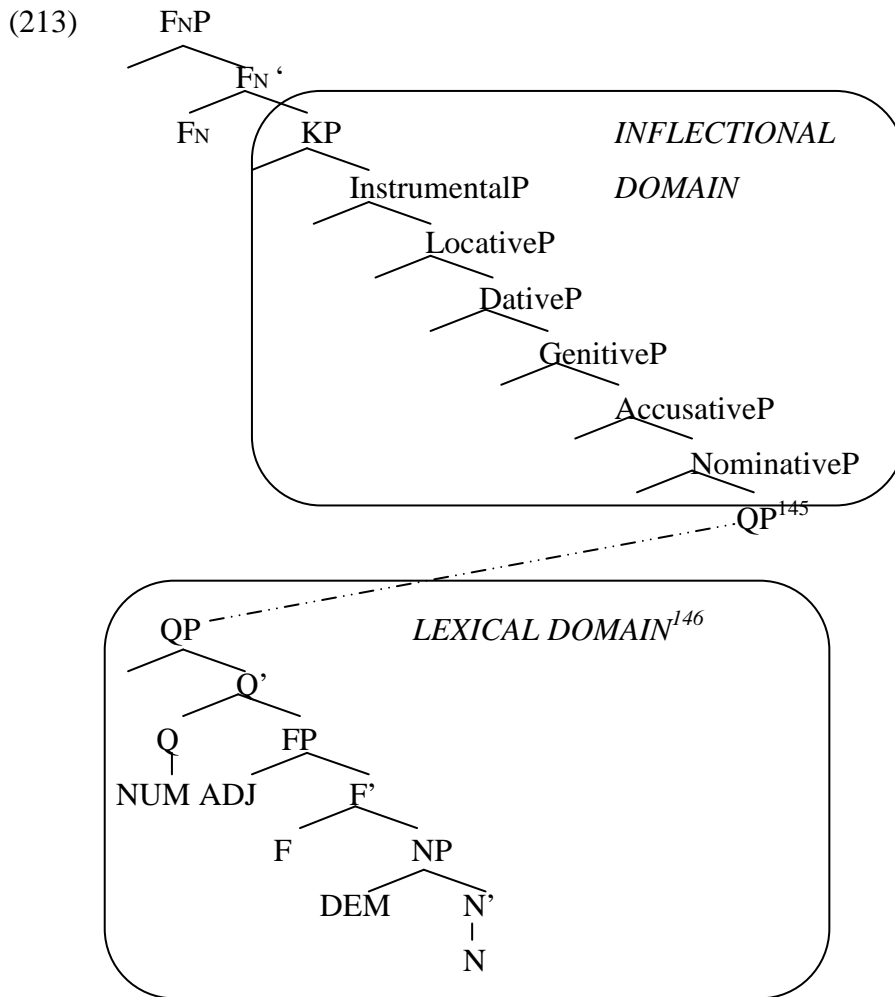
examples containing numerals and demonstratives which can occur in two positions, i.e. preceding the numeral, e.g. *tych sześć jabłek* (these six jabłek) and preceding the noun, e.g. *sześć tych jabłek* (six these apples). Therefore, for both Old English and Polish the proposed structure is the one with a FNP and NP. Yet, between these two projections I also assume the presence of KP which following Willim (2000) is the place where morphological case is checked. Taking into account the following facts, i.e.

- i. within a nominal phrase a position is needed which could provide the right interpretation of the nominal phrase, i.e. indefinite specific and specific,
- ii. in inflectional languages such as Polish case is morphologically marked on nouns,
- iii. due to the diversity of modifiers in the nominal domain, e.g. quantifiers, adjectives and demonstratives, they cannot be grouped together as adjuncts,

I propose that the structure of the nominal phrase in Polish is composed of three domains, i.e. the domain constituted by FNP¹⁴³, *the morphological or inflectional domain* in which nominal elements acquire case and *the lexical domain* or *the domain of the first merge*, i.e. a domain in which the noun, its modifiers and complements are base-generated, e.g.¹⁴⁴

¹⁴³ FNP states for a maximal nominal projection. For the time being, I leave domain constituted by FNP the least specified. Yet, it must be said that this region may contain more projections, some of them being responsible for interpretation, focus etc. Definitely, it is a place to which some modifiers move to regain scopal relations after movements within the inflectional domain.

¹⁴⁴ A tripartite division within the nominal domain was proposed by Grohmann (2003). Moreover, such a complex structure of nominals, i.e. with numerous projections, has been already introduced, e.g. in Longobardi's (2001) work.



The noun enters the derivation as the head of the NP which is subsequently dominated by projections hosting adjectives and quantifiers. The demonstrative as a deictic element is located close to the head noun, in the specifier of NP, which later moves to specFNP to check some formal feature.¹⁴⁷ Such a position of a demonstrative can be supported with the following points. First of all, the low position of demonstratives has been widely argued in the literature, e.g. by Brugé (1996, 2002), Giusti (1997, 2002) Panagiotidis (2000), Guardiano (2010) or Roberts (2011). Although the exact position of a demonstrative varies, for instance in Brugé (1996, 2002) it has been in the specifier of a Demonstrative Phrase placed between DP and NP, in Giusti within a functional projection FP also between DP and NP, and in Roberts the specifier position of nP, what

¹⁴⁵ For space reasons structure is presented in two parts.

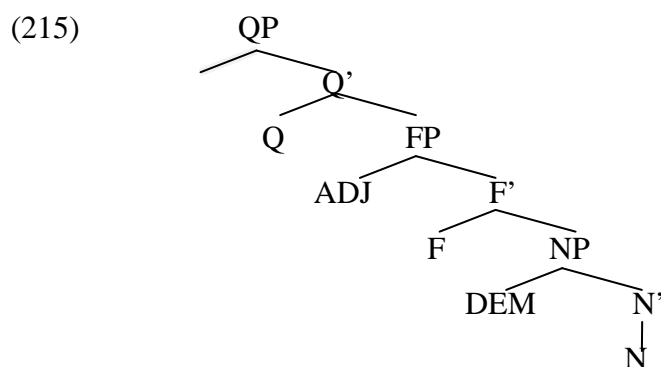
¹⁴⁶ Lexical domain may contain more projections, e.g. the one hosting possessive pronouns.

¹⁴⁷ Demonstrative in specNP has been proposed, for instance, by Manolesou (2000) or Panagiotidis (2000).

unifies these accounts is that this element moves to the specifier of DP. Secondly, the idea that it occupies the specifier of NP is motivated with word order possibilities in the strings containing demonstratives, numerals and nouns. As the demonstrative can either precede the numeral, e.g. (214a) and (214b), or the noun, e.g. (214c), but also share the case value either with former, e.g. (214b) or the latter, e.g. (214a) and (214c), at least in two out of three cases it has to be base-generated in two different positions, i.e. in the specifier of NP or in the specifier of QP.

- (214) a. *tych* *pięć* *kobiet*
 these_{GEN} five_{NOM/ACC} women_{GEN}
- b. *te* *pięć* *kobiet*
 these_{NOM/ACC} five_{NOM/ACC} women_{GEN}
- c. *pięć* *tych* *kobiet*
 five_{NOM/ACC} these_{GEN} women_{GEN}

Adjectives originates in specifier positions of functional heads allowing for serialization of modifiers. This approach has been introduced and popularized by Cinque (1994, 1999) and Scott (2002)¹⁴⁸. Quantifiers occupy the QP, both the specifier position (weak quantifiers) and the head position (cardinal numerals, both lower and higher). The structure of the nominal phrase in the lexical domain is presented in (215):¹⁴⁹



Movement within the nominal phrase proceeds successively from one domain to another and it proceeds leftward. No movement is possible in the domain of the first

¹⁴⁸ For the adjunction analysis of adjectives cf. Valois (1991, 1996).

¹⁴⁹ Projections hosting modifiers so the adjectival FP and QP are present only when modifiers are introduced.

merge where all new elements are introduced into the derivation. This requirement follows naturally from the character of a domain which resembles the thematic domain and in which movement is forbidden. The inflectional domain is instantiated by the so-called *Kase Phrase* (KP). KP as the morphological checking domain has been proposed for Polish by Willim (2000: 325). In that account the noun moving up through the NumP, where it checks its number and gender, reaches the head position of KP where case-checking occurs. The nominal internal agreement, i.e. between the nominal head and its modifiers, proceeds through spec-head relation. Modifiers occupying specifier positions of NumP and/or KP agree in number, gender and case with the noun moving to the head position of NumP and KP respectively. In my proposal, although KP differs in its nature from Willim's approach, it is also a border projection demarcating the inflectional domain as well as a place pivotal for case assignment.¹⁵⁰ Also, KP indicates the upper bound on Cinque's requirement on movement of nominal elements which in order to acquire case must move from their base-positions, i.e. the domain of the first merge, to the inflectional domain. This movement, however is restricted, following Cinque (2005), according to whom displacement of any chunk of the nominal phrase must contain a nominal head. This simply translates into a condition prohibiting a solitary movement of nominal modifiers abandoning the noun. Such a restriction ensures, at least in my analysis, that none of the modifiers, which agree in number, gender and case features with a modifying noun, will attempt to check their features separately from the noun. As enumerated features belong to the inflectional domain instantiated by KP, this is the projection up to which this restriction applies. Consequently, movement out of KP is most of all legitimate as projections dominating KP constitute another domain, the one dealing with interpretation of the phrase, and this is indeed what happens in Polish nominals. After inflectional matters have been completed within KP, i.e. modifiers and the noun have been settled with the appropriate

¹⁵⁰ Internal agreement, i.e. concord, in nominal phrases can be established in a specifier-head configuration, e.g. by employing the model of feature checking as in Chomsky (1995) but based on a version of *Enlightened-Self Interest*, according to which trigger for movement lies both on the target and the moving element, instead of *Attract*. Such an approach is introduced by Carstens (2000). Although in my account movement and creating proper structural configurations are the key steps in the derivation, they are used only for the purpose of establishing cases for particular elements of the phrase. Agreement in phi-features, i.e. in person, number and gender, although not of primary interest here, is probably reached via *feature-sharing* as discussed by Danon (2011) and Frampton and Gutman (2000, 2006). The underlying idea is that in the presence of one valued feature, all instances of unvalued features (of the same type) become valued. And, this is what may happen in discussed nominal phrases. The source of value for gender might be the gender feature of the noun and for number the Q head. Obviously, there might be some other possibilities for placement of valued features, e.g. see Miechowicz-Mathiasen and Dziubała-Szrejbrowska (2012, 2013) for the account in which gender is parasitic on number.

case, elements other than the noun, for instance, demonstratives, adjectives or quantifiers have a green light to evacuate the KP region without the ancillary movement of the N head. This step has been in accordance with Cinque (2005) as in his approach movement to DP, e.g. focus-related movement without the company of a nominal head, has been allowed.

The interim structure of a nominal phrase in Polish has been presented in (213) and (215). As it has been already mentioned, all lexical elements are confined in the domain below KP which exemplifies the inflectional domain. From their base position, modifiers and the noun move up to KP and, subsequently, to FNP. Importantly, movement to KP is obligatory for all nominal constituents, whereas movement above KP involves only those elements that have to check some formal features¹⁵¹. Yet, at this point I have introduced the structure without the indication of movement which will be discussed in the following sections.

Having sketched a preliminary organization of a nominal phrase, in the next section I discuss the tenets of my analysis and then I present derivations of phrases with numerals considering morphosyntax of different modifiers accompanying the phrase.

3.4.1. Introduction of a framework and analysis

A starting point for a further discussion of numerically quantified phrases is a presentation of a mechanism according to which particular elements of a nominal phrase receive case. Considering various approaches to case assignment which were presented in the previous parts of this work, I would like to pay attention to a relatively new approach to grammar, nanosyntax, as employed by Caha (2009, 2010), Taraldsen (2009) or Muriungi (2009) which is based on the premises that features and not morphemes or words are the basic building units and thus they can be merged together to form larger structures. Built on the idea as proposed by Starke (2009) that syntax operates on atomic features which after being merged are subject to lexical insertion, Caha (2009, 2010) proposes a new theory of case.

The major tenet of the nanosyntactic view of grammar is that syntax does not work on the material from the lexicon but on abstract features that eventually give rise

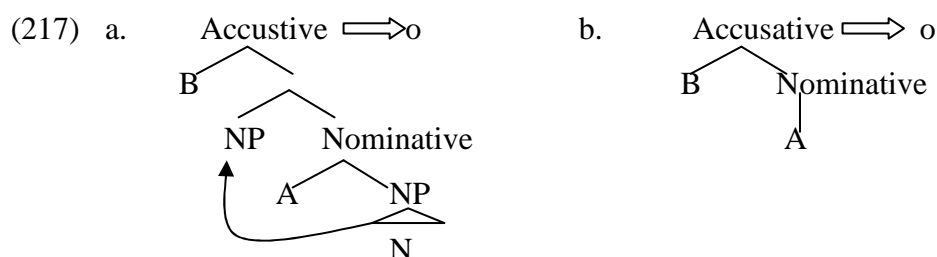
¹⁵¹ The obligation of movement to KP and the optionality of further movement to the domain above KP might be yet another reason for the applicability of Cinque's requirements only up to the inflectional domain.

to morphemes, words and phrases. These features are put together to form binary branching trees which are subsequently lexicalized. The immediate consequence of the proposed model is that there is no lexicon before syntax, morphology as a component of grammar has been dispensed with and structures are built to match those stored in the lexicon, which is a driving force in the syntactic computation, i.e. merge and movement proceed to create structures that would reflect those in the lexicon. Whatever is created in syntax is handed over to the lexicon where matching of formed structures and those already existing takes place.¹⁵² The choice of structures to be spelled out is constrained by some principles, e.g. *the Superset Principle* or *Elsewhere Condition*, which provide guidelines as to what structures are preferred eliminating those illegitimate. The definition of each is given below, e.g.:

(216) ***The Superset Principle***: A phonological exponent is inserted into a node if its lexical entry has a (sub-)constituent that is identical to the node (ignoring traces) (Caha 2009: 55 after Starke 2005).

The Elsewhere Condition: In case two rules, R1 and R2, can apply in an environment E, R1 takes precedence over R2 if it applies in a proper subset of environments compared to R2 (Caha 2009: 55).

The Superset Principle is the condition on the identity of structures, according to which a syntactic tree does not have to be exactly the same as the lexical one, i.e. it is enough that the lexical tree contains the syntactic structure, e.g. Constituent A, a Modern Greek word *vuno* with Nominative *-o* represented in (217a) can be lexicalized by structure in (217b) in which Accusative is also *-o*, as the latter contains the former, e.g. (from Caha 2009: 53-54):

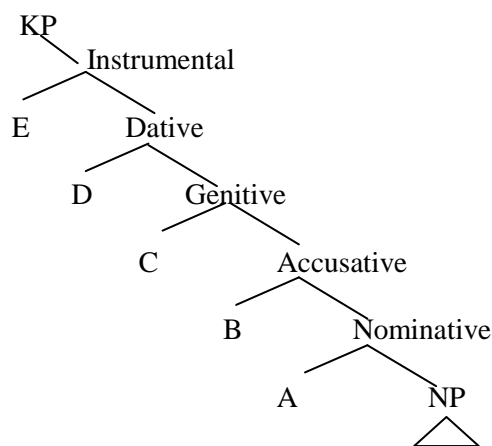


¹⁵² Foundations of nanosyntax are discussed in Starke (2009).

Now, having two different words, *athrop-os*_{NOM}, *anthrop-o*_{ACC} and *vun-o*_{NOM}, *vu-n*_{NOM}, the *Elswhere Condition* prevents *anthropos* from having *-o* in Nominative as although *-o* can apply in both Nominative and Accusative, in the presence of the rule saying that Nominative can also be *-os*, the more accurate matching is chosen.

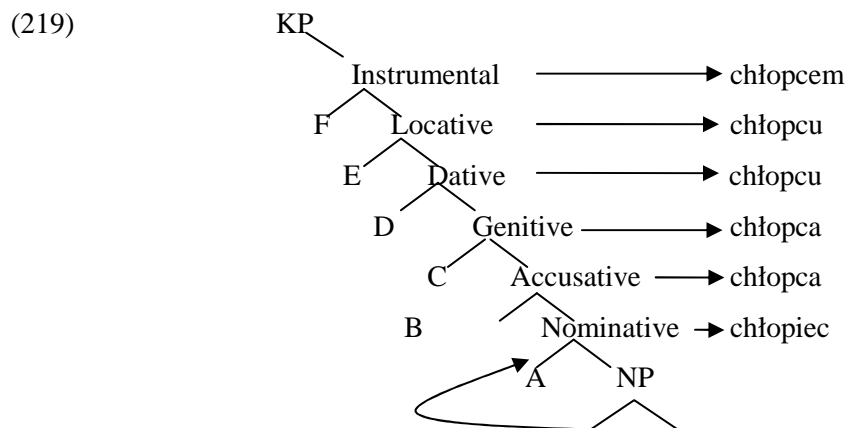
Considering basic assumptions of a presented approach, Caha (2009, 2010) analyzes case marking and provides an explanation for case syncretisms by postulating that cases decompose into features and are viewed as functional projections placed above NP. The ordering of cases in the syntactic tree, as stated in the *Universal case Contiguity* (Caha 2009: 49), is Comitative – Instrumental – Dative – Genitive – Accusative – Nominative, and is the same across languages. The sequence, which is a modified version of a case hierarchy proposed by Blake (1994) additionally allowing for Ergative, Locative and Ablative, tells us that if a given language has a particular case it also has every other that occurs to its right in the sequence or that is placed below it in the syntactic tree, e.g. (218).

(218)



In practice, that translates into the situation that if a language has Instrumental, it also has DAT, GEN, ACC and NOM, if a language has Dative it has GEN, ACC and NOM. If, at the same time Dative is also the highest case projection, a language does not feature Instrumental. The hierarchy is based on the analysis of attested syncretisms in a number of languages, e.g. Ancient Greek, Modern Greek, Arabic, and the idea that only adjacent cases can be syncretic. Moreover, the direction of containment, i.e. the higher case in the syntactic structure or the leftmost, contains those below or to the right in the linear representation is motivated with the fact that Nominative has been the most unmarked case and Nominative and Accusative as core cases are set apart from oblique

ones which are usually morphologically more complex (Caha 2009: 23), therefore the latter contain the former. When it comes to other cases such as Locative, Prepositional or Partitive, they are located in different places in the sequence depending on a language, e.g. in Classical Armenian Locative is placed between ACC and GEN (Caha 2009: 212), in Latin between GEN and DAT (Caha 2009: 124) and in Polish probably between Dative and Instrumental.¹⁵³ Prepositional, on the other hand, in Slavic languages is found between DAT and GEN, e.g. in Russian, Serbian, Slovene, and Partitive, if distinguished in a language, it occurs above Genitive. The adopted case hierarchy as represented in the syntactic tree in (218) reflects the proposal in which a nominal element receives case by moving to a position c-commanding a selected case feature. The sample derivation of a Polish noun *chłopiec* (a boy) is shown in (219).



In Caha's account the noun enters the derivation uninflected and with the full inventory of case features, i.e. an NP is topped with KP, standing for a *Kase Phrase*, split into particular cases. In order to receive case, a noun moves up above a given Case, probably to some specifier position within KP.¹⁵⁴ Moreover, movement of an NP must be leftward and containing a nominal head. These additional restrictions, as specified by Cinque (2005), ensure that the element moves to the c-commanding position which is required for a proper linearization (Kayne 1994), i.e. linearization of a noun and a case suffix, and that the modifiers of a noun do not move independently on the nominal head

¹⁵³ Placement of Locative in Polish is based on the syncretism with Dative in virile and non-virile singular (selected declensional classes). Adjacency of cases is a requirement for their syncretism (Caha 2009: 10).

¹⁵⁴ Caha does not provide details regarding the exact landing site of a noun. In his representation of a split KP, what is meant by Nominative, Accusative and other cases, is a non-terminal projection. Yet, the noun moving up as an element of XP type and not X^0 , must reach the specifier position of a phrase YP that gives rise to marking of a particular case.

(Caha 2009: 26). Having established the nature of case in the spirit of Caha (2009, 2010), I assume that in Old English and Polish an NP is also dominated by the KP split into cases. Every element nominal in nature, i.e. that possesses the [+N] feature, so the noun and its modifiers, acquires case in the course of a derivation by movement to a position c-commanding case^{155,156} and in compliance with Cinque's (2005) restrictions on movement. The only provision to this constraint is that it applies up to the KP which, in my view, demarcates the end of the inflectional domain, i.e. domain where nominal elements are secured with inflectional endings expressing grammatical categories¹⁵⁷. Building on the approach utilizing the idea of case not being a part of a feature matrix of a lexical and a functional item, but being represented in the syntactic tree, it seems to be a good solution to apply it to phrases containing numerals, so in situations in which we encounter both a homogenous and heterogeneous syntax. If case distribution amounts to movement of a nominal element to the position within KP region, we might be able to derive case patterns as found in numerically quantified phrases maintaining at the same time uniform structure of phrases with numerals agreeing in case with a modified noun and numerals accompanying nouns in Genitive. Following the ideas of Willim (2000) that KP is present in Polish and that it takes part in a checking relation of case features as well as Caha's with a split KP I propose the account of numerically quantified phrases in which case distribution is based on movement of particular elements within the KP region. What is more, the discrepancies in the syntax of lower and higher numerals have nothing to do with their positions in the syntactic tree or case assigning properties as irrespective of their value they occupy the same position. Although Caha (2012, 2013) also introduces his analysis of numerals using examples from Czech, his approach differs substantially from the one presented here, as he treats numerals as nouns with their own KPs. In consequence, every element bearing case has a KP to which it moves to end up with a particular case affix. In my analysis, on the other hand, numerals are not nouns, nor adjectives for reasons presented in previous chapters and sections but they are base-generated in the QP which as one of the projections placed

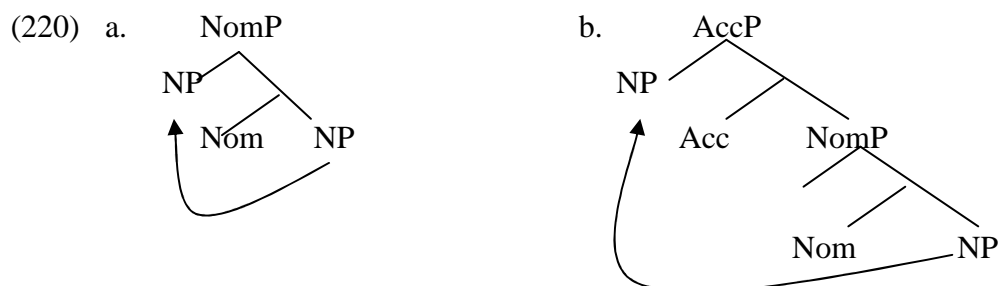
¹⁵⁶ A bit different approach to case is presented by Pesetsky (2012) who treats cases as affixal realizations on dedicated parts of speech. This way Genitive case translates into a morpheme of N category, Nominative of D, Accusative of V and oblique cases of P. Cases are assigned under the rule of *Feature Assignment* (FA) according to which when two objects merge features of one object are copied onto the other. Moreover, a Genitive morphology might be the result of FA or simply signal that the root is a noun and in this form it entered a derivation.

¹⁵⁷ At this point I handle only morphological case leaving aside number and gender for further research.

above NP. Moreover, due to the fact that all constituents of a nominal phrase in Polish decline and share the same number and gender features they are located around the nominal core, i.e. the lexical noun, and topped with one KP. The idea behind it is that all constituents of a nominal phrase bear the same case by default. If, however, the opposite is true, i.e. there are different values of case on particular elements of the nominal phrase, it is the result of some additional movements within the KP region. In the course of a derivation, i.e. when such a phrase is selected for as a subject or an object¹⁵⁸ and thus required to bear a particular case, a noun and every other element with [+N] feature move up to a given position within KP. Yet, acquiring case proceeds differently than in Caha's approach in which the noun moves to the position c-commanding a selected case, so that both the noun and the affix reach a configuration conducive to the proper linearization after Spell-Out. Here, not only the noun but also other elements that decline move altogether to the specifier of what I call Nominative Phrase (NomP), Accusative Phrase (AccP) or Genitive Phrase (GenP) etc. where they receive case. The immediate question, however, that comes along is how exactly the phrase containing the noun and modifiers, end up with a particular case. At this point, it seems to me that two scenarios could be at work here, i.e. the one based on Chomsky's (1993, 1995) approach employing feature checking in the specifier-head configuration and the one loosely based on Caha's approach but utilizing the idea of a syntactic tree matching the corresponding structure in the lexicon. In the first version, the nominal phrase with the noun having case feature that is uninterpretable [-interpretable] and without assigned value [-value] moves to the specifier of a chosen Phrase within KP and there, under spec-head agreement feature checking and valuation proceed. As a result, the case of a noun spreads or percolates within the phrase so that all modifiers end up with the same case. Although at first sight such a presentation of case assignment seems to be viable it does not work in those examples in which some of the constituents bear cases of different values, e.g. in numerically quantified phrases in which the numeral is Nominative or Accusative and the noun Genitive, as once the whole phrase reaches the position of some case it is impossible to exclude selected elements from getting the same case. If, on the other hand acquiring case is viewed in more structural terms, it might be possible to derive demanded case patterns in phrases with numerals. Let's say that getting a case means that a given element moves to the specifier position of Phrase

¹⁵⁸ Object of a verb or a preposition.

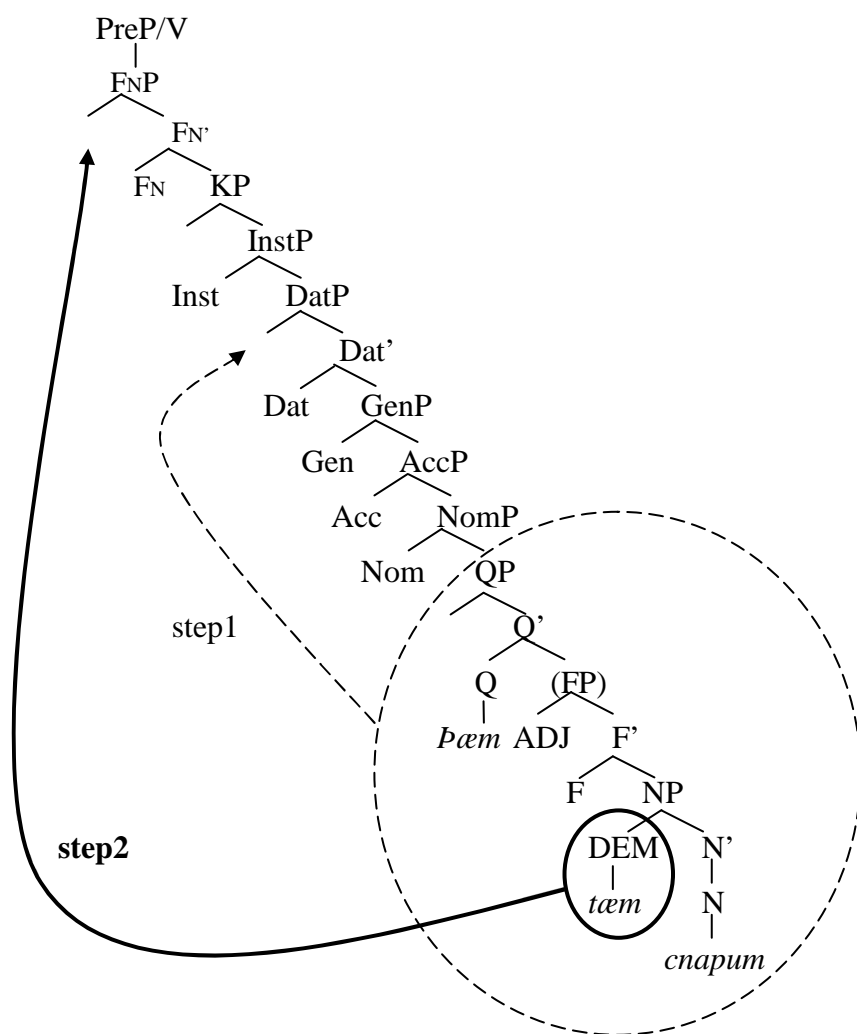
in the KP region, e.g. a noun to become Nominative moves to the specifier of Nominative Phrase, e.g. (220a), to become Accusative it moves to the specifier of AccP, e.g. (220b) and to obtain other cases, in the same manner moves to the specifiers of their case projection.



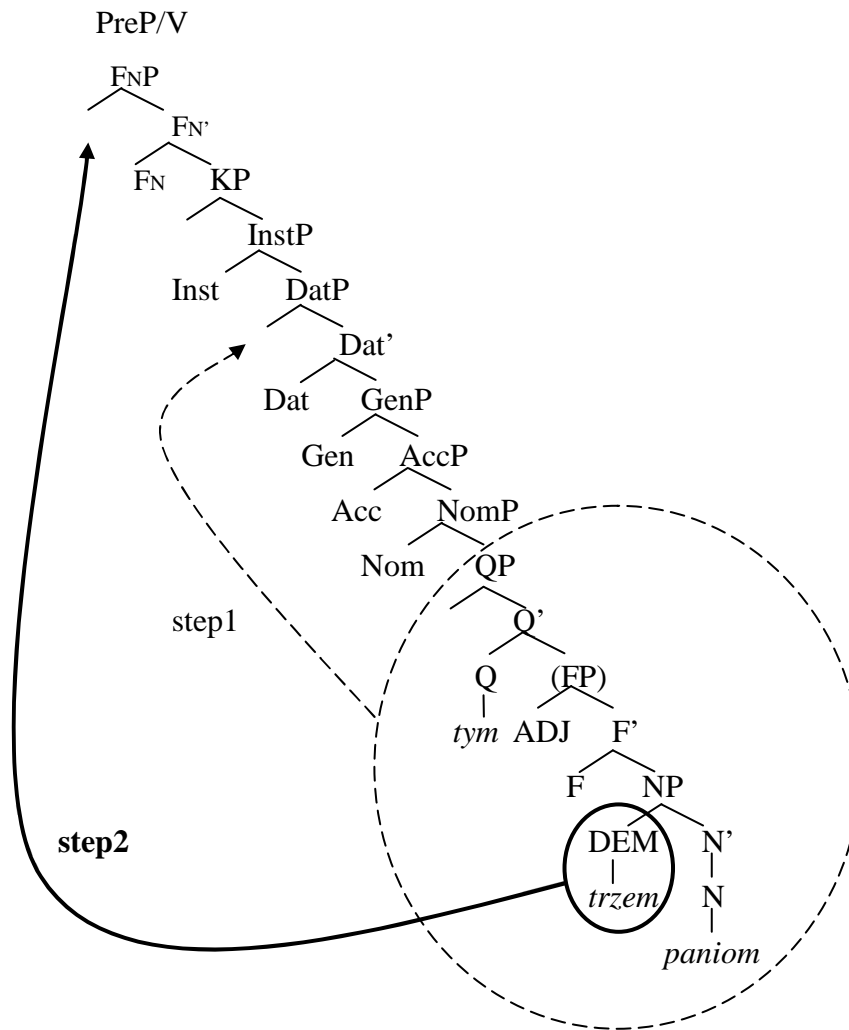
Then the configuration is created in which the element, i.e. the phrase with a noun and all its modifiers can be spelled out with a particular case. In order to see how it is employed to phrases with different case values, let's present a step-by-step derivation, firstly with agreeing modifiers and then in the example of Genitive of Quantification.

Having a nominal phrase with congruent modifiers selected by the external selector, for instance, a verb or a preposition imposing Dative on its argument, the whole phrase moves to the specifier of Dative Phrase (DatP), which is presented as *step 1* in example from old English, i.e. (221a) (Abraham and Isaac_Genesis 22:1-19), and Polish, i.e. (221b). The movement of [_{QP} [_{twæm} / _{trzy} [_{FP} [_F [_{NP} _{þæm} / _{te} [_{cnapum} / _{panie}]]]]]] to the specifier of DatP provides all the elements with Dative case. Yet, there must be one more movement, i.e. movement of old English demonstrative *þæm* and Polish *te* to the specifier of DP which not only ensures the right word order, i.e. demonstrative–numeral–noun, but also checks the referential feature of a demonstrative. Excorporation of a demonstrative to specDP is presented as *step 2* in both languages.

- (221) a. *þæm twæm cnapum*
 these_{DAT.PL} two_{DAT} servants_{DAT.PL}
 'the two servants'



- b. *tym trzem paniom*
 [these three ladies]_{-DAT}

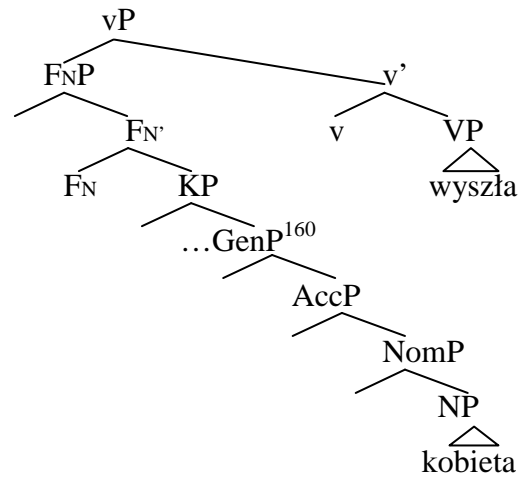


When the numerically quantified phrase is in the position requiring Nominative or Accusative, then both the lower numeral and noun move in the syntactic tree to acquire one of these cases, e.g. from Old English (*Ælfric's Colloquy*_34,35) and Polish:

(222) A: *Hwæt gelæhtest þu?*
 what caught you
 'What did you catch?'

B: *Twegen heortas ond ænne bar.*
 two-ACC red deers-ACC.MASC.PL and one-ACC wild boar-ACC.MASC.PL
 'Two red deer and one wild boar.'

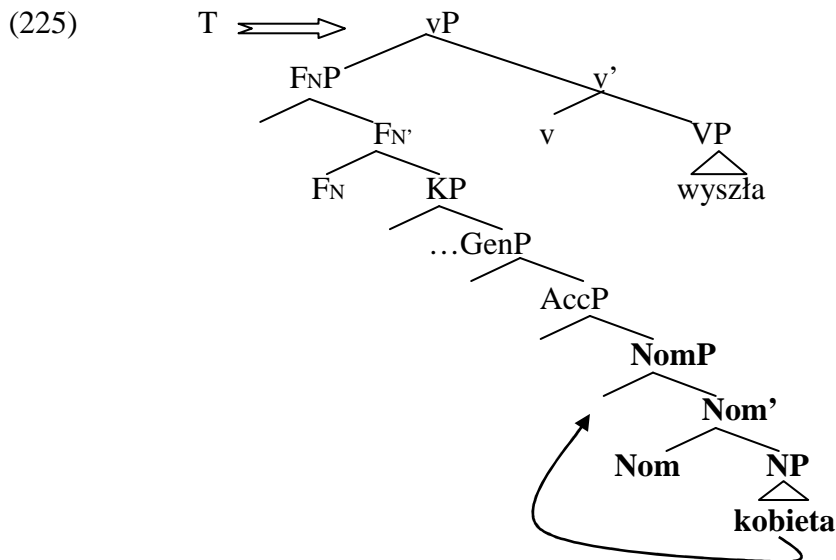
(224)



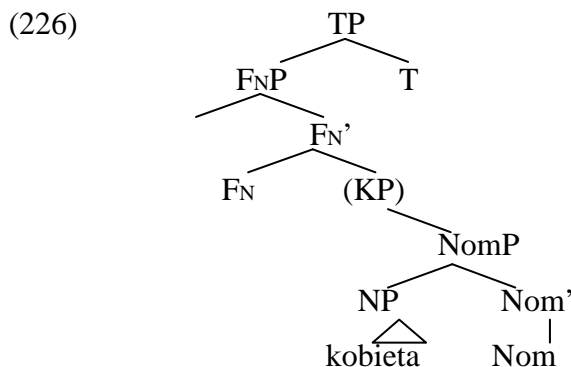
Then, when T merges into the structure, features of the probe T activate the NomP to which a nominal phrase moves, e.g. (225). The accessibility of *Case Projections* buried inside FNP as target positions for a nominal phrase upon the presence of probe T is possible assuming that FNP does not constitute a phase.¹⁶¹ Such an assumption not only finds its justification in the literature on phases but, what is of a paramount importance, has its consequences for derivations with higher numerals which are discussed in the current section.

¹⁶⁰ For clarity I do not include all *Case Phrases* in the syntactic tree. Moreover, I draw only specifier position when it is necessary to indicate movement.

¹⁶¹ A discussion of the phasal status of DPs, and other phrases, can be found, e.g. in Legate (2003, 2005), Svenonius (2004), Matushansky (2005) among others. As various diagnostics regarding DP as a phase do not provide conclusive evidence, what is more, case valuation constitutes a serious challenge to analysis with DP as a phase, I lean towards the view that DP is not a phase. Although, one of the solutions to address a problem of case assumes that it can be pushed to the phonological component, data from Polish, i.e. phrases in which the numeral and the noun bear two different case values, imply that case assignment cannot be reduced to phonology.



After this movement, so once the region of KP marked with NomP has been activated, the rest of *Case Projections* is no longer seen by syntax as inoperative. As the result, the DP has the following structure.



Derivations with numerals agreeing in case with nouns they quantify seem to represent a quite straightforward mechanism, yet with the phrases subject to Nominative or Accusative marking containing higher numerals, so the numeral requiring Genitive noun, the derivation must proceed in a different manner, i.e. in a way to reconcile with case requirements of the predicate and of the numerals. Interestingly, when the argument must bear one of the oblique cases the expected Genitive on the noun is replaced exactly by this particular case.

In Old English, arguments depending on the verbal predicate or a preposition could be marked as Nominative, Accusative, Genitive or Dative. In positions where the phrase was Nominative or Accusative, the numeral remained Nominative/Accusative

with a Genitive noun, e.g. (227a), and when Dative or Genitive was assigned, both the numeral and the noun shared the same case value, e.g. (227b) and (227c).

- (227) a. *On eallum geara sind getealde ðreo hund daga and fif*
 in every year are reckoned three hundred days-GEN.PL and five
and sixtig daga
 and sixty days-GEN.PL
 ‘In every year there are reckoned three hundred and sixty-five days.’

(Dominica Prima in Quadragesima_179)

- b. *fiftigum wintrum /mid twam stafum*
 fifty-DAT winter-DAT.PL /with two-DAT letters-DAT.PL
- c. *geond feowertigra daga*
 for.a.space.of forty-GEN days-GEN

A parallel situation with case distribution between the numeral and the noun is found in Polish. When a nominal phrase is a subject it can either be Nominative, Genitive or Dative. Nominative subjects are probably the most frequent option, yet some verbs require phrases in the subject position in Genitive, for instance, unaccusative verbs, e.g. (228a) or a negated verb *be* (być), e.g. (228b):

- (228) a. *Ludzi przybywało z każdą godziną.*
 people-GEN.PL were.arriving with every hour
 ‘People were arriving every hour.’
- b. *Marka nie ma w domu.*
 Mark- MASC.GEN.SG not have-3SG.PRES in home
 ‘Mary is not at home.’

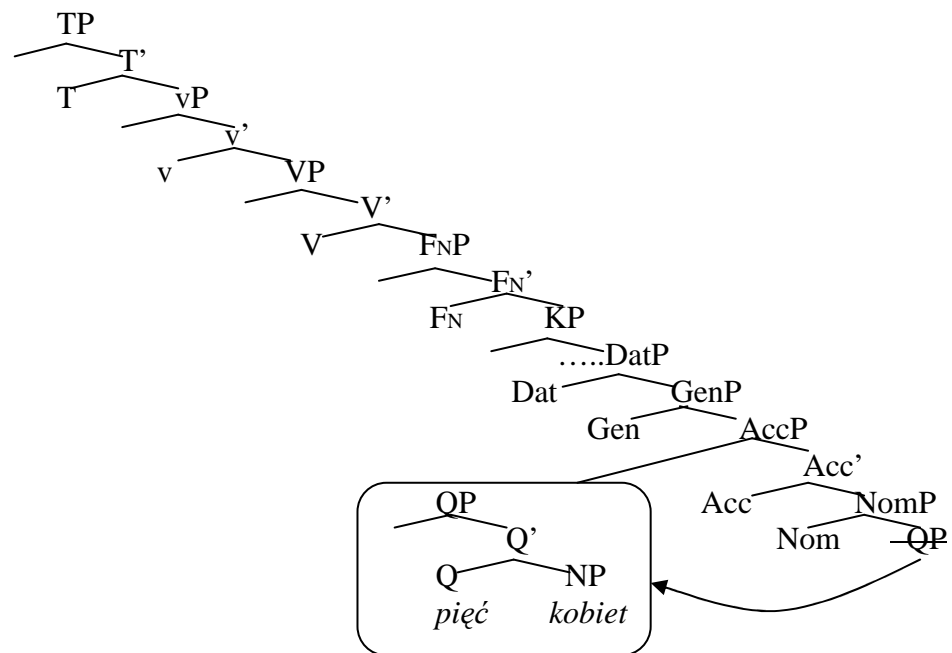
Another class of verbs belonging to psych verbs, such as *podobać się* (like + reflexive) or *nudzić się* (be bored + reflexive), is found with Dative phrases in the structural subject position, e.g.:

- (229) a. *Markowi podobało się przedstawienie.*
 Mark- MASC.DAT.SG liked REF performance.
 ‘Mark liked the performance.’

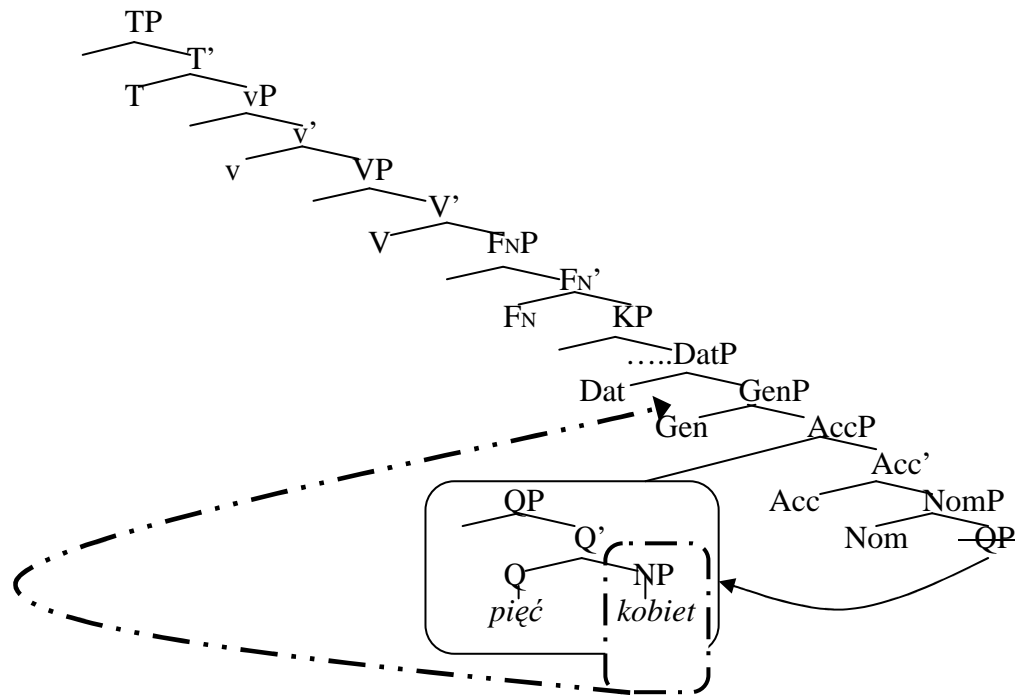
that the noun appearing with higher numerals is in Genitive, there must be one more round of movement ensuring that the noun receives required case value.

Recapitulating the whole derivation step by step what we witness are the following stages: i. the nominal phrase, i.e. consisting of a noun, its modifiers and functional layers (split KP and F_NP), uninflected, is selected as an argument. ii. Then, to comply with the selectional requirements of one of the following heads, e.g. T looking for a proper subject, or v and P (preposition) searching for a nominal complement, the phrase (QP) moves to the position within KP to get case imposed by the external selector, e.g. a finite T makes a QP move to specNomP, v triggers movement of complement, for instance, to specAcc etc. Yet, this is a scenario when the modifiers are congruent in case with the noun. When, however, the nominal phrase contains a higher numeral and the noun is in Genitive, two rounds of movement within KP are necessary, i.e. the one of the whole phrase to the position dictated by the external selector, e.g. (232a), and one more ensuring Genitive on the quantified noun, e.g. (232b). Steps of a derivation are presented on the example of the direct object *pięć kobiet* (five woman) required in Accusative.

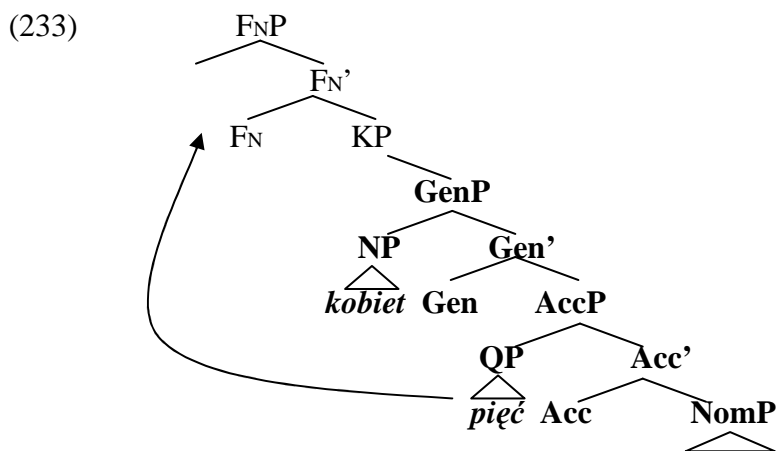
(232) a. Step 1 : movement of the QP to specAccP as required by the selector, i.e. v.



b. Step 2: Excorporation of the noun (NP) to specGenP to receive Genitive



After movements within KP are completed, the remaining *Case Projections* are neglected and the phrase has the structure as presented in (233). Still, although case matters are resolved, the problem of the right word order emerges, i.e. the numeral follows the noun, which is not what we expect. Thus, in order to regain the correct word order, the numeral must leave the inflectional domain via movement to FN_P.¹⁶³



¹⁶³ Considering that the structure of a domain above KP may be more elaborate, the exact landing site a numeral might be different than FN_P. Still, as the result of this lap of movement, the numeral evacuates the inflectional domain.

Presented steps in the phrase markers seem to meet all the demands of a convergent derivation, i.e. selectional properties of the external head are satisfied, all constituents of the nominal phrase have case and their correct word order is established. However, it seems that the timing of some derivational steps, i.e. acquiring different cases by constituents of the numerically quantified phrases, causes countercyclicity. To be specific, the noun quantified by higher numerals requires Genitive but it moves to the specifier of GenP after selectional properties of the external head are fulfilled, i.e. after the whole nominal phrase moves to the position to reach case imposed by the selector, for instance to specNomP or specAccP. Under the definition of cyclicity by Chomsky (1995) a strong feature must be checked as soon as enters the derivation implying that properties of an element corresponding to the goal in further permutations of *the Minimalist Program* must be satisfied immediately after being introduced. In the subsequent versions of the theory (e.g. Chomsky 2000), cyclicity is viewed in terms of satisfying properties of a probe before new elements of the lexical array are accessed for further computation. In what follows, movement of any element within F_{NP} to a position in a KP region is triggered by the external selector counting as the probe merged in the structure. Despite the fact that, at first sight, the numeral requiring the quantified noun in Genitive should force movement to KP, dislocation of the noun does not happen until later. The reason for such a state of affair might be twofold. On the one hand, the numerals may not count as probes (or they are defective probes not inducing movement of the potential goal), for instance because of their non-uniform syntax, i.e. homogenous and heterogeneous one, and on the other hand the noun might not serve as a proper goal for the numeral. The explanation for this may be that the noun in this shape, i.e. as the NP, cannot be a goal. Just like in the Chomsky's account, the available goal has a full set of phi features for the probe, including a case feature and the goal here is defined as a nominal having the minimal structure shown in (234). Only then, is the element visible and suitable for the probe-goal relation.

(234) [KP [**the inventory of Case Projections** [NP [N N]]]]

The inadequacy of the NP as a goal, however, does not erase the necessity of its Genitive marking. Still, in this case, to reconcile the lexical requirements of the higher numeral regarding the heterogeneous syntax and its deficient goal, movement of the NP to the KP region is postponed until the whole phrase from the lexical domain moves to

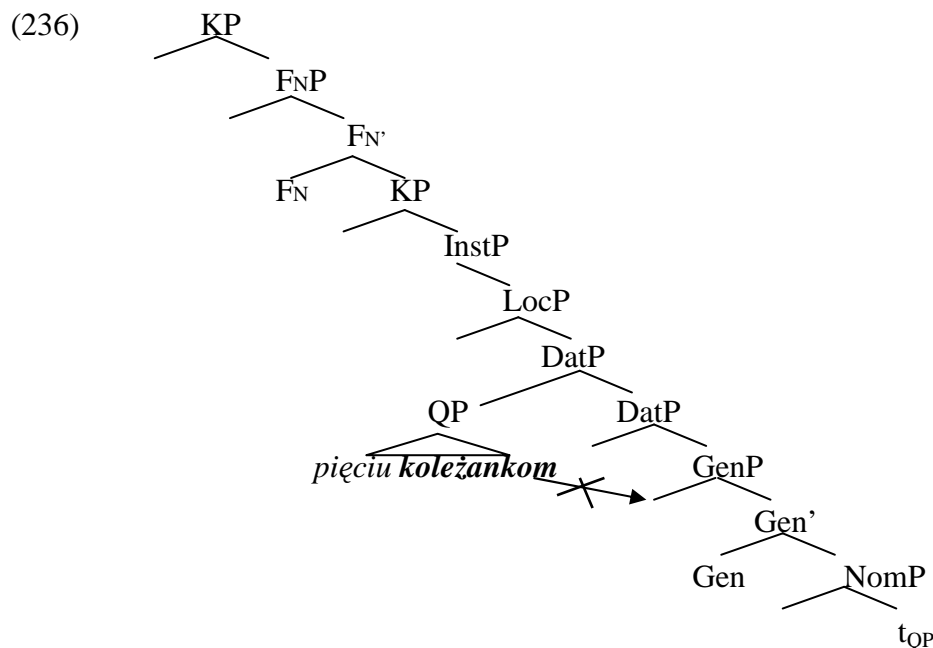
the specifier position of some *Case Projection* as triggered by the external probe. Only then, so after movement to KP has been initiated, the NP can reach its position in specGenP. This scenario allows to equip all elements with the appropriate case and avoid the problem of a countercyclic derivation as the second movement, the one to specGenP, supposedly bleeding the derivation, is, in fact, parasitic on the first one. Such a solution saving the derivation is conceivable provided that the nominal phrase (FNP) is not a phase in which case movements violating *cyclicity* are, in fact, feasible as long as their derivational window is still opened, i.e. upon merge of the next phasal head, i.e. C, which signals completion of the phase with a probe T. Moreover such an order of movements, i.e. the one forced by the external probe and the other one complying with the requirements of the numeral has been a natural consequence of the constraints in the sense of Cinque (2005), i.e. the noun moving first to reach Genitive would hinder later movement of a numeral which immobilized in the lexical domain would be left caseless, hence leads to the crash of the derivation.

Having presented a derivation for phrases in which quantifiers agree in case with a noun or impose Genitive on them, so focusing on the major distinction between lower and higher numerals, now I turn to some more problematic examples in which a higher numeral, although accompanying a Genitive noun, in certain positions in a sentence, traditionally called oblique case positions, does not longer necessitate the presence of a Genitive noun, e.g.:

- (235) *Maria* *pokazała* *pięciu* *koleżankom* *nowe zaproszenia*
 Maria showed five friends-^{*}GEN/DAT new invitations
 ślubne.
 wedding
 ‘Maria showed her five friends new wedding invitations.’

In example (235), verb *pokazać* (show) occurs with one of its arguments in Dative. When the same argument is numerically quantified, let it be a lower or higher numeral, the case form of the noun does not change contrary to expectations, i.e. the noun is still Dative and not Genitive. Commonly, this case discrepancy has been explained in various accounts by means of structural versus inherent case distinction, and to be more specific, by the assumption that the inherent case overrides structural, so when the phrase appears in positions where one of the oblique cases is assigned, Genitive on a

noun normally required by a higher numeral is replaced by the inherent case. In the present proposal, there is no more reference to the structural or inherent case because the nature of case has changed. Considering that cases are decomposed into features and structurally represented in the syntactic tree, obtaining case proceeds through movement of a particular element to a position within KP. In this manner, the noun and its modifiers obtain cases, but what previously was attributed to case overriding now is the result of some movement constraints. The fact that in *pięciu koleżankom* ([five friends]-_{DAT}) the noun is no longer spelled out as Genitive is due to the ban on downward movement, i.e. the QP being an argument of a verb selecting for Dative first move within KP to the specifier position where it can receive this case. Yet, as Dative dominates Genitive, there is no possibility of a further movement of a noun to reach Genitive because that would mean movement down the tree which is forbidden, e.g. (235).¹⁶⁴ What follows, the reason for which a noun is marked as Genitive with higher numerals only in Nominative and Accusative contexts lies in the ban on downward movement. When the whole phrase, i.e. QP, first lands in specNomP or specAccP, further movement of a nominal constituent up the tree is possible. However, when the same QP targets the specifier position of a *Case Projection* above GenP, then no element can incorporate and move to a lower position.



¹⁶⁴ The other possibility of having a Genitive noun would require a noun movement as the first instance of movement but in this case, as it was previously discussed, the numeral would be immobilized and left without case.

3.4.2. Some ancillary issues – modifiers in the nominal phrase and subject verb agreement

In the previous section it has been established that patterns of case distribution within numerically quantified phrases are based on the approach that case is no longer a component of a feature matrix of lexical nominal items but it is represented separately as a terminal node in the syntactic tree. In what follows, acquiring case by particular elements progresses by means of movement of a nominal phrase, or its parts, but in accordance with Cinque's (2005) restrictions on movement to a position c-commanding case. This mechanism has been applied to Old English and Polish and seems to account for both homogenous and heterogeneous syntax of numerals, so the core problematic areas. In this section, however, I devote some attention to more diverse structures with numerals, i.e. demonstratives and adjectives differing in case depending on which element of a nominal phrase they modify. In order to present the model and for clarity, I use mostly examples from Modern Polish.

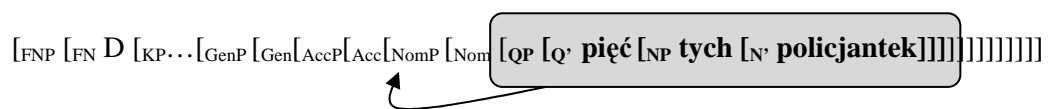
Demonstratives in numerically quantified phrases can appear in two forms, i.e. virile *tych* and non-virile *te* or *tych*. Generally, they can be found in two different positions, preceding the numeral or preceding the noun. This optionality, however, refers only to form *tych*, e.g. (237a), (237b), (237d) and (237e) as the form *te* is correct only in the prenumeral position, e.g. (237c) and (237e).

- (237) a. *pięciu* *tych* *chłopców*
 five-NOM/ACC/GEN these-ACC/GEN boys-VIR.GEN
 'five of these boys'
- b. *tych* *pięciu* *chłopców*
 these-ACC/GEN five-NOM/ACC/GEN boys- VIR.GEN
 'these five boys'
- c. *te* *pięć* *przyjaciółek*
 these -NOM/ACC five-NOM/ACC friends-NONVIR.GEN
 'five these friends'
- c. *tych* *pięć* *przyjaciółek*
 these-GEN five-NOM/ACC friends- NONVIR.GEN
 'five these friends'

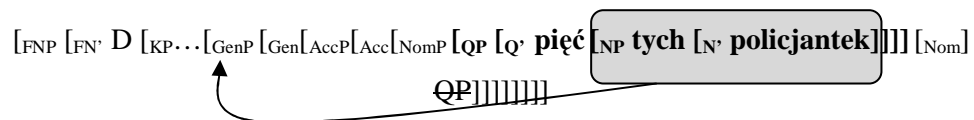
- d. *pięć* **te/tych* *przyjaciółek*
five-NOM/ACC these-*NOM/ACC friends- NONVIR.GEN
‘five of these friends’

These irregularities in the available forms are related not only to a different meaning of particular examples but also to the actual part of the phrase that is modified by the demonstrative. In examples (237a) and (237e) with *pięciu tych chłopców/ pięć tych przyjaciółek* demonstrative in the close vicinity to the noun is in Genitive and the whole phrase has a partitive reading. The derivation proceeds in exactly the same way as it was previously described but with the proviso that a demonstrative does not move further out of KP, e.g. (238 a) and (238b)

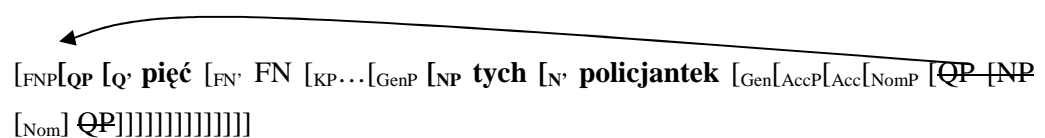
- (238) a. Step 1: movement of QP to specNomP



- b. Step 2: movement of NP to specGenP



- c. Step 3: movement of the numeral to FNP



In the above derivations the demonstrative moves together with the noun to specGenP but the order *num-dem-noun* is established via the movement of the numeral (QP) to the specifier of FNP, e.g. (238c). In the alternate order, i.e. with a Genitive demonstrative base-generated in specNP, but this time preceding the numeral, the demonstrative must move somewhere higher than the numeral. Therefore, one more projection is necessary

to host a displaced element. As we do not want to add projections on top of F_{NP}, let's assume that there is a maximal projection, γ P, between F_{NP} and KP being part of the third domain, e.g.:¹⁶⁵

(239) [F_{NP} [γ P [KP]]]

When, on the other hand, demonstrative precedes the numeral, which is the case in examples (237b) and (237b) *tych pięciu chłopców* and *te pięć dziewczynek*, the numeral is merged in the specifier of QP. This way *tych pięciu* and *te pięć* always agree in case, i.e. *tych pięciu* having a syncretic form in Nominative, Accusative and Genitive and *te pięć* having a syncretic form in Nominative and Accusative. The ungrammatical form **pięć te kobiet* results from the fact that the demonstrative is merged in specNP and the noun is Genitive so complying with the requirements on movement there is no possibility for a demonstrative to reach a position conducive to getting other case than Genitive.¹⁶⁶ Relying on the same mechanism, finally, it can be explained why phrases with virile quantified nouns cannot be preceded by a Nominative demonstrative *ci* (these-virile), e.g.:

(240) **ci* *pięciu* *mężczyzn*
 these-VIR.NOM five men
 'these five men'

Bearing in mind that a demonstrative receives case that tallies with the case either of a noun or a quantifier, which is determined through certain movement operations, in this particular example, a Nominative element has no reasons for its existence as the noun is Genitive and thus in the phrase with a base-generated order *numeral-demonstrative-noun* with the movement of the whole NP, so containing the demonstrative, to

¹⁶⁵As far as order of constituents within FNP is concerned, the most troublesome is the configuration *dem-num-noun* with a demonstrative originating in specNP as two laps of movements out of KP need to be performed, i.e. the one establishing order [numeral-NOM/ACC [demonstrative noun]-GEN] and the second one relocating the demonstrative to a pronominal position.

¹⁶⁶When it comes to a final order of modifiers and the noun, whenever the demonstrative is merged in specQP, it moves out of KP with the whole QP which always leaves the inflectional domain. Yet, in contexts other than Nominative and Accusative, so when all constituents of the phrase share the same case value, QP can move only with its NP complement. The same refers to lower numerals which also agree in case with the modified noun. Movement of QP has been discussed in Svenonius (2004).

specGenP, and the subsequent movements of a numeral and a demonstrative, we receive an explanation of the grammaticality of *tych pięciu mężczyzn*. Yet, as it was shown in previous examples, a demonstrative can be base-generated in the specifier position of QP having case congruent with the case of the numerals, e.g. *te pięć dziewczyn*.

(241) [_{FNP} [_{FN'} FN [_{KP} ... [_{GenP} [_{Gen} [_{AccP} [_{Acc} [_{NomP} [_{QP} *te* [_{Q'} *pięć*]_{NP} [_{N'} *dziewczyn*]]]]] [_{Nom} *t_{QP}*]]]]]]]]]

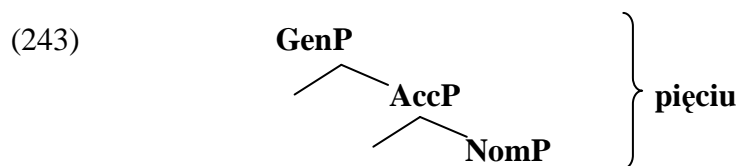
However, in the case of a masculine higher numeral, movement of the QP to specNom (with the subsequent movement of the noun to specGen) still does ensure the Nominative form of the demonstrative *ci*, e.g. **ci pięciu mężczyzn*:

(242) [_{FNP} [_{FN'} FN [_{KP} ... [_{GenP} [_{Gen} [_{AccP} [_{Acc} [_{NomP} [_{Nom} * [_{QP} *ci* [_{Q'} *pięciu*]_{NP} [_{N'} *mężczyzn*]]]]]]]]]]]]]]]]]]]]]

With masculine numerals we observe syncretisms of Nominative, Accusative and Genitive forms, with the proviso that the syncretic forms spread from Genitive to Accusative and Nominative, e.g. (243). The present-day form of masculine higher numerals has arisen in the process of formation of the virile gender, started as early as in Old Polish, signaled by the *-u* ending, which first affected duals by means of Accusative – Genitive syncretism which subsequently spread to other lower numerals. Then, changes reached indefinite numerals such as *kilka*, *wiele* on a par with numeral 5 and onwards. Finally, the Accusative – Genitive syncretism, expanded to Nominative, which was modeled on the basis Nominative – Accusative syncretism developed within non-virile forms. As a result, the Nominative virile form of higher numerals has changed from *pięć* to *pięciu* which despite being used in Nominative contexts is, in fact, a Genitive form.¹⁶⁷ Therefore, even when the numeral occupies specNomP it has the same form as when it would be in specAccP or specGenP, thus it is impossible to tell the position of QP on the basis of the form of the numeral. In consequence, two options seem to be at work here. Firstly, the demonstrative with masculine numerals is base-generated exclusively in the specifier of NP and because of that it occurs only in Genitive. The other possibility excluding Nominative demonstrative **ci* is the *Accusative Hypothesis* advocated by Franks (2002), Przepiórkowski (1996, 2004) or

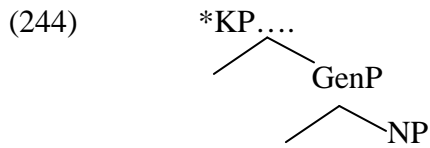
¹⁶⁷ Stapor (2008) or Siuciak (2008) discuss thoroughly various forms of numerals from a diachronic perspective. The emergence of virile gender is analyzed by Miechowicz-Mathiasen and Dziubała-Szrejbrowska (2012, 2013). Also, syncretisms among numerals and their historical development are elaborated on in chapter 2 of a present work.

Miechowicz-Mathiasen (2012), according to which numerals are Accusative, which is supposed to explain not only the ungrammaticality of a Nominative demonstrative with higher masculine virile numerals but also the lack of subject-verb agreement between the verb and the numerically quantified subjects. Putting aside for the moment the discussion of the inherently Accusative numerals, I will first verify if the infelicitous string with a Nominative demonstrative and virile higher numerals can be explained in the proposed account. Bearing in mind that cases are represented in the syntactic tree (e.g. Caha 2009, 2010) in the form of their own projections and that they are ordered in a specific sequence indicating the direction of containment and possible syncretisms, it seems that the present analysis can address this troublesome issue. Following Caha (2009, 2010) and his idea of the *Universal Case Contiguity* according to which case syncretisms affect cases in contiguous regions which means that only adjacent case projections can have the same forms, Genitive-Accusative-Nominative syncretism of masculine human numerals easily fits into the picture, e.g.:

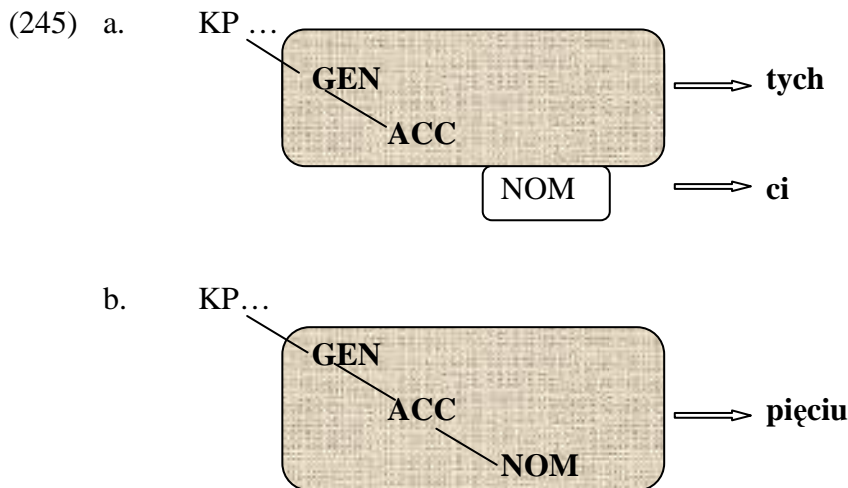


As it is shown in (243), the adjacency of GenP, AccP and NomP ensures that the Nominative form of virile numeral 5 can have a form identical with Genitive. Now, taking historical facts regarding declensional paradigms of numerals together with theoretical bases, it becomes transparent that the source of a syncretic form is Genitive which spreads on Accusative and Nominative, so the form of the higher numeral even when it is selected by the external head requiring Nominative never has the Nominative form.¹⁶⁸ Such an arrangement of cases and syncretisms, however, cannot suggest that whenever we witness case syncretisms particular case projections are overridden by the one with a dominating source of case, i.e. syncretism of GEN-ACC-NOM with a dominating Genitive does not mean that AccP and NomP are cut out from the syntactic representation, e.g.:

¹⁶⁸ The fact that a numeral lexeme does not have a Nominative form is not tantamount with the fact that it occupies the specifier position of NomP.



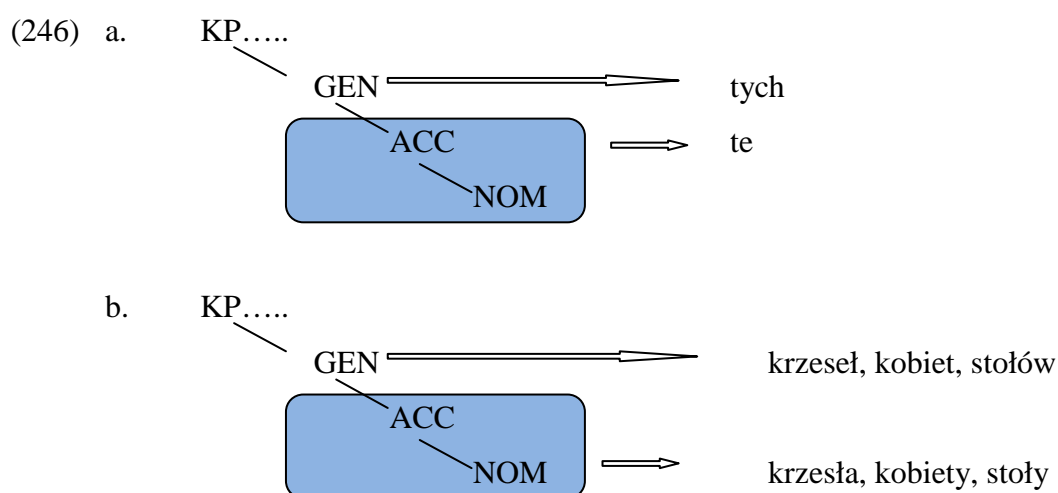
Although, Caha's (2009) *Universal Case Contiguity* explains the form of higher masculine human numerals in Polish, we are missing the solution of the ungrammaticality of a string containing Nominative virile demonstrative and a masculine higher numeral. Rejecting the stipulation that higher numerals are inherently Accusative, I propose that the reason for the incorrectness of **ci pięciu mężczyzn* (these_{NOM} [five men]_{GEN}) lies on the part of the virile demonstrative and its due to the incomplete syncretism of cases in the inflectional paradigm of a virile demonstrative which is not compatible with the syncretism of the masculine human numeral¹⁶⁹, e.g.:



Considering that the demonstrative can originate in the specifier of QP, it has to agree with the modifying head, i.e. the numeral. In the case, however, when the whole QP moves to the specifier of NomP what we witness is the clash of cases, i.e. the Nominative form of a virile demonstrative and the Genitive form of a numeral. Therefore, the controversial string **ci pięciu mężczyzn* cannot be derived. Instead, the

¹⁶⁹ The pattern of case syncretisms of a virile demonstrative and a masculine human numeral reflects two stages of the syncretism spread among masculine human lexemes, i.e. firstly Genitive-Accusative syncretism among masculine animate and virile to single out Nominative followed by Accusative-Nominative syncretism initially established for non-virile. The detailed discussion of directions of syncretisms is discussed in chapter 2.

whole QP moves to the closest *Case Projection*, precisely to the specifier of AccP, in which the form of the modifier and the head can be compatible, i.e. they both occur in the same case form. The same mechanism can be employed to strings with demonstratives accompanying non-virile numerals which, contrary to the previous examples, allow for a Nominative determiner, e.g. *te dziesięć krzesel* (these-NOM ten chairs), *te pięć kobiet* (these-NOM five women), *te sześć stołów* (these-NOM six tables). Such a state of affairs is related to the Accusative-Nominative syncretism of non-virile lexemes which is uniformly found among non-virile demonstratives and higher numerals, e.g. (246):



As a result, when the QP with a demonstrative in a specifier position and a numeral in the head position moves to a particular *Case Projection*, i.e. to NomP or AccP, the forms of both constituents are always compatible, i.e. they are either Nominative or Accusative. Therefore, Nominative non-virile demonstratives can co-occur with non-virile higher numerals. On the basis of presented examples with virile and non-virile demonstratives and numerals as well as considering case syncretism it seems that postulation of inherently Accusative numerals, and what follows the *Accusative Hypothesis* gains no justification. As the examination of structures with non-virile numerals preceded by demonstratives has shown, there is no need or grounds for the idea that numerals have no Nominative form. Moreover, the discussion of relevant strings with demonstratives has revealed that the source of Accusative lies in the need for the overlapping syncretism in case paradigms of constituents in the specifier-head

relation and is limited only to numerals in the virile gender.¹⁷⁰ Having proposed the solution to the puzzle of a non-Nominative demonstrative preceding the masculine human numeral, there is nothing left in defense of the *Accusative Hypothesis* except for the issue of the subject-verb agreement with the numerically quantified subjects. Yet, before, this facet of numeral constructions is given attention, some more examples with modifiers and their positions within the nominal phrase are discussed.

The connection between the form of the demonstrative and part of the phrase it relates to is not only tested in the present account but also receives support from the syntactic behavior and forms of adjectives. Nominative/Accusative forms of selected adjectives in front of the numeral indicates modification of the preceding item and not of the noun or of the whole phrase, e.g.:

- (247) a. *Nauczyciel sprawdził dobre dwadzieścia esejów.*
 teacher checked at.least-ACC.PL twenty essays-GEN.PL
 ‘The teacher checked at least twenty essays.’
- b. *Nauczyciel sprawdził dwadzieścia dobrych /*dobre esejów.*
 teacher checked twenty good-GEN.PL/*good-ACC.PL essays-GEN.PL
 ‘The teacher checked at least twenty good essays.’

In sentence (247a) in which the adjective, agreeing in case with the numeral and not the noun, functions as a degree modifier of a numeral on a par with *tylko* (only) or *dokładnie* (exactly).¹⁷¹ In sentence (247b), however, the adjective preceding and agreeing in case with the noun, definitely refers to the noun. The meaning of each phrase is reflected in its structure, i.e. the one with the modifier referring to the numeral has the structure presented in (248a) and the other with the modifier describing the noun in (248b).

- (248) a. [QP dobre [Q' dwadzieścia [NP esejów]]
 b. [QP dwadzieścia [FP dobrych [F' F [NP esejów]]]

¹⁷⁰ It is worth mentioning that the inadequacy of a Nominative demonstrative and virile numeral refers both to lower and higher numerals. Thus, examples with **ci dwóch mężczyzn* (these-NOM two men) are analyzed in the same manner as the corresponding instances with 5 onwards, especially, that GEN-ACC-NOM syncretisms in the declensional paradigm of numerals were initiated by numeral *two*.

¹⁷¹ *Dobre pięć* means five and maybe more, *tylko pięć* means five or maybe fewer and *dokładnie pięć* means no more and no fewer than five.

As the above structures demonstrate that the modifier can occupy two different positions which is mirrored not only in its meaning, but also in its case form which is always congruent with the modified element. Incidentally, in these two examples, adjectival modifiers are also in their base-generated positions. When, however, the adjective is placed in the pre-numeral position it can appear in Genitive, e.g.

- (249) *zamszowych pięć torebek*
 suede_{GEN} five_{NOM/ACC} bags_{GEN}
 ‘five suede bags’

In such examples, I also claim, that the original position of the adjective is in the pre-nominal position with the further movement outside the inflectional domain. The differentiation in the base-position of the adjectival modifiers can be additionally supported with the examples in which the adjective describing the noun is found in its starting position, i.e. preceding the noun, e.g. (250a), and after movement in a position preceding the numeral, e.g. (250b). In both cases, the adjective is marked with Genitive which highlights its congruency in case with the modified noun. In example (250c), however, the congruency in case with the numeral, i.e. Accusative, renders the structure ungrammatical, which implies that the adjective cannot be merged in the pre-numeral position, hence modify the numeral.

- (250) a. *Kupił pięć niedojrzałych bananów*
 bought five_{ACC} [green bananas]_{GEN}
 ‘He bought five green bananas.’
- b. *Kupił niedojrzałych pięć bananów*
 bought green_{GEN} five_{ACC} bananas_{GEN}
- c. *Kupił *nie DOJRZAŁE pięć bananów*
 bought [green five]_{ACC} bananas_{GEN}

A final word regarding numerically quantified phrases is devoted to subject-verb agreement with the subject containing a numeral. Yet, as the analysis of this aspect of numerically quantified phrases requires more discussion, I only sketch a possible solution to the subject matter under consideration and indicate a direction for further research.

As it was extensively discussed in chapter 1, in Polish, lower agreeing numerals do not influence the case of a modified noun and the noun is in Nominative in the subject position, e.g.

- (251) *Trzy uczennice urządziły konkurs.*
 three female.students- FEM. NOM.PL organized-3PL.FEM.PAST contest.
 ‘Three female students organized a contest.’

Higher numerals accompanying a Genitive noun, on the other hand, are found in sentences with verbal predicates in the third person neuter singular that signals lack of the subject-verb agreement, e.g.

- (252) *Siedmiu studentów zbojkotowało wykład.*
 seven_{NOM} students_{GEN} boycotted_{3SG.NEUT.PAST} lecture.
 ‘Seven students boycotted the lecture.’

The same pattern is recognized with lower virile numerals that induce Genitive marking on the noun, e.g. (253).

- (253) *Dwóch strażników złapało złodzieja.*
 two_{GEN} guards_{GEN} caught_{3SG.NEUT.PAST} thief
 ‘Two guards caught the thief.’

The above description of agreement patterns clearly shows that agreement with the verbal predicate is possible only when the noun is Nominative. Pursuing this idea, i.e. that Nominative is conducive to establishing a relation between the probe and goal, I refer to work by Pesetsky and Torrego (2001, 2004) in which Nominative is a morphological reflex of Tense (T) on nominals. Application of this concept together with the proposal regarding Agree viewed as feature sharing as in Pesetsky and Torrego (2007) to explain some facts from Polish syntax have been introduced and discussed in Witkoś and Dziubała-Szrejbrowska (in prep.). Building on their ideas, I explore the mechanism in which operation Agree is defined in a following way:

- (254) ***Agree (Feature sharing version)***
- i. An unvalued feature F (a probe) on a head H at syntactic location α ($F\alpha$) scans its c-command domain for another instance of F (a *goal*) at location β ($F\beta$) with which to agree.
 - ii. Replace $F\alpha$ with $F\beta$, so that the same feature is present in both locations. (Pesetsky and Torrego 2007)

According to this formulation of Agree, what counts as a probe is an element with the unvalued feature seeking the appropriate goal. Interestingly, the relation between elements may involve unvalued features. Such a specification of features, i.e. the one in which the following pairs are possible, e.g. (255), has been entirely different than in Chomsky's version of Agree (2000, 2001) in which combinations in (255a) and (255d) are not found.

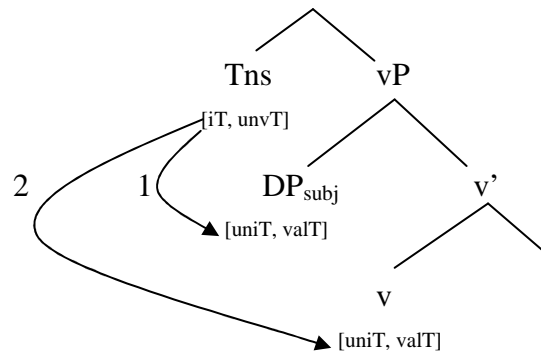
- (255) a. **interpretable, unvalued**
b. interpretable, valued
c. uninterpretable, unvalued
d. **uninterpretable, valued**

Despite the fact that two instances of the unvalued feature are an option what must be fulfilled is a condition providing that a feature is interpretable at least in one position within a structure. The exact formulation of this rule is presented in (256).

- (256) ***Thesis of Radical Interpretability*** (Brody 1997)
Each feature must receive a semantic interpretation in some syntactic location.

Having sketched the major characteristics of agreement operation, let's follow a basic derivation showing how a nominal ends up as Nominative.

(257)



In the finite clause, Tns bearing [interpretable, unvalued] T feature searching for a goal, establishes Agree relation with a DP. Yet, DP having [uninterpretable, unvalued] T feature cannot provide value of T for Tns. Consequently, Tns probes a different goal to find value for a common feature. Agree between Tns and finite verb with [uninterpretable, valued] feature occurs, as a result of which T feature of a DP has been also valued (Pesetsky and Torrego 2007). The outcome of particular steps is that all instances of a feature T are valued but the feature is interpretable only in the position of a probe, i.e. on Tense. Now, applying a similar mechanism to phrases in Polish in which nominals are morphologically marked for case, we can easily address patterns with Nominative subjects. With the leading idea that a morphological representation reflects a valued feature and that Nominative feature is nothing else than the uninterpretable feature T on D/F_N, in the result of Agree between Tns and F_{NP}, both instances of feature are valued with one position in which it receives semantic interpretation.

Turning to examples in which differentiation in case marking implies existence of two separate [uninterpretable, valued] features with different values, i.e. in structures with higher numerals marked as Nom or Acc modifying the noun in Genitive, the analysis becomes more complicated. The problematic aspect is how to reconcile the fact that the derivation is convergent with the failure in establishing agreement between the probe and the goal in phi-features. One of the potential answers to this problem might be related to the availability of features with two different values on a goal, which somehow affects valuation of phi-features on a probe. Although Pesetsky and Torrego (2004) dissociate assignment of Nominative from phi-features they way it is interlinked in Chomsky's system, in which case checking is in a sense contingent on checking phi-features, Polish data, i.e. examples with numerically quantified subjects and a default form of a verb, indicate that these two processes must somehow correlate. The remaining issue, though, is to explain in what way the relation between a goal (F_{NP}) having

[interpretable, valued] phi-features¹⁷² and Tns with [uninterpretable, unvalued] phi-features is disrupted in the presence of two different valued features being a morphological instance of case on one goal. This, however, and some other interrelated issues require more attention and research, thus no attempt is made in the present work to provide a reliable and insightful account of discussed facts, instead some possible avenues to explore have been suggested.

3.5. Conclusion

Numerically quantified noun phrases have constituted an interesting subject of research due to the properties of numerals not only in different languages but also within their own group. Discrepancies in case distribution within nominals complemented with a discussion on their DP versus NP status have instigated a heated debate and, in consequence, resulted in a multitude of accounts in which not only varied structures of nominals have been proposed but also different mechanisms of case assignment to their constituents. In all these models numerals have been viewed as belonging to two different categories, which has additionally hindered the introduction of a uniform analysis of quantified structures. For these reasons, the primary goal of this chapter has been to reanalyze the architecture of nominals not only by considering numerals as belonging, without exception, to one part of speech, but also by assuming a uniform projection, i.e. FNP, for a noun phrase in a cross-linguistic dimension. Having established an inventory of projections building a nominal phrase with numerals, I have introduced a new approach to grammar in which case has become a part of a syntactic tree and different case patterns have resulted from movement steps performed by elements constituting a noun phrase. By means of restrictions on movement and order of satisfying selectional requirements of various items, i.e. predicates and elements building their arguments, it has become possible to put forward a unified account preserving postulates regarding numerals from previous chapters.

¹⁷² Valuation of phi-features inside FNP based on the feature-sharing mechanism as presented by Danon (2011) is discussed in Witkoś and Dziubała-Szrejbrowska (in prep.).

Conclusion

In the process of the analysis of numeral lexemes in Polish and English from different periods, constructions in which they can be found and relations they bear with other constituents of the nominal phrase or the clause, it has been shown that there are many, sometimes quite complex issues, that not without any reason, still attract attention of linguists. Among numerous aspects that have been profoundly discussed in the literature on this subject matter, one of the issues that has been frequently addressed is the status of numerals. Although, at first sight, it does not seem to be a matter of a paramount importance, the assignment of numerals to a particular grammatical category subsequently affects syntactic analyses which try to provide explanations for their properties. Thus, in my view, an adequate description of numeral lexemes should be a starting point for a proper examination of numerically quantified phrases. In my exploration of characteristic features of numerals, in chapter 1, I scrutinize different types of numeral lexemes that in the majority of definitions, although not without reservations, are classified as members of one group (cf. Doroszewski 1957; Laskowski 1984; Nagórko 1996; Saloni and Świdziński 1998, 2012; Carnie 2006). The revision includes *cardinal*, *collective*, *ordinal*, *fractional*, *indefinite*, *distributive*, *multiplicative* and *frequentative* numerals, and covers examples from different languages. Their description, to a large extent based on the examples from Modern Polish, which due to its inflectional nature constitutes the richest source of varied examples, concentrates on semantic, syntactic and morphological properties, on the basis of which I propose that only *cardinal*, *collective*, *fractional* and *indefinite* numerals belong to one group, i.e. quantifiers. Considering semantics as one of the criteria, I narrow down a definition of quantifiers selecting only those lexemes that specify the exact or the approximate

number or amount of elements in a set denoted by a modified noun excluding those numerals, e.g. *ordinal*, *multiplicative* and *frequentative*, whose quantitative meaning indicates sequential order or a number of repetitions. Taking into account syntactic and morphological factors, I closely analyze case properties of numerals with a special attention given to cardinal lower, i.e. <5, and higher numerals, i.e. >5. Despite discrepancies in case distribution in phrases with numerals <5, which agree in case with the quantified noun, and numerals >5, which require a noun in Genitive, I claim that due to their semantic function, i.e. a quantitative specification of a number or amount of elements in a set or its part, which I call a *semantic condition on sets*, they cannot be treated on a par with adjectives and nouns. Moreover, their syntactic behavior subsumed under so-called *syntactic requirements*, i.e. their ability to form complex numeral expressions (*cardinal*, *fractional* and *collective numerals*) and partitive constructions (*cardinal*, *fractional*, *collective* and *indefinite numerals*), undoubtedly distinguish them from other grammatical categories. Finally, morphological considerations, described here as *morphological requirements*, according to which only quantifiers and not adjectives or nouns force a plural marking on a noun they accompany, clearly demonstrate that granting them an adjectival or nominal status is highly erroneous. In the same way, placing *ordinal*, *multiplicative* and *frequentative* numerals along with other quantifiers becomes rather unfounded. The introduction of conditions to verify the membership of particular lexemes to one category is further completed with a survey of historical development of numerals in Old English and Polish, which additionally contributes to the view that cardinal numerals, despite their non-uniform syntax which, in fact, constitutes their unique property, are representatives of one category. Additionally, a comparison of seemingly two different grammatical systems, i.e. Old English and Polish, exposes a common tendency among numerals to simplify and unify their inflection which in English is manifested by a complete decline of morphological exponents, e.g. Table 17, and in Polish by the emergence of the *-u* ending along with prevailing syncretisms in all three genders, e.g. Table 18.

Table 17. Declension of numeral 2 in OE and PDE.

	OE			PDE
	MASC	FEM	NEUT	MASC/FEM/NEUT
NOM	twegen	twa	twa, tu	two
ACC	twegen	twa	twa, tu	
GEN	twegra, twega			
DAT	twam, twæm			

Table 18. Development of the inflectional paradigm of 5 in Polish.

	MASC		FEM/NEUT	
	OPol/MPol	Mod Pol	OPol/MPol	ModPol
NOM	pięć, pięci	pięciu	pięć	pięć
ACC				
GEN	pięc		pięci, pięci	pięciu
DAT	pięci, pięciom		pięci, pięciom	
LOC	pięciu, pięcioma		pięciu	
INST	pięciu, pięcioma	pięcioma	pięciu, pięcioma	pięcioma

Such an approach to numerals allows us to introduce a structure in which these elements invariably occupy the same position, i.e. within a *Quantifier Phrase*, and, at the same time, defend the idea that their characteristic properties related to case can no longer be explained via their different affiliation or a different placement within a nominal phrase. Instead, what I propose is a uniform structure of nominal phrases hosting both lower and higher numerals in the same structural position, i.e. as the head of QP being one of the projections building the nominal phrase. Moreover, the same mechanisms of case distribution applies both to examples with numerals agreeing in case with a noun and with those co-occurring with a noun in Genitive. In my attempts to account for these idiosyncrasies pursued in chapter 3, I embark on a discussion on the architecture of nominal phrases in a cross-linguistic perspective and elaborate on the hypothesis promoting the idea that the nominal phrase is DP rather than NP. Reviewing numerous analyses and arguments for and against the *universal DP hypothesis* (e.g. Abney 1987; Progovac 1998 and Zlatić 1998; Petrović 2011; Willim 2000), focusing especially on differences regarding possibilities of extraction of constituents from a nominal phrase in article and articleless languages (e.g. Corver, 1990, 1992; Bošković 2005, 2008, 2009, 2011, 2012, in press a, in press b; Bašić 2004, 2007), the variety of nominal modifiers such as adjectives (e.g. Scott 2002), quantifiers or possessors which should be

differentiated through distinct positions within a nominal phrase and not grouped together as adjuncts (e.g. Pereltsveig 2007; Bartnik 2011), the featural makeup of pronouns analyzed as D heads and not as N heads (e.g. Panagiotidis 2002), as well as attested word orders of nominal constituents (e.g. Longobardi 1994, 2001; Migdalski 2001, 2003), I lean towards the stance that a nominal phrase, even in the absence of morphological evidence, should have the capacity to address all these complexities. Subsequently, I look into selected accounts trying to provide a solution to the puzzle related to case distribution in phrases containing numerals. Briefly surveying various approaches within a generative framework based on premises that in the structure of nominals the noun is the head of the phrase (e.g. Babby 1987; Rappaport 2002, 2003; Pesetsky 2012), the numeral is the core element (e.g. Przepiórkowski 1999; Bailyn 2003), or both the noun and the numeral can be heads depending on the context, i.e. depending on the value of numerals (e.g. Dziwirek 1990; Tajsner 1990; Franks 1994, 1995 or Bošković 2006), I argue that, irrespective of a numeral and its case properties, the nominal phrase has invariably the same structure and numerals always occupy the same position (contra e.g. Rutkowski 2002b; Bailyn 2003; Pesetsky 2012). Considering the fact that the available accounts face some difficulties in addressing problems posed by the numerically quantified phrases without interfering with the structure of nominals, because they seem to fail to avoid a countercyclic derivation (cf. Bobrowski 1998; Rutkowski 2002b), or because they are not entirely successful in handling the wide range of data, e.g. in Polish, in which different orders of nominal constituents with different case marking are observed, some novel solutions are still in demand. Thus, exploring this avenue, I resort to an approach to grammar, nanosyntax, on which I built my analysis of nominal phrases and the mechanism of case distribution. Utilizing the idea, first introduced by Caha (2009, 2010), that cases are represented in the syntactic tree as separate projections, varied case patterns are derived via displacement in the syntactic structure. What follows, I propose that the nominal phrase has a structure which can be divided into three domains, i.e. *the lexical domain* or *the domain of a first merge* where all lexical elements are introduced into the structure, e.g. noun and its modifiers, *the inflectional domain* consisting of KP split into projections of particular cases where all constituents of a nominal phrase acquire case and *the topmost domain* to which elements move after evacuating *the inflectional domain* to check some formal features, e.g.

movement may target *the topmost domain*. If, however, constituents of a nominal phrase have different case values, as it is when the noun is modified, e.g. by higher numerals, movements within KP must secure two different positions, i.e. one within NomP which is required by the external selector T, and one within GenP to satisfy requirements of the numeral. Only, after every element has a proper case, further movement up is permitted. Although, such a scenario implies that a derivation is countercyclic as requirements of a numeral are satisfied after the introduction of the external head which triggers the very first movement out of *the lexical domain*, the order of operations seems to be well-justified. First of all, because movement is constrained in a line of Cinque (2005), i.e. only a chunk containing a nominal head can move and the movement proceeds leftwards, after a movement of a noun to GenP, the numeral can only stay in-situ where it is left caseless, which, in turn, bleeds a derivation. If, however, the whole QP targets GenP, requirements of the external selector probing for Nominative or Accusative are not met, as quantifier cannot move downward, and derivation crashes as well. The other reason for such a sequence of movements may be that the numeral, due to its non-uniform syntax, is not a legitimate probe and, therefore, fails to trigger movement of a noun. Last but not least, the problem of countercyclicality is avoided assuming that an F_NP is not a phase in which case such operations are allowed as long as the derivational window is still open, i.e. until the next phase head is merged into the structure.

In the same manner, we can account for a homogenous syntax of phrases with higher numerals occurring in the so-called oblique case positions. Bearing in mind, that the external selector initiates movement to *the inflectional domain*, the fact that the whole QP moves to positions above GenP, i.e. DatP, LocP or InstP, the subsequent movement of the noun to specGenP is forbidden as, according to Cinque (2005), movement downward is prohibited. In consequence, the numeral and the noun agree in case.

The proposal regarding the structure of nominals and the mechanism of case distribution seems to be a viable alternative to current approaches as it deals with a broad range of data. Apart from structures containing only the numeral and the noun with two different cases, in some languages, e.g. in Polish, we observe other possible configurations involving additional constituents, for instance, determiners, e.g. (259a, b, c, d), or adjectives, e.g. (260a, b, c, d), which can be addressed once we apply the elaborate structure of nominal phrases along with the movement theory.

- (259) a. Num_{NOM} – Det_{GEN} – N_{GEN}
 b. Det_{GEN} – Num_{NOM} – N_{GEN}
 c. Det_{NOM} – Num_{NOM} – N_{GEN}
 d. *Num_{NOM} – Det_{NOM} – N_{GEN}
- (260) a. *pięć dobrych samochodów*
 five_{NOM} good_{GEN} cars_{GEN}
 ‘five cars of good quality’
- b. *dobrych pięć samochodów*
 good_{GEN} five_{NOM} cars_{GEN}
 ‘five cars of good quality’
- c. *dobrze pięć samochodów*
 good_{NOM} five_{NOM} cars_{GEN}
 ‘at least five cars’
- d. **drogie /drogich pięć samochodów*
 expensive_{NOM} / expensive_{GEN} five_{NOM} cars_{GEN}
 ‘five expensive cars’

The presented case patterns and orders of modifiers in (259) are derived by placing the demonstrative either in the specifier position of NP or QP, which ensures that it agrees in case with a head it modifies, e.g. (259a) and (259c). The final order, however, can be additionally altered by the movement of the demonstrative up to *the topmost domain*, e.g. (259b). Examples with adjectives in (260a, b, c, d), additionally support the claim that once the modifier is merged in the specifier position of QP or NP it must share a case value with the respective head, e.g. (260a) and (260c), or it originates in the lower position from which it moves so that it precedes the head with which it does not agree in case. The inadequacy of (260d), on the other hand, shows, that the specifier position may be not only a place providing a case congruency between its holder and the head but that it is beyond the reach for elements excluded on the semantic grounds, i.e. not every adjective can modify a numeral.

Last but not least, the current analysis seems to accommodate the issue of the illegitimate demonstrative in Nominative placed next to a numeral in virile gender, i.e. **ci pięciu mężczyzn* (these_{NOM} five_{GEN} men_{GEN}), which has been a serious challenge for available accounts. Rejecting *the Accusative Hypothesis* and with the present theoretical

apparatus at hand, I conclude, that in the case of virile higher numerals there is no possibility to derive constructions with a Nominative demonstrative. Considering that the form of such a numeral, although available in NomP, is in fact Genitive as the result of historical changes and spread of syncretisms with Genitive as a source, demonstrative in specQP must bear case other than Nominative to agree with the modifying head. Only then the clash of cases can be avoided.

As the final issue raised in the context of numerically-quantified phrases, I discuss very briefly subject-verb agreement and point to the possible direction for further research.

Summary in Polish

Tematem rozprawy pt. „Aspekty reguł morfoskładni wyrażeń kwantyfikacyjnych w języku angielskim i polskim” są liczebniki oraz określenia typu *wiele*, *dużo*, *mało*, *kilka*, jako elementy modyfikujące we frazach rzeczownikowych¹⁷³ w języku angielskim i polskim. Przedmiotem analizy jest składnia grupy nominalnej zawierająca owe przydawki w ujęciu gramatyki generatywnej, a dokładniej w najnowszych modelach generatywizmu omawianego w pracach Chomskiego (1995, 2001) oraz w oparciu o nowe podejście do gramatyki, tzw. nanoskładnię, przedstawione w pracach Starke (2009), Caha (2009, 2010, 2012, 2013), czy Taraldsen (2009). Głównym aspektem pracy jest struktura frazy nominalnej zawierającej wyrażenia kwantyfikacyjne oraz mechanizm nadawania przypadku wewnątrz frazy znajdującej się w pozycjach, w których nadawane są przypadki strukturalne, np. mianownik, biernik, i zależne np. dopełniacz, celownik itp.

Frazy nominalne, w których rzeczownik jest modyfikowany przez liczebniki główne niższe, tj. <5 , oraz liczebniki wyższe, tj. ≥ 5 , w językach słowiańskich lub określenia typu *wiele*, *dużo*, *mało*, *kilka*, od dawna stanowi przedmiot badań wielu analiz w różnych modelach gramatyki. Ze względu na charakterystyczne właściwości liczebników niższych i wyższych, które z jednej strony zgadzają się pod względem rodzaju i przypadku z modyfikowanym rzeczownikiem (liczebniki niższe), np. *dwie panie*, a z drugiej występują z rzeczownikiem w formie dopełniacza gdy cała fraza nominalna znajduje się w pozycji do której przypisywany jest mianownik lub biernik,

¹⁷³ Fraza rzeczownikowa, grupa nominalna i grupa imienna odnoszą się do tej samej frazy, tj. frazy, zawierającej rzeczownik, określenia modyfikujące takie jak przymiotniki, liczebniki, zaimki wskazujące, oraz dopełnienie.

czyli w pozycjach tzw. przypadków strukturalnych (liczebniki wyższe), np. *pięć pań*, zagadnienie to nierzadko stanowi wyzwanie dla wielu analiz. Dodatkowym elementem utrudniającym przedstawienie jednolitej dla obu typów liczebników analizy jest fakt, iż liczebniki wyższe we frazach nominalnych występujących w pozycjach, w których przypisywane są tzw. przypadki zależne, wykazują się składnią identyczną do liczebników niższych, tj. zgadzają się pod względem rodzaju i przypadku z modyfikowanym rzeczownikiem, np. z *pięcioma paniami*. Wyżej przedstawiona charakterystyka liczebników nie tylko stanowi przedmiot badań w rozważaniach nad mechanizmami nadawania przypadku we frazach nominalnych, ale także, w konsekwencji, prowadzi do podziału wewnątrz grupy liczebników na elementy zestawiane z przymiotnikami (liczebniki niższe) oraz z rzeczownikami (liczebniki wyższe). Ponadto, różne kryteria, tj. morfologiczne, składniowe i semantyczne, przyjmowane w opisie leksemów przynależących do liczebników sprawiają, że brakuje spójnego opisu elementów tworzących tę grupę. Biorąc pod uwagę opisane aspekty składni liczebników, celem niniejszej pracy jest nie tylko zweryfikowanie podziału liczebników niższych i wyższych jako elementów przymiotnikach lub rzeczownikowych, ale także zaproponowanie innego spojrzenia na ich własności, które mimo różnej składni, będą stanowić podstawę to wyróżnienia ich spośród innych części mowy. W następstwie, zaproponowana zostanie analiza oparta na teorii przesunięcia (ang. *theory of movement*), która stanowi próbę pogodzenia składni zgody liczebników niższych, składni rządu liczebników wyższych z faktem, że stanowią one jednorodną grupę a tym samym zajmują tę samą pozycję w strukturze frazy nominalnej. Takie podejście do liczebników wydaje się być dość niestandardowe, dlatego, że w dostępnych analizach proponujących rozwiązania dotyczące mechanizmów przypisywania przypadku kluczową kwestią jest rozróżnienie pozycji, w której znajdują się liczebniki ≤ 5 i ≥ 5 gdyż to właśnie od ich umiejscowienia względem rzeczownika w strukturze drzewa składniowego w dużej mierze uwarunkowana jest dystrybucja przypadku wewnątrz całej frazy.¹⁷⁴

¹⁷⁴ W budowie frazy nominalnej zawierającej liczebniki, najbardziej popularne są podejście, w których to rzeczownik jest głównym elementem frazy, np. (Rappaport 2002, 2003), liczebnik (Przepiórkowski 1999; Bailyn 2003) lub rzeczownik i liczebnik w zależności od kontekstu, tj. czy rzeczownik występuje z liczebnikiem niższym czy wyższym (Dziwirek 1990; Tajsner 1990; Franks 1994, 1995). Ponadto, liczebniki niższe zajmują inną pozycję we frazie niż liczebniki wyższe (zob. Bailyn 2003; Bošković 2006; Rutkowski 2007).

Materiał do badań stanowią przykłady z języków fleksyjnych, tj. ze staro-angielskiego i polskiego, w których to dzięki końcówkom fleksyjnym dobrze widoczne są właściwości morfo-składniowe liczebników i rzeczowników.

Punktem wyjścia do dyskusji na temat wyrażen kwantyfikacyjnych jest przedstawienie definicji i przykładów leksemów w różnych językach zaliczanych do liczebników oraz konstrukcji w jakich występują. Powszechnie, gramatyki języka angielskiego jak i polskiego zaliczają liczebniki do części mowy (np. Carnie 2006 dla j. ang., Nagórko 1996 dla j. pol.), a przynależność do tej grupy jest ustanowiona na postawie właściwości morfologicznych, tj. afiksów, składniowych, tj. tych determinujących ich pozycję we frazach względem innych elementów, oraz semantycznych, czyli bazujących na ich znaczeniu. Liczebniki, definiowane są jako odmienne części mowy określające liczbę, ilość, kolejność (zob np. Jadacka 2000, 2011). Odmieniają się przez przypadki i rodzaj. Na podstawie kryterium semantycznego wśród liczebników wyróżnia się liczebniki główne, zbiorowe, porządkowe, ułamkowe, nieokreślone, dystrybutywne oraz wielorakie.¹⁷⁵

Przedstawiony pokrótce podział liczebników oparty jest na kryteriach semantycznych, tzn. leksemy określające rzeczowniki, mające coś wspólnego z liczbą bądź ilością oraz wykazujące morfologiczne podobieństwo do liczebników głównych lub zbiorowych są przypisane do jednej grupy. Jednak po dokładniejszym przyjrzeniu się ich właściwościom, zarówno semantycznym, składniowym jak i morfologicznym, okazuje się, że przynależność do tej grupy jest nie do końca uzasadniona w przypadku liczebników porządkowych, wielokrotnych, mnożnych i wielorakich.¹⁷⁶ Ponadto, próby przypisania liczebników głównych 1-4 do przymiotników, a od 5 wzwyż do rzeczowników, również wydają się niezbyt trafne po uwzględnieniu kryteriów, które dotyczą tylko liczebników. Gdy weźmie się pod uwagę wyznacznik semantyczny, tzn. definicję liczebnika jako elementu określającego dokładną bądź przybliżoną liczbę lub ilość elementów w zbiorze określanym przez modyfikowany rzeczownik, okazuje się, że liczebniki porządkowe, wielokrotne, mnożne i wielorakie, zarówno w j. polskim jak i angielskim, nie spełniają tej charakterystyki. Biorąc pod uwagę aspekt składniowy, do liczebników można zaliczyć leksemy, które mogą tworzyć liczebniki złożone,

¹⁷⁵ W gramatykach polskich z różnych okresów występuje różny podział liczebników, np. Doroszewski (1957: 101) i Klemensiewicz ([1952] 2001: 59f.) nie uwzględniają liczebników dystrybutywnych i nieokreślonych. Laskowski (1984: 283f) do liczebników zalicza główne, zbiorowe i partytywne. Liczebniki nieokreślone przynależą do liczebników głównych a ułamkowe do partytywnych.

¹⁷⁶ Pomijam w tej klasyfikacji liczebniki dystrybutywne.

występują w konstrukcjach partytywnych a w języku polskim dodatkowo gdy występują we frazie będącej podmiotem wymuszają formę orzeczenia w trzeciej osobie liczby pojedynczej rodzaju nijakiego. Dodatkowym, wyróżniającym liczebniki spośród innych części mowy czynnikiem, jest fakt, że określany przez nie rzeczownik występuje w liczbie mnogiej. Jest to zasadnicze kryterium, które nie tylko eliminuje liczebniki porządkowe, wielokrotne, wielorakie i mnożne z tej grupy, ale także odróżnia liczebniki główne niższe od przymiotników, które nigdy nie modyfikują rzeczownika pod względem liczby.^{177,178} Co do liczebników wyższych i dyskusji dotyczącej klasyfikowania ich jako rzeczowników ze względu na formę dopełniacza opisywanego przez nie rzeczownika, należy podkreślić, że leksemy te, oprócz wspomnianego dopełniacza, różnią się od rzeczowników, nie tylko tym, że wymuszają liczbę mnogą określanego rzeczownika, ale również formę orzeczenia, tj. 3os.l.poj.r.n, co jest niespotykane w przypadku konstrukcji zawierającej dwa rzeczowniki, np.

- (1) a. *Pięć kanarków wyfrunęło przez okno.*
b. *Kanarki Jana/braci wyfrunęły przez okno/ Kanarek Jana/braci wyfrunął przez okno.*

Co więcej, liczebniki wyższe (jak i niższe) mają swoje odpowiedniki rzeczownikowe, np. pięć_{liczebnik} piątka_{rzeczownik}, które podobnie jak inne rzeczowniki posiadają liczbę mnogą i formy zdrobniałe, np. *dostałam dziś dwie dwóje, trzy szóstki i trójczkę*. Dlatego posiadanie dwóch leksemów o takim samym znaczeniu, należących do tej samej części mowy byłoby zbyt liczne i nieekonomiczne. W przypadku liczebników nieokreślonych, zarówno w języku polskim jak i angielskim, wykazują się one cechami, które eliminują je z grupy przymiotników, tj. określają przybliżoną liczbę elementów w zbiorze definiowanym przez rzeczownik. Poza tym, w języku polskim występują z rzeczownikiem w dopełniaczu i z orzeczeniem w 3os.l.poj.r.n. gdy są częścią podmiotu. Zarówno w języku polskim jak i angielskim występują w konstrukcjach partytywnych.

¹⁷⁷ Warto dodać, że w niektórych językach, np. w węgierskim, rzeczownik poprzedzony liczebnikiem występuje w liczbie pojedynczej. Nie stawia to jednak go na równi z przymiotnikami, dlatego, że opisana zależność jest jednokierunkowa, tj. liczebnik może występować z rzeczownikiem w liczbie pojedynczej, ale żaden przymiotnik nie narzuci liczby mnogiej określanemu przez niego rzeczownikowi.

¹⁷⁸ Przymiotnikowy charakter liczebników niższych jest szeroko omawiany w literaturze przedmiotu, zwłaszcza dla języków słowiańskich (zob. Greenberg 1978; Corbett 1978a, 1978b; Franks 1994, 1995 inter alia). Tym samym liczebniki wyższe jako rzeczowniki są omawiane w Hurford (1975), Reinhardt (1991).

Kryteria przedstawione dla liczebników nieokreślonych są spełnione także dla liczebników zbiorowych w języku polskim, co stawia je obok liczebników głównych i ułamkowych w tej samej grupie.

Omówienie typów liczebników i leksemów powszechnie uważanych jako liczebniki, tj. liczebniki porządkowe, wieloraki, wielokrotne i mnożne, oraz usystematyzowanie podejścia do liczebników głównych poniżej i powyżej 5, stanowi istotny krok w podjęciu próby przedstawienia analizy wyjaśniającej pewne właściwości liczebników, a mianowicie mechanizm nadawania dopełniacza rzeczownikowi przez liczebniki wyższe, występowanie składni rządu we frazach z liczebnikami wyższymi w pozycjach przypadków strukturalnych i składni zgody w pozycjach przypadków zależnych, zróżnicowanie w pozycji i wartości przypadku przymiotników i zaimków wskazujących we frazach z liczebnikami powyżej pięć, np. (2a) - (2d) oraz formę orzeczenia z podmiotem liczebnikowym, np. (2e).

- (2) a. *tych pięć kobiet, pięć tych kobiet*
- b. *te pięć kobiet, *pięć te kobiet*
- c. *tych pięciu mężczyzn, pięciu tych mężczyzn, *ci pięciu mężczyzn*
- d. *pięć dobrych samochodów, dobrych pięć samochodów*
- e. *dobrze pięć samochodów, *pięć dobre samochodów*
- f. *pięć/kilka samochodów podjechało pod szkołę.*

Określenie kryteriów przynależności leksemów do grupy liczebników, jak również zerwanie z powszechnym poglądem o przymiotnikowym charakterze liczebników głównych od 1-4 i rzeczownikowym w przypadku liczebników 5 jest uzupełnione o analizę liczebników w języku angielskim. Choć współczesny język angielski, ze względu na swój analityczny charakter, nie dostarcza zbyt wielu materiałów do analizy porównawczej, przykłady konstrukcji liczebnikowych oraz ich paradygmatów odmiany ze staro-angielskiego potwierdzają, że to co do tej pory było uważane za cechy utrudniające przypisanie pewnych leksemów do grupy liczebników, tj. składnia zgody i składnia rządu, stanowi tak naprawdę ich cechę wyróżniającą (zob. Mengden 2010).

W języku angielskim, podobnie jak w języku polskim liczebniki niższe zgadzały się pod względem przypadku z określonym rzeczownikiem np. (Mitchell-Robinson 1998: 67).

wszystkich rodzajów, nie sposób nie zauważyć wspólnych punktów, nie tylko w składni, ale pod względem kierunków zmian morfologicznych prowadzących do uproszczenia paradygmatu.

Kolejnym punktem w dyskusji dotyczącej leksemów liczebnikowych jest przeanalizowanie struktury wewnętrznej fraz nominalnych, w których to występują oraz proponowanych w literaturze mechanizmów wyjaśniających składnię zgody i składnię rządu liczebników. Zasadniczą kwestią, która będzie stanowić podstawę do dalszych rozważań jest budowa frazy rzeczownikowej, a co za tym idzie, umiejscowienie liczebników względem rzeczownika i innych elementów pełniących funkcję przydawki.

W modelu gramatyki generatywnej, a dokładniej w *Teorii Rządu i Wiązania* (z ang. *Government and Binding Theory*), a następnie w *Programie Minimalistycznym* (z ang. *Minimalist Program*) (Chomsky 1995) i jego późniejszych odmianach (np. Chomsky 2001), struktura frazy nominalnej była i jest tematem polemiki w związku ze sporną kwestią związaną z obecnością fraz, tj. maksymalnej projekcji rdzenia funkcjonalnego D, w językach, które nie posiadają określników (z ang. *determiners*) występujących w tej pozycji.¹⁷⁹ Dyskusja ta odnosi się do języków mających przedimek określony (z ang. *definite article*) takich jak angielski, tzw. *article languages*, i tych, które go nie posiadają, tzw. *articleless languages*, czyli języki słowiańskie z wyjątkiem Bułgarskiego i Macedońskiego. Przedmiotem debaty jest kwestia, czy bez względu na obecność przedimków określonych będących fonologiczną realizacją rdzenia funkcjonalnego, fraza nominalna to DP (z ang. *Determiner Phrase*) w myśl, tzw. *universal DP hypothesis*¹⁸⁰, czy należy uwzględnić fakt występowania lub braku elementów umieszczonych w pozycji D zgodnie z tzw. *parametrized DP hypothesis*¹⁸¹ i zamiast DP postulować NP, czyli projekcję rdzenia leksykalnego N. W różnych opracowaniach na temat *hipotezy frazy przedimkowej* pojawiają się argumenty postulujące powiększoną o projekcję rdzenia funkcjonalnego strukturę frazy nominalnej ze względu na zaobserwowany w danym języku szyk wyrazów, tzn. różne pozycje

¹⁷⁹ DP jako struktura frazy nominalnej została zaproponowana przez Abney (1987), Szabolcsi's (1983,1994) i dalej analizowana przez np. Longobardi (1994). Kolejne innowacje w budowie frazy nominalnej dotyczyły dodania nowych projekcji, tj. tzw. *Number Phrase* (Ritter 1993; Carstens 2000), *Gender Phrase* (Picallo 2008) czy *Possessive Phrase* (Longobardi 2001).

¹⁸⁰ DP dla różnych języków nie posiadających przedimka określonego jest omawiane przez np., Bašić (2004, 2007) dla serbsko-chorwackiego, Leko (1999) dla bośniackiego, Rappaport (2002), Pereltsvaig (2007) dla rosyjskiego. Dla języka polskiego, analizę frazy rzeczownikowej jako DP przedstawia np. Migdalski (2001), Rutkowski (2007).

¹⁸¹ Prace odrzucające tzw. *hipotezę frazy przedimkowej* (DP hypothesis) to między innymi, Corver (1992), Zlatić (1998), Willim (2000) i Bošković (2005, 2008, 2009, 2011, 2012).

rzeczownika względem przymiotników lub zaimków dzierżawczych, np. we włoskim (Longobardi 1994), w językach semickich (Ritter 1989), skandynawskich (Taraldsen 1990) czy rumuńskim (Grosu 1988). Inne argumenty wymieniane w kontekście *hipotezy frazy przedimkowej* oparte są na paralelizmach między strukturą zdania a strukturą frazy, np. Bernstein (2001), lub kwestiach dotyczących interpretacji frazy nominalnej, tzn. DP stanowi miejsce sprawdzenia cech (z ang. *features*, chodzi o tzw. *referential features* i *deictic features*) zaimków wskazujących lub zaimków dzierżawczych a tym samym zapewnia odpowiednią interpretację frazy nominalnej. Wyżej opisane zagadnienia omawiane dla języka polskiego przez Migdalskiego (2001, 2003) sugerują, że w języku polskim, mimo braku przedimka określonego, fraza nominalna to DP raczej niż NP. Ponadto, charakterystyka zaimków osobowych posiadających cechy odpowiadające cechom rdzenia funkcjonalnego D (chodzi o tzw. *person feature*) stanowi dodatkowy argument przemawiający za DP w języku polskim. Analogiczną analizę można zastosować dla angielskiego z okresu staro-angielskiego, kiedy to wykazywał cechy języków syntetycznych a tym samym nie wykształcił jeszcze przedimka określonego. W zawiązku z tym, stanowisko wobec budowy frazy nominalnej, tj. czy jest to DP czy NP, jest także niejednoznaczne, np. Osawa (2000) postuluje NP dla staro-angielskiego, z kolei Bartnik (2011) czy Wood (2003) przedstawiają frazę rzeczownikową jako DP. Jako jeden z argumentów potwierdzających istnienie DP jest pozycja we frazie przymiotników, liczebników, zaimków dzierżawczych i zaimków wskazujących, które w podejściu promującym NP występują w pozycji *adjunct*, która nie uwzględnia zróżnicowania w kolejności w jakiej wyżej wymienione elementy są umiejscowione, np. liczebnik występuje między zaimkiem wskazującym, zaimkiem dzierżawczym a przymiotnikiem.¹⁸² Dodatkowo, przykłady przesunięcia z pozycji N do pozycji D (z ang. *N-D movement*) mają świadczyć o tym, że fraza rzeczownikowa jest rozszerzona o projekcję DP. Tym samym, przyjmuje się w niniejszej analizie, że fraza rzeczownikowa, zarówno w języku polskim jak i staro-angielskim to nie projekcja rdzenia leksykalnego N, ale

¹⁸² Analiza dotycząca pozycji elementów przydawkowych jest kwestią wyjściową w debacie na temat *parametrized* contra *universal DP hypothesis*, w której to znaczącą rolę odgrywają opracowania Bošković (2005, 2008, 2009, 2011, 2012, a, b). Bošković opowiadający się za NP dla języków nie posiadających przedimków określonych przytacza szereg zjawisk językowych, które mają korelować z obecnością lub brakiem przedimka określonego. Co więcej, w swoich pracach analizuje zjawiska ekstrakcji przymiotników i rzeczownikowego dopełnienia we frazach nominalnych w świetle teorii faz (z ang. *phase theory*) wyjaśniając, że to właśnie obecność DP uniemożliwia przesunięcia elementów przydawkowych poza frazę nominalną tak jak jest to zaobserwowane w języku angielskim a odwrotnie niż w językach słowiańskich, w których to DP nie występuje.

wielowarstwowa struktura, w której została wyróżniona część leksykalna, tzw. *lexical domain*, część fleksyjna, tzw. *inflectional domain*, oraz część z najwyższej usytuowaną we frazie projekcją, tzn. $F_N P$.¹⁸³ Leksykalne elementy całej frazy takie jak rzeczownik, przymiotnik, liczebnik, generowane są w części leksykalnej w swoich frazach, tj. rzeczowniki w NP (z ang. *Noun Phrase*), przymiotniki w FP ¹⁸⁴ (z ang. *Functional Projection*) i liczebniki w QP (z ang. *Quantifier Phrase*), które następnie zdominowane są przez projekcje elementów funkcjonalnych, tj. KP (Kase Phrase)¹⁸⁵ oraz FNP. Zaimki wskazujące umieszczone zostały wewnątrz frazy NP, w pozycji okolicznika (z ang. *adjunct*). Budowa frazy rzeczownikowej zawierającej liczebnik będący trzonem frazy QP przedstawiona została w pkt. (6):

$$(6) \quad [_{FNP} [_{FN'} FN^0 [_{KP} K [_{QP} [_{Q'} Q^0 [_{FP(adj)} [_{F'} F [_{NP} DEM [_{N'} N^0]]]]]]]]]]]$$

Jednak, w przeciwieństwie do struktur typowych dla gramatyk generatywnych, w których to najmniejszy elementem frazy stanowi morfem, w niniejszej analizie opieram się na podejściu zaproponowanym przez Caha (2009, 2010), Taraldsen (2009) itp. w którym to najmniejszą jednostką derywacyjną jest cecha (z ang. *feature*), w tym przypadku cecha przypadku (z ang. *Case feature*). Co za tym idzie, kategoria fleksyjna przypadku nie jest już częścią matrycy cech danego elementu leksykalnego lub funkcjonalnego, ale stanowi osobną część w drzewie składniowym. Co więcej, każdy przypadek, strukturalny i leksykalny, stanowi rdzeń swojej własnej projekcji znajdującej się w części fleksyjnej frazy, np.

$$(7) \quad [_{(KP)} K [_{InstP} Inst [_{LocP} LOC [_{DatP} Dat [_{GenP} Gen [_{AccP} Acc [_{NomP} Nom [_{QP}]]]]]]]]]]^{186,187}$$

Mechanizm przypisywania przypadków w grupie imiennej oparty jest na teorii przesunięcia (z ang. *movement theory*) i jest wynikiem przemieszczenia się elementu leksykalnego, tj. rzeczownika i elementów go modyfikujących (np. przymiotników lub/i

¹⁸³ $F_N P$ może być traktowana jako odpowiednik DP, jednak aby zdystansować się do toczącej dyskusji na temat DP i NP, ale jednocześnie podkreślić, że fraza nominalna musi być bardziej rozbudowana niż NP, przyjmuję w niniejszej analizie, że najwyższą projekcją jest FNP.

¹⁸⁴ Fraza, w której umieszczone są przymiotniki to umowna projekcja FP (zob. Cinque 1999).

¹⁸⁵ KP dla j. polskiego została zaproponowana w pracach Willim (2000).

¹⁸⁶ Hierarchia przypadków została przedstawiona w oparciu o propozycję Blake (1994), oraz na podstawie występujących synkretizmów przypadków w danym języku.

¹⁸⁷ *InstP* to fraza narzędnika, *LocP* to fraza miejscownika, *DatP* to fraza celownika, *GenP* to fraza dopełniacza, *AccP* to fraza biernika, *NomP* to fraza mianownika.

liczebników), do wybranej pozycji w strefie KP gdzie możliwe jest uzyskanie danego przypadku.¹⁸⁸ Kierunek przesunięcia oraz kolejność, w której poszczególne elementy grupy imiennej mogą przemieścić się do KP jest ściśle określony¹⁸⁹ (Cinque 2005) a pozycja, do której się przesuwać zależy od elementu zewnętrznego, który wymusza na frazie rzeczownikowej określony przypadek, np. czasowniki występujące z podmiotem mianownikowym, czasowniki występujące z dopełnieniem w bierniku lub przypadku zależnym będą powodem przesunięcia się rzeczownika do pozycji, w której możliwe będzie uzyskanie danego przypadku. Tym samym, związek zgody między liczebnikiem (1-4) a rzeczownikiem jest spowodowany przesunięciem się tychże elementów do tej samej pozycji w strefie KP. Związek rządu z liczebnikiem 5<, natomiast, wymaga dodatkowego przemieszczenia się rzeczownika do pozycji w obrębie GenP by mógł uzyskać on formę dopełniacza. Relacja kongruencji między 5< a rzeczownikiem, mimo, iż liczebnik narzuca formę dopełniaczową określanemu rzeczownikowi, wynika z wymagań co do wartości przypadku elementu zewnętrznego i wyżej wymienionych restrykcji dotyczących przemieszczenia.¹⁹⁰ Mechanizm ten zastosowany do bardziej rozbudowanych fraz, tzn. takich zawierających zaimki wskazujące lub przymiotniki przedstawione w pkt. (2a) - (2d) pozwala wyjaśnić różnice w wartości przypadku elementu modyfikującego w zależności od jego pozycji we frazie, tj. czy poprzedza on liczebnik czy rzeczownik. Wówczas dana przydawka, określająca liczebnik lub rzeczownik, przesuwa się wraz z tymi elementami do danej pozycji w strefie KP gdzie możliwe jest uzyskanie wybranego przypadku. Ten sam mechanizm oparty na przesuwanie się poszczególnych elementów do wybranych projekcji przypadków oraz uwzględniający pozycję wyjściową zaimka wskazującego, tzn. czy jest on włączony do derywacji w pozycji *specifier* przynależącego do NP czy QP tłumaczy niegramatyczność wyrażań, w których zaimek wskazujący w mianowniku występuje z liczebnikami wyższymi w rodzaju męskim osobowym, np. **ci pięciu mężczyzn*.

¹⁸⁸ Rzeczowniki i elementy je określające wchodzą do derywacji nieodmienne przez przypadki.

¹⁸⁹ Dopuszczalne jest przesunięcie w lewo i w górę drzewa składniowego całej grupy imiennej lub jej części zawierającej rzeczownik (Cinque 2005). Jednak zasady określające wielkość przesuwanego się elementu dotyczą wyłącznie tzw. domeny fleksyjnej (z ang. *inflectional domain*), której granicę wyznacza KP.

¹⁹⁰ Jeśli element zewnętrzny wymaga by jego argument miał formę celownika rzeczownik i liczebnik w pierwszej kolejności przesuwać się do pozycji umożliwiającej uzyskanie tego przypadku. Dopiero potem możliwe jest przesunięcie rzeczownika pozwalające spełnić wymagania liczebnika co do przypadku rzeczownika. Jako, że nie jest możliwe przemieszczenie w dół drzewa składniowego, rzeczownik nie może obniżyć się do pozycji dopełniacza i stąd powstała relacja kongruencji między liczebnikiem i rzeczownikiem.

Ostatnią kwestią poruszaną w kontekście fraz liczebnikowych jest forma orzeczenia z podmiotem liczebnikowym. Jako, że zagadnienie to, ze względu na rozbudowaną problematykę, może stanowić osobny temat do dyskusji, zostaje ono tylko przedstawione i pokrótce omówione pod kątem kierunku, w jakim może zostać w przyszłości przeanalizowane.

List of texts

Old English texts

The Brooklyn-Geneva-Amsterdam-Helsinki parsed corpus of Old English Texts. 2000:

AELIEVE. Aelfric's lives of saints.

APOLLO. The Old English 'Apollonius of Tyre'.

BEDE. The Old English version of Bede's ecclesiastical history of the English people.

CHROA2. Chronicle ms a early.

OROSIUS. Alfred's Orosius.

The York-Toronto-Helsinki parsed corpus of Old English Prose. 2003.

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Ælfric's Colloquy

"Dominica Prima in Quadragesima", *The homilies of the Anglo-Saxon Church*

"Juliana" [Juliana], *Exeter Book*

"The wife's lament" [Wife], *Exeter Book*

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Biblia to iest Xiegi Starego i Nowego Zakonu [...]. 1561. (Translated by [J.] Leopolit.).
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